

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
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Toby Baker, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

January 13, 2021

MR OSCAR RODRIGUEZ
SR HR DIRECTOR
NATIONS CABINETRY LLC
4600 W US HIGHWAY 90
SAN ANTONIO TX 78237-4002

Re: Permit Amendment and Renewal Applications
Permit Number: 43104
Nation's Cabinetry, LLC
Wood Cabinet Manufacturing Facility
San Antonio, Bexar County
Regulated Entity Number: RN100542828
Customer Reference Number: CN605051838

Dear Mr. Rodriguez:

The Texas Commission on Environmental Quality (TCEQ) has made a preliminary decision on the above-referenced application. In accordance with Title 30 Texas Administrative Code § 39.419(b), you are now required to publish Notice of Application and Preliminary Decision. You must provide a copy of this preliminary decision letter with the draft permit at the public place referenced in the public notice.

If you have any questions, please call Mr. Alexander Au at (512) 239-1890, or write to the TCEQ, Office of Air, Air Permits Division, MC-163, P.O. Box 13087, Austin, Texas 78711-3087.

Sincerely,

A handwritten signature in cursive script that reads "Bonnie Evridge".

Bonnie Evridge, Manager
Mechanical/Coatings New Source Review Permits Section
Air Permits Division

Enclosure

cc: Health Program Manager, Air Quality, San Antonio Metropolitan Health District, San Antonio
Air Section Manager, Region 13 - San Antonio

Project Number: 317485

Special Conditions

Permit Number 43104

1. This permit authorizes the operation of facilities associated with the manufacturing of wood cabinets. These facilities are located at 4600 U.S. Highway 90 West, San Antonio, Bexar County. This permit covers only those sources of emissions listed on the maximum allowable emission rates table (MAERT) and those sources are limited to the emission limits and other conditions specified in the attached table. The annual rates are based on any consecutive 12-month period. **(XX/XX)**
2. This permit does not include the facilities or maintenance, startup, or shutdown (MSS) activities at the site, except as noted in the MAERT. Instead, these facilities and/or activities are authorized by a permit-by-rule (PBR) under Title 30 Texas Administrative Code (30 TAC) Chapter 106, standard exemption, exemption from permitting, or are a de minimis source listed under 30 TAC § 116.119. **(XX/XX)**
3. The facilities and/or activities listed in the following table operate per the criteria of the referenced Standard Exemption (SE)/Permit by Rule (PBR)/Standard Permit and are incorporated by reference: **(XX/XX)**

Facilities/Activities	PBR No.	Registration No.
Miscellaneous Painting	106.433	74161

4. A copy of this permit shall be kept at the site and made available at the request of personnel from the Texas Commission on Environmental Quality (TCEQ) or any other air pollution control agency with jurisdiction. **(XX/XX)**
5. With the exception of fugitive sources, the holder of this permit shall clearly label all equipment at the property that has the potential of emitting air contaminants. Permitted emission points shall be clearly labeled corresponding to the emission point numbering on the MAERT. **(XX/XX)**

Emission Limitations **(XX/XX)**

6. There shall be no visible emissions from building openings or vents. This determination shall be made as follows.
 - A. Observe for visible emissions while cabinet piece manufacturing is ongoing. Contributions from uncombined water shall not be included in determining compliance with this condition.
 - B. Observations shall be performed and recorded quarterly. If visible emissions are observed from the building openings or vents, identification of the source and cause of the visible emissions shall be conducted within 24 hours and documented.
 - C. Corrective action to eliminate the cause of visible emissions shall be taken promptly. Corrective action shall be documented within one week of the first observation of the visible emissions. After corrective action has been taken, another visible emissions observation shall be performed and recorded to ensure the visible emissions have been eliminated.
7. Opacity shall not exceed five percent averaged over a six-minute period from each exhaust stack or vent emission point and the determination shall be made as follows:

- A. Observe for visible emissions while each facility is in operation. Observations shall be made at least 15 feet and no more than 0.25 miles from the emission points. Up to three emission points may be read concurrently, provided that all three emission points are within a 70 degree viewing sector or angle in front of the observer such that the sun position is at the observer's back and can be maintained for all three emission points. Contributions from uncombined water shall not be included in determining compliance with this condition.
 - B. Observations shall be performed and recorded quarterly. If visible emissions are observed from an emission point, then the opacity shall be determined and documented within 24 hours for that emission point using Title 40 Code of Federal Regulations Part 60 (40 CFR Part 60), Appendix A, Test Method 9.
 - C. If the opacity exceeds five percent, corrective action to eliminate the cause of the excessive visible emissions shall be taken promptly. Corrective action shall be documented within one week of the first visible emission observation. After corrective action has been taken, another visible emissions observation shall be performed and recorded to ensure the visible emissions have been eliminated.
8. The coatings used in the facilities covered by this permit shall comply with the individual volatile organic compounds (VOC) content limits specified in 30 TAC §115.421(15) for surface coating of wood furniture less water and exempt solvent (ES) on a daily weighted average basis.

Operation Limitations (XX/XX)

9. Surface coating operations include the application of surface coatings all cleanup activities involving the use of solvent, the mixing of surface coatings, and the thinning of surface coatings using solvents.
10. All surface coating operations shall be performed according to the following requirements:
- A. Airless application equipment or other equipment, such as electrostatic systems, that is demonstrated to reach the same or higher transfer efficiency shall be used. This equipment shall be operated and maintained within the limits set forth by the manufacturer.
 - B. The face velocity across each natural draft opening (NDO) on each coating line and oven shall be at least 100 feet per minute (fpm) during all surface coating and drying operations.
11. Each coating line and the wood shop shall be equipped with a ventilation system that is designed to capture all emissions from the surface coating operations and shall be operated according to the following requirements.
- A. The ventilation system for the coating lines shall be equipped with filter pads designed or warranted to achieve a filter efficiency of 99 percent or greater for particulate matter (PM). The ventilation system for the wood shop shall be equipped with a baghouse which has a maximum outlet grain loading of equal to or less than 0.002 grain per dry standard cubic foot and with an airflow of at least (specify) standard cubic feet per minute.
 - B. The filter system shall be operated and maintained in accordance with the manufacturer's recommendations to assure that the minimum control efficiency is met at all times when the coating booth is in operation.

- C. The holder of this permit shall install, calibrate (if applicable), and maintain a differential pressure gauge to monitor pressure drop across the filter pads. If a monitoring device requires calibration, it shall be calibrated at least annually in accordance with the manufacturer's specifications and shall be accurate to within a range of ± 0.5 inch water gauge pressure (± 125 pascals) or a span of ± 3 percent. If a monitoring device requires to be zeroed, it shall be zeroed at least once a week.
 - D. The filter media differential pressure shall be maintained within the operating range specified by the manufacturer. Filters shall be replaced whenever the pressure drop reading across the filter media is outside the manufacturer's specified operating range.
 - E. Pressure drop readings shall be recorded at least once per day that the system is required to be operated.
 - F. Maintenance on the ventilation system, including filter replacement, shall be performed only when the facility being controlled is not in operation.
12. The ventilation system for each coating line and associated oven shall route the emissions to a thermal control device (e.g., thermal oxidizer) which meets the following requirements:
- A. The thermal control device shall achieve a 99.1 percent or greater destruction efficiency for organic compounds emissions.
 - B. The thermal control device shall be equipped with a monitor (temperature sensor) that continuously measures and records the temperature of the thermal control device combustion chamber or in the duct immediately downstream of the combustion chamber before any substantial heat exchange occurs) and shall be accurate to within $\pm 5^{\circ}\text{F}$. The combustion chamber temperature shall be maintained at greater than or equal to 1500°F based on a 3-hour average temperature over four equally spaced measurement points per hour.
 - C. Once every quarter an accuracy audit shall be conducted to determine if the temperature sensor is still functioning properly. Accuracy audit methods include comparisons of sensor output to redundant temperature sensors, to calibrated temperature measurement devices, or to temperature simulation devices. The temperature sensor shall be replaced with a new sensor either if the sensor looks damaged and/or broken or the sensor is no longer accurate to within $\pm 5^{\circ}\text{F}$.
 - D. Conduct a visual inspection of each sensor every quarter if redundant temperature sensors are not used.
 - E. The operating instructions for the thermal control device shall be established and posted such that they are readily available to all of the thermal control device operators.
 - F. The thermal control device shall be operated and maintained in conformance with all of the manufacturer specifications and recommendations.
 - G. The thermal control device capture system's ductwork shall be operated under negative pressure. An audio, visual, and olfactory (AVO) inspection of the capture system shall be performed monthly to check for leaking components. The capture system shall be maintained free of holes, cracks, and other conditions that would reduce the collection efficiency of the capture system.

- H. An inspection and maintenance log shall be kept for the thermal control device whereby the log shall note the date of each inspection, the name of the inspector, and any repairs and/or maintenance work performed on the thermal control device and its capture system.
 - I. Materials containing halogenated organic compounds shall not be used in the surface coating operations and vented to the thermal control device.
13. Planned maintenance on the thermal control device shall only be performed during periods when the facilities being controlled by the thermal control device are not in operation.
14. The ventilation systems for operations associated with the production of wood cabinets shall include exhaust stacks that have no obstructions or restrictions to vertical exhaust flow. The exhaust stacks shall have a height (as measured from ground level to the discharge point) that is equal to or greater than the following:
- | Emission Point Number (EPN) | Height (feet) |
|-----------------------------|---------------|
| RTO | 41 |
| 11 | 47 |
| 5 | 30 |
| 7 | 50 |
| 8 | 12.5 |
15. Fuel for the boilers, drying ovens, and thermal control device shall be limited to pipeline-quality, sweet natural gas as provided by the gas distributor.

Material Usage Flexibility (XX/XX)

16. In addition to the approved materials, the use of new materials or products that meet all of the following sub-conditions are allowed. Pollutants from categories of air pollutants not currently authorized on the MAERT cannot be authorized using this special condition. This special condition does not authorize the use of any chlorinated or fluorinated compound when emissions are routed to a thermal control device.
- A. All the ingredients of the new material are known; i.e., the weight percentages of the ingredients add to 100 percent or more.
 - B. The maximum hourly (short-term) or annual emission rates from new or existing air contaminant ingredients (aka air contaminants) shall not cause any increases in the short-term or annual emission rates as listed on the MAERT.
 - C. Emissions from the new material shall only be from the emission points represented in the table provided in paragraph G(2) of this special condition.
 - D. Any air contaminant in the new material is exempt from paragraphs E through H of this special condition if the air contaminant is currently authorized under this permit and the proposed emission rate from each EPN is less than or equal to the authorized emission rate from the same EPN.
 - E. Any air contaminant in the new material is exempt from paragraphs F through H of this special condition if:

- (1) The air contaminant is a particulate and no specific short-term effects screening level (ESL) is included in the most current set of ESLs available through the TCEQ Toxicity Factor Database (must meet NAAQS); or
- (2) The air contaminant is not included in the most current set of ESLs available through the TCEQ Toxicity Factor Database.

If the compound is not on the current ESL list and does not belong to a category of compounds on the list, the permit holder shall request confirmation from the Toxicology Division that an ESL need not be created for authorization through this condition. If the Toxicology Division determines that an ESL is not required under this condition, confirmation that no ESL is required shall be kept on file by the applicant.

- F. Any air contaminant in the new material is exempt from paragraphs G and H of this special condition if:

- (1) it is emitted at a rate and has a short-term ESL and an annual ESL as stated in the following table; or

Emission Rate (lbs/hr)	Short-term ESL ($\mu\text{g}/\text{m}^3$)	Annual ESL ($\mu\text{g}/\text{m}^3$)
≤ 0.04	≥ 2 and < 500	≥ 0.2 and < 50
≤ 0.10	≥ 500 and $< 3,500$	≥ 50 and < 350
≤ 0.40	$\geq 3,500$	≥ 350

- (2) it is not sprayed and it has at least one of the following physical characteristics:
 - (a) a vapor pressure less than 0.01 mm Hg (0.0002 psi) at 68°F;
 - (b) a boiling point at atmospheric pressure that is above 400°F (204°C), provided the compound is not heated above room temperature in the process; or
 - (c) a molecular weight that is above 200 g/g-mol, provided the compound is not heated above room temperature in the process.

- G. For all other new air contaminants or increases in existing air contaminants, the following procedure shall be completed to determine if the short-term impacts are acceptable.

- (1) Determine the emission rate of each air contaminant including emissions of the same air contaminant (if an existing air contaminant) from the currently authorized materials that may be emitted at the same time from each emission point.
- (2) Multiply the emission rate of the air contaminant by the unit impact multiplier for each emission point from the following table to determine the off-property impact Ground Level Concentration (GLC)_{MAX} for each emission point.

EPN	Unit Impacts ($\mu\text{g}/\text{m}^3$ per lb/hr)
RTO	19.46
11	9.35
7	5.44
8	514.5

- (3) Sum the impacts from each emission point/emission point group to determine a total short-term off-property impact (Total GLC_{MAX}) for the new or existing air contaminant.
- (4) Compare the total short-term off-property impact to the short-term ESL for the air contaminant as shown below to determine if it is less than or equal to the ESL. If the total off-property impact exceeds the short-term ESL, then a permit amendment is required to authorize the emission rate for the air contaminant.

$$\text{Total } GLC_{MAX} \leq ESL_{SHORT}$$

Where:

Total GLC_{MAX} = The sum of the short-term GLCs from each emission point.

ESL_{SHORT} = The short-term ESL of the new or existing air contaminant from the most current set of ESLs available through the TCEQ Toxicity Factor Database and the date of the database retrieval or as specifically derived by the TCEQ Toxicology Division. The ESL shall be obtained in writing prior to the use of the new or increased air contaminant.

- H. For all other new air contaminants or increases in existing air contaminants, the following procedure shall be completed to determine if the annual impacts are acceptable.
- (1) Determine the annual emission rate (tpy) of each air contaminant including emissions of the same air contaminant (if an existing air contaminant) from the currently authorized materials that may be emitted at the same time from each emission point.
 - (2) Convert the annual emission rate to an hourly emission rate using 8760 hours per year and 2000 pounds per ton.
 - (3) Multiply the hourly emission rate (lb/hr) of the air contaminant determined in paragraph H(2) of this special condition by the unit impact multiplier for each emission point from the table provided in paragraph G(2) of this special condition to determine the off-property impact GLC_{MAX} for each emission point.
 - (4) Sum the impacts from each emission point to determine a total off-property impact (Total GLC_{MAX}) for the new or existing air contaminant.
 - (5) Multiply the total off-property impact (Total GLC_{MAX}) determined in paragraph H(4) of this special condition by 0.08 to determine the annual off-property impact (Annual GLC_{MAX}) for the new or existing air contaminant.
 - (6) Compare the annual off-property impact to the annual ESL for the air contaminant as shown below to determine if it is less than or equal to the ESL. If the annual off-property impact exceeds the annual ESL, then a permit amendment is required to authorize the emission rates for the air contaminant.

$$\text{Annual } GLC_{MAX} \leq ESL_{ANNUAL}$$

Where:

ESL_{ANNUAL} = The annual ESL of the new or existing air contaminant from the most current set of ESLs available through the TCEQ Toxicity Factor Database or as specifically derived by the TCEQ Toxicology Division.

Initial Determination of Compliance

17. One-time testing and sampling of the thermal control device shall be performed in order to do the following:
 - A. Verify the destruction efficiency of the thermal control device; and
 - B. Determine the minimum operating temperature needed to meet the minimum required destruction efficiency. The operating temperature shall be based on a 3-hour rolling average.
18. Specific requirements of the testing are as follows:
 - A. Submit a proposed test plan to accomplish the required testing for approval to the appropriate TCEQ regional office. The proposed test plan must be submitted within 60 days after reaching normal operating conditions of the thermal control device under this permit. The testing should be performed as follows:
 - (1) The testing shall be performed during maximum operating conditions for the facilities that are controlled by the thermal control device; and
 - (2) The thermal control device shall operate at a temperature high enough to ensure compliance with the minimum required destruction efficiency.
 - B. Schedule a pretest meeting with the appropriate TCEQ regional office staff at least 45 days in advance of testing. The purpose of the meeting is to review the test details which include sampling and measuring procedures to be used, the forms required for recording the pertinent data, and the format and content of the test report as outlined in Chapter 14 of the TCEQ Sampling Procedures Manual;
 - C. Testing shall be completed no later than 90 days after regional approval of the test plan and no later than 180 days after reaching normal operating conditions; and
 - D. Submit a test report to the appropriate TCEQ regional office and TCEQ Austin Office of Air, Air Permits Division, no later than 60 days after the testing has been completed. The report shall provide documentation including calculations which demonstrate compliance with the required destruction efficiency.
19. Submit an alteration request to the TCEQ within 6 months of the testing to incorporate into the permit the minimum operating temperature needed to meet the minimum required destruction efficiency.

Recordkeeping (XX/XX)

20. General Condition No. 7 regarding information and data to be maintained on file is supplemented as follows and shall be used to demonstrate compliance with the special conditions and the MAERT:
 - A. Environmental Data Sheet (EDS) or similar documentation (including material safety data sheets) for all paints and solvents used in the coating operations and all solvents used in the cleanup operations. The EDS or similar documentation for materials shall indicate the maximum composition of all constituents.
 - B. Data shall be recorded as follows:

- (1) Daily total gallons of each paint and solvent (including exempt solvents) used in each coating booth;
 - (2) Daily hours and times of day of operation for each coating booth; and
 - (3) As-applied coating VOC and exempt solvent content for each paint and solvent used in each coating booth.
 - C. The data recorded in paragraph [B] of this special condition shall be used to produce a monthly summary that reflects:
 - (1) The VOC, exempt solvent, and PM emissions in lbs/hr as daily averages for each day;
 - (2) The VOC, exempt solvent, and PM emissions in tons per year (tpy) over the previous 12 months; and
 - (3) Hazardous Air Pollutant (HAP) emissions in tpy over the previous 12 months for each individual HAP and total HAPs.
 - D. Field records of visible emissions observation and/or opacity measurements. Records of any corrective action taken.
 - E. Records sufficient to demonstrate compliance with the applicable requirements of 30 TAC Chapter 115.
 - F. Records of the manufacturer's specifications for the spray application equipment employed by the facility.
 - G. Manufacturer's documentation on PM control efficiency for the filters used in the coating booths. Documentation which shows the manufacturer's specified operating range and the procedures recommended for replacement of the filters.
 - H. Records of the calibrations performed on each differential pressure gauge.
 - I. Records of the differential pressure readings across the filter pads.
 - J. Records of when filters were replaced.
 - K. Records of the combustion chamber temperature for the thermal control device.
 - L. Records of the thermal control device temperature sensor accuracy audit and visual inspection (if applicable). Records of temperature sensor replacement.
 - M. Records of AVO inspections and a maintenance log for the thermal control device capture system.
 - N. Records of the inspections and maintenance performed on the thermal control device.
 - O. Records and calculations demonstrating compliance with Material Usage Flexibility condition for the introduction of any new materials.
 - P. A copy of initial test reports and any records of subsequent testing performed shall be kept for the life of the permit.
21. The records required by the special conditions shall be maintained in hard copy or electronic format and shall be maintained for at least two years. The recordkeeping summary required shall contain examples of the calculations performed (including units, conversion factors, transfer efficiency, and emission factors), any assumptions made in the calculations, and the basis for those assumptions. These records shall be kept on-site and made available for review upon request by representatives of the TCEQ or any air pollution control agency with appropriate jurisdiction.

Pollution Prevention (XX/XX)

22. All paint gun cleanup shall be performed in a coating line with the fans operating by discharging the cleaning solvent into closed containers. Any collected waste shall be either recycled or placed in closed containers.
23. Paint pots shall be covered while filled with solvent during cleaning.
24. All waste coatings and solvents shall be stored in closed containers. In no case shall any container be left uncovered whose contents exceed one inch in depth as measured with the container placed on a level surface.
25. All coating and solvent spills shall be cleaned up immediately using appropriate procedures.
26. Towels, rags, sponges, or other materials used for cleanup operations shall be placed into closed containers immediately after use.
27. Containers that contain waste coatings and solvent, equipment cleaning waste and spill cleanup materials may be opened to allow for the addition or removal of material and shall be closed immediately after the transfer operation is complete. All waste materials shall be kept in storage until removed from the plant site in accordance with all applicable waste rules.
28. All filters used for the control of PM from the surface coating operations shall be removed and disposed of in such a manner that minimizes trapped PM from escaping into the atmosphere.

Date: DRAFT

Emission Sources - Maximum Allowable Emission Rates

Permit Number 43104

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities, sources, and related activities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

Air Contaminants Data

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lbs/hour	TPY (4)
RTO	Regenerative Thermal Oxidizer – Process Emissions	VOC	0.72	1.56
		Exempt Solvents	0.56	0.88
		PM	<0.01	<0.01
		PM ₁₀	<0.01	<0.01
		PM _{2.5}	<0.01	<0.01
	Regenerative Thermal Oxidizer – Combustion	VOC	0.06	0.28
		NO _x	0.59	2.58
		CO	0.49	2.16
		SO ₂	<0.01	0.02
		PM	0.04	0.2
		PM ₁₀	0.04	0.2
		PM _{2.5}	0.04	0.2
	Regenerative Thermal Oxidizer – Air Makeup Heater	VOC	0.06	0.26
		PM	0.04	0.18
		PM ₁₀	0.04	0.18
		PM _{2.5}	0.04	0.18
		NO _x	0.54	2.36
		CO	0.45	1.98
		SO ₂	<0.01	0.01
5	Boiler	VOC	0.05	0.21
		PM	0.03	0.15
		PM ₁₀	0.03	0.15
		PM _{2.5}	0.03	0.15
		NO _x	0.44	1.93

Emission Sources - Maximum Allowable Emission Rates

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lbs/hour	TPY (4)
7	Baghouse	CO	0.37	1.62
		SO ₂	<0.01	0.01
		PM	1.15	2.35
8	Wood Shop Glue Fugitives	PM ₁₀	1.15	2.35
		PM _{2.5}	1.15	2.35
		VOC	0.03	0.07
		Space Heater Fugitives	0.01	0.05
		PM	0.01	0.03
		PM ₁₀	0.01	0.03
		PM _{2.5}	0.01	0.03
		NO _x	0.09	0.41
11	Paint	CO	0.08	0.35
		SO ₂	<0.01	<0.01
		VOC	60.32	26.09
		Exempt Solvents	26.36	7.62
		PM	<0.01	<0.01
All Emission Points at the Site	All Sources at the Site	PM ₁₀	<0.01	<0.01
		PM _{2.5}	<0.01	<0.01
		Single HAP		<10.00
All Emission Points at the Site	All Sources at the Site	Total HAPs		<25.00

- (1) Emission point identification - either specific equipment designation or emission point number from plot plan.
(2) Specific point source name. For fugitive sources, use area name or fugitive source name.
(3) Exempt Solvent - Those carbon compounds or mixtures of carbon compounds used as solvents which have been excluded from the definition of volatile organic compound.
- VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
NO_x - total oxides of nitrogen
SO₂ - sulfur dioxide
PM - total particulate matter, suspended in the atmosphere, including PM₁₀ and PM_{2.5}, as represented
PM₁₀ - total particulate matter equal to or less than 10 microns in diameter, including PM_{2.5}, as represented
PM_{2.5} - particulate matter equal to or less than 2.5 microns in diameter
CO - carbon monoxide

Emission Sources - Maximum Allowable Emission Rates

HAP - hazardous air pollutant as listed in § 112(b) of the Federal Clean Air Act or Title 40 Code of Federal Regulations Part 63, Subpart C

- (4) Compliance with annual emission limits (tons per year) is based on a 12 month rolling period.
- (5) Emission rate is an estimate and is enforceable through compliance with the applicable special condition(s) and permit application representations.

Date: _____ DRAFT

October 12, 2020

Mr. Alexander Au
Air Permits Division (MC-163)
Texas Commission on Environmental Quality
PO Box 13087
Austin TX 78711

**Re: Nations Cabinetry LLC – US 90 Facility
4600 US Highway 90 (US90)
San Antonio TX 78237
Bexar County**

**NSR Air Permit No. 43104
CN 605051838
RN 100542828**

Additional Response to Request for Information

Dear Mr. Au:

On August 14, 2020, the Texas Commission on Environmental Quality (TCEQ) provided a letter to Nations Cabinetry, LLC (Nations) requesting additional information in association with the New Source Review (NSR) amendment and renewal application for the subject facility. On September 14, 2020, BSI EHS Services and Solutions (BSI) submitted a letter, on behalf of Nations, to the TCEQ addressing the additional information requested; however, the response did not fully provide information related to the baghouse.

This correspondence is in response to the baghouse items that were not addressed in the previous submittal made on September 14, 2020. Pending items have been copied directly from the August 14th letter, and applicant responses are provided in bold below.

6. Emission Calculations:

- a. The painting calculation spreadsheet was converted to a PDF format. Please submit the original Excel workbook for emission calculations and the impacts analysis.

Updated applicant response: Updated emissions calculations have been uploaded under confidential cover to the TCEQ's FPTs server to Alexander Au's attention. Upon agreement of the calculations, BSI will upload a public version.

- f. Table 11: Particle size distribution was used to determine PM10 and PM2.5 emissions for the baghouse. This is not allowed when using outlet grain loading, and PM = PM10 = PM2.5 should be used. Please revise PM calculations from the baghouse to represent this.

Updated applicant response: The applicant contacted the baghouse vendor/manufacture, Nederman MikroPul, LLC (previously named Pneumafil & Luwa). Nederman MikroPul provided a filter efficiency letter on 09/30/2020 which states that the baghouse model RAF 13.5-448-12 has an outlet emission of 0.002 grains per cubic foot (99.96 % efficiency). Furthermore, the applicant has updated the emissions

calculations to assume PM = PM10 = PM2.5 since the outlet grain loading calculation methodology is being used to estimate emissions.

7. Modeling Impacts:

- c. Please provide pictures of the heaters and all EPN stacks so that the source types used in the modeling may be verified.

Updated applicant response: In the previous submittal dated September 20th, the applicant provided photos of the boiler, baghouse, and RTO stacks. Based on the site photos, the baghouse stack is not vertical. The applicant has decided to modify the baghouse stack to a vertical exhaust without obstruction to airflow. Therefore the baghouse has been remodeled as a point source.

On October 8th, 2020, the applicant remeasured the boiler, baghouse, and RTO stacks, and found that there were discrepancies with stack height measurements and the stack heights used in historical documentation. In addition, the applicant has decided to increase the height of the boiler and baghouse to obtain better air dispersion.

Table 1 Boiler, RTO and Dustcollect stack Heights

Equipment Name	EPN	Stack Height Represented in Historical Documentation (ft)	Stack Height measured on October 8, 2020 (ft)	Proposed Stack Height (ft)
Boiler	5	27.75	27.5	30
RTO	RTO	35	41	41
Baghouse	7	35	45	50

The boiler, baghouse, and RTO have been remodeled with the proposed stack heights.

8. Manufacturing data:

- e. The outlet grain loading was calculated by using an assumed inlet grain loading and a filter efficiency. This does not represent the maximum outlet grain loading. Please provide recent manufacturer data for the baghouse that supports the represented outlet grain loading.

Updated Applicant response: Please see response to question 6.f.

Should you have any questions concerning this request, please contact Natalia Rojas at 512.717.9410, or via email at natalia.rojas@bsigroup.com.

Regards,

Natalia Rojas

Natalia Rojas, EIT
Consulting Specialist

Reviewed by:

Lindsey Renfro

Lindsey Renfro
Principal Consultant, Manager

Mr. Oscar Rodriguez, Sr. Human Resources Manager, Nations – San Antonio, TX



Attachments

Updated Form PI-1 General Application (updated Workbook tabs)

- Unit Types – Emission Rates

Updated Emissions Calculations

- Table 11 – Baghouse Emission Calculations
- Table 13 – Modeling Input Parameters (previously Table 14)
- Table 14 – Unit Impact Multipliers Using SCREEN3 (previously Table 15)
- Table 15 – NAAQS SIL Analysis and Impacts Analysis (previously Table 16)

SCREEN 3 Modeling Runs

- Updated EPN 5 – Boiler
- Updated EPN RTO – RTO
- Updated EPN 7 – Baghouse

Equipment Specifications

- Mikropul Nederman (Pnemafile & Luwa) Baghouse Conditions Letter Dated September 30, 2020

Texas Commission on Environmental Quality
Form PI-1 General Application
Unit Types - Emission Rates

Date: _____
 Permit #: _____
 Company: _____

Permit primary industry (must be selected for workbook to function) Coatings

Action Requested (only 1 action per FIN)	Include these emissions in annual (tpy) summary?	Facility ID Number (FIN)	Emission Point Number (EPN)	Source Name	Pollutant	Current Short- Term (lb/hr)	Current Long- Term (tpy)	Consolidated Current Short- Term (lb/hr)	Consolidated Current Long- Term (tpy)	Proposed Short- Term (lb/hr)	Proposed Long- Term (tpy)	Short-Term Difference (lb/hr)	Long-Term Difference (tpy)	Unit Type (Used for reviewing BACT and Monitoring Requirements)	Unit Type Notes (only if "other" unit type in Column O)
New/Modified	Yes	RTO	RTO	Regenerative Thermal Oxidizers - Process	VOC	8.46				0.72	1.56	-7.74	1.56	Control: Oxidizer (Thermal)	
					Exempt Solvents	--				0.56	0.88	0.56	0.88		
					PM					<0.01	<0.01	0.01	0.01		
					PM10					<0.01	<0.01	0.01	0.01		
					PM2.5					<0.01	<0.01	0.01	0.01		
New/Modified	Yes	RTO	RTO	Regenerative Thermal Oxidizers - Combustion	VOC	0.03	0.02			0.06	0.28	0.03	0.26	Control: Oxidizer (Thermal)	
					NOx	0.59	0.21			0.59	2.58	0	2.37		
					CO	0.5	0.18			0.49	2.16	-0.01	1.98		
					SO2	<0.01	0.02			<0.01	0.02	0	0		
					PM	0.05	0.02			0.04	0.2	-0.01	0.18		
					PM10	0.05	0.02			0.04	0.2	-0.01	0.18		
					PM2.5					0.04	0.2	0.04	0.2		
Remove	Yes	Stain,Seal,Seal3, Seal4	1,2,3,4	Stain Booth with Dryer and Topcoat/Sealer Booth with Dryers Vented Uncontrolled	VOC	167						-167	0		
					Exempt Solvents							0	0		
					PM	0.65						-0.65	0		
					PM10	0.65						-0.65	0		
Remove	Yes	Stain,Seal,Seal3, Seal4	RTO,1,2,3,4	Booth and Dryers Controlled and Uncontrolled	VOC		40					0	-40		
					Exempt Solvents							0	0		
					PM		2.85					0	-2.85		
					PM10		2.85					0	-2.85		
New/Modified	Yes	Boil	5	Boiler	VOC	0.02	0.09			0.05	0.21	0.03	0.12	Boiler: Liquid and Gas Fuel, ≤ 40 MMBtu/hr	
					PM	0.03	0.11			0.03	0.15	0	0.04		
					PM10	0.03	0.11			0.03	0.15	0	0.04		
					PM2.5					0.03	0.15	0.03	0.15		
					NOx	0.34	1.5			0.44	1.93	0.1	0.43		
					CO	0.29	1.27			0.37	1.62	0.08	0.35		
					SO2	<0.01	0.01			<0.01	0.01	0	0		
Remove	Yes	Heat	6	Makeup Air Heater	VOC	0.03	0.13					-0.03	-0.13	Heater	
					PM	0.04	0.18					-0.04	-0.18		
					PM10	0.04	0.18					-0.04	-0.18		
					PM2.5							0	0		
					NOx	0.54	2.37					-0.54	-2.37		
					CO	0.45	1.99					-0.45	-1.99		
					SO2	<0.01	0.01					-0.01	-0.01		
New/Modified	Yes	Shop	7	Baghouse	PM	0.69	3.03			1.15	2.35	0.46	-0.68	Control: Baghouse, Cartridge Filter System, Bin Vent Filter	
					PM10	0.69	3.03			1.15	2.35	0.46	-0.68		
					PM2.5					1.15	2.35	1.15	2.35		
New/Modified	Yes	Shop	8	Wood Shop Glue and Space Heater Fugitives	VOC	3.64	1.82			0.03	0.07	-3.61	-1.75	Heater	
					VOC	0.01	0.02			0.01	0.05	0	0.03		
					PM	0.01	0.03			0.01	0.03	0	0		
					PM10	0.01	0.03			0.01	0.03	0	0		
					PM2.5					0.01	0.03	0.01	0.03		
					NOx	0.09	0.41			0.09	0.41	0	0		
					CO	0.04	0.18			0.08	0.35	0.04	0.17		
					SO2	<0.01	<0.01			<0.01	<0.01	0	0		
Remove	Yes	Fug	9	Valve, Connection, and	VOC	0.02	0.06					-0.02	-0.06	Other	NG piping fugitives
New/Modified	Yes	Paint	11	Paint Line	VOC					60.32	26.09	60.32	26.09	Painting/Surface Coating (Enclosed)	
					Exempt Solvents					26.36	7.62	26.36	7.62		
					PM					<0.01	<0.01	0.01	0.01		
					PM10					<0.01	<0.01	0.01	0.01		
					PM2.5					<0.01	<0.01	0.01	0.01		
New/Modified	Yes	Heat	RTO	Regenerative Thermal Oxidizers - Makeup Heater	VOC					0.06	0.26	0.06	0.26	Heater	
					PM					0.04	0.18	0.04	0.18		
					PM10					0.04	0.18	0.04	0.18		
					PM2.5					0.04	0.18	0.04	0.18		
					NOx					0.54	2.36	0.54	2.36		
					CO					0.45	1.98	0.45	1.98		
					SO2					<0.01	0.01	0.01	0.01		
												0	0		

Table 11
EPN 7 - Baghouse Emissions Calculations

Airflow Rate	67,200	ft ³ /min
Emission Factor	0.002	grain/ft ³
Conversion Factor	60	min/hr
Conversion Factor	7,000	grain/lb
Annual Operating Hours	4,080	hr/yr

Contaminant	Short-term Emission Rate (lb/hr)	Annual Emission Rate (tpy)
PM	1.15	2.35
PM ₁₀	1.15	2.35
PM _{2.5}	1.15	2.35

Calculation Methodology and Notes

Applicant is adding PM_{2.5} to the emissions profile for this EPN and request PM₁₀ be a subject of the to PM emissions represented.

Short-term Emission Rate PM, PM10 and PM2.5 (lb/hr) = [Airflow Rate (ft³/min) * 60 (min/hr) * Emission Factor (grain/ft³)] / 7,000 (grain/lb)

Annual Emission Rate (tpy) PM, PM10 and PM2.5 (tpy) = [Short-term Emission Rate (lb/hr) * Annual Operating Hours (hr/yr)]/ 2000 (tons/lb)

Table 13
Modeling Input Parameters

Short-Term Impacts Analysis and NAAQS Screening Analysis

Source	Source EPN	Source Type	Zone	X Coordinate (UTM meters)	Y Coordinate (UTM meters)	Emission Rate (lbs/hr)	Stack/ Release Height ³ (ft)	Stack Inside Diameter ¹ (ft)	Stack Flow Rate (cfm)	Stack Flow Rate (acfm)	Stack Exit Velocity ² (ft/s)	Stack Exit Temperature ("F)	Dispersion Coefficient Urban/ Rural Option	Building Height (ft)	Building Width (ft)	Building Length (ft)	L (ft)	Region of Building Influence (5L) (ft)	Area or Volume Length (ft)	Area or Volume Width (ft)	Area Axis (Degrees)	Minimum Distance from Property Line (ft)	Building Cavity Zone (3L) (ft)	Property Line Within Cavity Zone? (Yes/No)	Cavity Calculation Required? (Yes/No)
Regenerative Thermal Oxidizer	RTO	Point	14	540865.75	3252916.95	1.000	41.00	3.63	--	--	32.83	127.9	Rural	25	307	675.21	25	125.0	NA	NA	--	54.17	75	YES	YES
Paint Line - Spray Booth	EPN 11	Point	14	540841.88	3252903.01	1.000	47.00	2.10	--	13,542	65.16	150.0	Rural	25	307	675.21	25	125.0	NA	NA	--	130.00	75	NO	NO
Miscellaneous Spray Booth	EPN Misc.SprayBooth	Point	14	540846.04	3252859.48	1.000	31.00	2.00	--	6,077	32.24	ambient	Rural	25	307	675.21	25	125.0	NA	NA	--	78.46	75	NO	NO
Boiler	EPN 5	Pseudo Point	14	540852.35	3252861.44	1.000	30.00	0.0033	--	--	0.0033	220	Rural	25	307	675.21	25	125.0	NA	NA	--	82.02	75	NO	NO
Baghouse	EPN 7	Point	14	540877.77	3253011.47	1.000	50.00	5.00	--	69,979	59.40	ambient	Rural	25	307	675.21	25	125.0	NA	NA	--	47.30	75	YES	YES
Wood Glue and Space Heater Fugitives	EPN 8	Volume	14	540855.12	3252866.64	1.000	12.50	--	--	--	--	--	Rural	25	307	675.21	25	125.0	162	162	--	67.70	75	YES	YES

Pseudo Point Sources

¹ Stack inside diameter revised to 0.001 meters per TCEQ guidance memo for Modeling Fugitive Emissions as Pseudo-Point Sources dated July 25, 1997.
² Stack exit velocity revised to 0.001 meters/sec per TCEQ guidance memo for Modeling Fugitive Emissions as Pseudo-Point Sources dated July 25, 1997.
³ Stack height for pseudo point sources may either be 1.0 meters or the actual release height for horizontal discharges and stacks with rain hats or gooseneck exhaust. Please contact TCEQ for additional guidance for other situations.

TCEQ memo on pseudo-point sources: <https://www.tceq.texas.gov/assets/public/permitting/air/memos/pseudopt.pdf>

Area Sources

³ Stack height for area sources is set to either one half of the over head door height or the structure. Please contact TCEQ for additional guidance for other situations.

Volume Sources

Volume source length and width are based on the EPA SCREEN3 Users Guide - EPA - 454/B-95-004, Table 1

SCREEN3 user guide: <https://www3.epa.gov/scram001/userg/screen/screen3d.pdf>

SUMMARY OF SUGGESTED PROCEDURES FOR ESTIMATING INITIAL LATERAL DIMENSIONS σ_{yo} AND INITIAL VERTICAL DIMENSIONS σ_{zo} FOR VOLUME AND LINE SOURCES	
Type of Source	Procedure for Obtaining Initial Dimension
(a) Initial Lateral Dimensions (σ_{yo})	
Single Volume Source	σ_{yo} = length of side divided by 4.3
Line Source Represented by Adjacent Volume Sources (see Figure 1-8(a))	σ_{yo} = length of side divided by 2.15
Line Source Represented by Separated Volume Sources (see Figure 1-8(b))	σ_{yo} = center to center distance divided by 2.15
(b) Initial Vertical Dimensions (σ_{zo})	
Surface-Based Source ($h_e \sim 0$)	σ_{zo} = vertical dimension of source divided by 2.15
Elevated Source ($h_e > 0$) on or Adjacent to a Building	σ_{zo} = building height divided by 2.15
Elevated Source ($h_e > 0$) not on or Adjacent to a Building	σ_{zo} = vertical dimension of source divided by 4.3

For volume sources, the base of the volume must be square.
For a building 150 ft x 100 ft the dimensions of a square with an equal area is (L2 + W2)*0.5 = 122.47 ft
 σ_{y0} = 122.47 ft + 4.30 = 28.48 ft
 σ_{z0} = 27 ft + 2.15 = 12.55 ft

Table 14
Unit Impact Multipliers Using SCREEN3

EPN RTO

Modeled Concentration	19.46	µg/m ³	<i>max at STAB 4</i>
Fugitive Reduction ²	1.00		
Low Wind Speed Reduction ³	1.00		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion Factor ¹	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	1.00	19.460	1.00	1.00	1.00	19.460
3-hr	0.90	17.514	1.00	1.00	1.00	17.514
8-hr	0.70	13.622	1.00	1.00	1.00	13.622
24-hr	0.40	7.784	1.00	1.00	1.00	7.784
Annual	0.08	1.557	1.00	1.00	1.00	1.557

EPN 11 - Paint Line

Modeled Concentration	9.354	µg/m ³	<i>max at STAB 4</i>
Fugitive Reduction ²	1.00		
Low Wind Speed Reduction ³	1.00		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion Factor ¹	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	1.00	9.354	1.00	1.00	1.00	9.354
3-hr	0.90	8.419	1.00	1.00	1.00	8.419
8-hr	0.70	6.548	1.00	1.00	1.00	6.548
24-hr	0.40	3.742	1.00	1.00	1.00	3.742
Annual	0.08	0.748	1.00	1.00	1.00	0.748

EPN Misc.SprayBooth

Modeled Concentration	131.800	µg/m ³	<i>max at STAB 6</i>
Fugitive Reduction ²	1.00		
Low Wind Speed Reduction ³	1.00		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion Factor ¹	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	1.00	131.800	1.00	1.00	1.00	131.800
3-hr	0.90	118.620	1.00	1.00	1.00	118.620
8-hr	0.70	92.260	1.00	1.00	1.00	92.260
24-hr	0.40	52.720	1.00	1.00	1.00	52.720
Annual	0.08	10.544	1.00	1.00	1.00	10.544

Table 14
Unit Impact Multipliers Using SCREEN3

EPN 5 - Boiler

Modeled Concentration	531.600	µg/m ³	<i>max at STAB 4</i>
Fugitive Reduction ²	0.60		
Low Wind Speed Reduction ³	0.67		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion Factor ¹	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	1.00	531.600	0.60	0.67	1.00	213.703
3-hr	0.90	478.440	0.60	0.67	1.00	192.333
8-hr	0.70	372.120	0.60	0.67	1.00	149.592
24-hr	0.40	212.640	0.60	0.67	1.00	85.481
Annual	0.08	42.528	0.60	0.67	1.00	17.096

EPN 7 - Baghouse

Modeled Concentration	5.44	µg/m ³	<i>max at STAB 5</i>
Fugitive Reduction ²	1.00		
Low Wind Speed Reduction ³	1.00		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion Factor ¹	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	1.00	5.440	1.00	1.00	1.00	5.440
3-hr	0.90	4.896	1.00	1.00	1.00	4.896
8-hr	0.70	3.808	1.00	1.00	1.00	3.808
24-hr	0.40	2.176	1.00	1.00	1.00	2.176
Annual	0.08	0.435	1.00	1.00	1.00	0.435

EPN 8 - Wood glue and Space Heater Fugitives

Modeled Concentration	514.5	µg/m ³	<i>max at STAB 6</i>
Fugitive Reduction ²	0.60		
Low Wind Speed Reduction ³	0.67		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion Factor ¹	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	1.00	514.500	0.60	0.67	1.00	206.829
3-hr	0.90	463.050	0.60	0.67	1.00	186.146
8-hr	0.70	360.150	0.60	0.67	1.00	144.780
24-hr	0.40	205.800	0.60	0.67	1.00	82.732
Annual	0.08	41.160	0.60	0.67	1.00	16.546

¹ Conversion factors are from EPA Screening Procedures for Estimating the Air Quality Impact of Stationary Sources - Revised, EPA 454/R-92-019, page 4-16

<https://www.tceq.texas.gov/assets/public/permitting/air/memos/pseudopt.pdf>

³ TCEQ 0.67 factor to adjust for low wind speed of 1.0 m/sec - SCREEN3 only.

⁴ Shroud factor is based on the shroud guidance memo which is located at:

<https://www.tceq.texas.gov/assets/public/permitting/air/memos/shroudcredit.pdf>

If an adjustment is not applicable, enter 1.00.

Table 15
NAAQS SIL Analysis and Impacts Analysis

EPN RTO

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.05	1.13	1.08	Increase	24-hr	7.78	8.39
PM _{2.5}	0.00	1.13	1.13	Increase	24-hr	7.78	8.78
PM _{2.5}	0.00	1.13	1.13	Increase	Annual	1.56	1.76

EPN 5 - Boiler

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.03	0.03	0.00	Increase	24-hr	85.48	0.30
PM _{2.5}	0.00	0.03	0.03	Increase	24-hr	85.48	2.87
PM _{2.5}	0.00	0.03	0.03	Increase	Annual	17.10	0.57

EPN 6 - Make Up Air Heater (EPN being removed from permit - POCs vented into Spray Room and exhausted through RTO)

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.04	0.00	-0.04	Decrease	24-hr	--	--
PM _{2.5}	0.00	0.00	0.00	No Change	24-hr	--	--
PM _{2.5}	0.00	0.00	0.00	No Change	Annual	--	--

EPN 7 - Baghouse

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.69	1.15	0.46	Increase	24-hr	2.18	1.01
PM _{2.5}	0.00	1.15	1.15	Increase	24-hr	2.18	2.51
PM _{2.5}	0.00	1.15	1.15	Increase	Annual	0.44	0.50

EPN 8 - Space Heaters

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.01	0.01	0.00	Decrease	24-hr	82.73	0.24
PM _{2.5}	0.00	0.01	0.01	Increase	24-hr	82.73	0.59
PM _{2.5}	0.00	0.01	0.01	Increase	Annual	16.55	0.12

EPN 11 - Paint Line

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.00	0.00	0.00	Increase	24-hr	3.74	0.00
PM _{2.5}	0.00	0.00	0.00	Increase	24-hr	3.74	0.00
PM _{2.5}	0.00	0.00	0.00	Increase	Annual	0.75	0.00

Total Impacts

Criteria Pollutant	Project Impact (µg/m ³)	Significant Impact Level (µg/m ³) (Y/N)	Less than Significant Impact Level? (Y/N)	Further Analysis Required?	Site-Wide Impact (µg/m ³) ¹	Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)	Less than Standard? (Y/N)
PM ₁₀ (24-hr)	9.93	5.0	No	Go to Full Analysis	9.93	73.00	82.93	150	Yes
PM _{2.5} (24-hr)	14.74	1.2	No	Go to Full Analysis	14.74	20.00	34.74	35	Yes
PM _{2.5} (annual)	2.95	0.3	No	Go to Full Analysis	2.95	8.17	11.11	12	Yes

¹ If the project increase is greater than the SIL, enter total site-wide impacts based on site wide modeling here.
If the project increase is equal to site-wide impacts, enter the project impact here.

EPN RTO

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
NO _x	0.59	1.13	0.54	Increase	Hourly	19.46	10.46
NO _x	0.59	1.13	0.54	Increase	Annual	1.56	0.84

EPN 5 - Boiler

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
NO _x	0.34	0.44	0.10	Increase	Hourly	213.70	21.62
NO _x	0.34	0.44	0.10	Increase	Annual	17.10	1.73

EPN 6 - Make Up Air Heater (EPN being removed - POCs vented into Spray Room and exhausted through RTO)

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
NO _x	0.54	0.00	-0.54	Decrease	Hourly	--	--
NO _x	0.54	0.00	-0.54	Decrease	Annual	--	--

EPN 8 - Space Heaters

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
NO _x	0.09	0.09	0.004	Increase	Hourly	206.83	0.85
NO _x	0.09	0.09	0.004	Increase	Annual	16.55	0.07

Total Impacts

Criteria Pollutant	Project Impact (µg/m ³)	Significant Impact Level (µg/m ³) (Y/N)	Less than Significant Impact Level? (Y/N)	Further Analysis Required?	Site-Wide Impact (µg/m ³) ¹	Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)	Less than Standard? (Y/N)
Nox (1-hr)	32.93	7.8	No	Go to Full Analysis	32.93	75.20	108.13	188	Yes
Nox (annual)	2.63	1.0	No	Go to Full Analysis	2.63	11.17	13.80	100	Yes

Table 16
NAAQS SIL Analysis and Impacts Analysis

EPN RTO

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
CO	0.50	1.13	0.63	Increase	Hourly	19.46	12.21
CO	0.50	1.13	0.63	Increase	8-hr	13.62	8.55

EPN 5 - Boiler

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
CO	0.29	0.37	0.08	Increase	Hourly	213.70	17.22
CO	0.29	0.37	0.08	Increase	8-hr	149.59	12.06

EPN 6 - Make Up Air Heater (EPN being removed - POCs vented into Spray Room and exhausted through RTO)

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
CO	0.45	0.00	-0.45	Decrease	Hourly	--	--
CO	0.45	0.00	-0.45	Decrease	8-hr	--	--

EPN 8 - Space Heaters

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
CO	0.04	0.08	0.04	Increase	Hourly	206.83	8.08
CO	0.04	0.08	0.04	Increase	8-hr	144.78	5.65

Total Impacts

Criteria Pollutant	Project Impact (µg/m ³)	Significant Impact Level (µg/m ³)	Less than Significant Impact Level? (Y/N)	Further Analysis Required?	Site-Wide Impact (µg/m ³) ¹	Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)	Less than Standard? (Y/N)
CO (1-hr)	37.511	2000	Yes	Analysis Complete	37.51	--	--	40000	--
CO (8-hr)	26.257	500	Yes	Analysis Complete	26.26	--	--	10000	--

EPN RTO

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
SO ₂	0.01	1.13	1.12	Increase	1-hr	19.46	21.75
SO ₂	0.01	1.13	1.12	Increase	3-hr	17.51	19.57
SO ₂	0.01	1.13	1.12	Increase	24-hr	7.78	8.70
SO ₂	0.01	1.13	1.12	Increase	Annual	1.56	1.74

EPN 5 - Boiler

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
SO ₂	0.01	0.00	-0.01	Decrease	1-hr	213.70	1.57
SO ₂	0.01	0.00	-0.01	Decrease	3-hr	192.33	1.41
SO ₂	0.01	0.00	-0.01	Decrease	24-hr	85.48	0.58
SO ₂	0.01	0.00	-0.01	Decrease	Annual	17.10	0.13

EPN 6 - Make Up Air Heater (EPN being removed - POCs vented into Spray Room and exhausted through RTO)

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
SO ₂	0.01	0.00	-0.01	Decrease	1-hr	--	--
SO ₂	0.01	0.00	-0.01	Decrease	3-hr	--	--
SO ₂	0.01	0.00	-0.01	Decrease	24-hr	--	--
SO ₂	0.01	0.00	-0.01	Decrease	Annual	--	--

EPN 8 - Space Heaters

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
SO ₂	0.01	0.00	-0.01	Decrease	1-hr	206.83	1.95
SO ₂	0.01	0.00	-0.01	Decrease	3-hr	186.15	1.76
SO ₂	0.01	0.00	-0.01	Decrease	24-hr	82.73	0.78
SO ₂	0.01	0.00	-0.01	Decrease	Annual	16.55	0.16

Total Impacts

Criteria Pollutant	Project Impact (µg/m ³)	Significant Impact Level (µg/m ³)	Less than Significant Impact Level? (Y/N)	Further Analysis Required?	Site-Wide Impact (µg/m ³) ¹	Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)	Less than Standard? (Y/N)
SO ₂ (1-hr)	25.268	7.8	No	Go to Full Analysis	25.27	56.77	82.04	196	Yes
SO ₂ (3-hr)	22.742	25.0	Yes	Analysis Complete	22.74	--	--	1300	--
SO ₂ (24-hr)	10.057	5.0	No	Go to Full Analysis	10.06	8.56	18.62	365	Yes
SO ₂ (annual)	2.021	1.0	No	Go to Full Analysis	2.02	1.73	3.75	80	Yes

EPN - 5 Boiler Pseudo Point Stack height 30 ft

10/08/20
16:46:11

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EPN5 - Boiler Pseudo

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = 0.126000
STACK HEIGHT (M) = 9.1440
STK INSIDE DIAM (M) = 0.0010
STK EXIT VELOCITY (M/S) = 0.0000
STK GAS EXIT TEMP (K) = 377.5944
AMBIENT AIR TEMP (K) = 293.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = RURAL
BUILDING HEIGHT (M) = 7.6200
MIN HORIZ BLDG DIM (M) = 93.5736
MAX HORIZ BLDG DIM (M) = 205.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
25.	518.2	4	1.0	1.0	320.0	9.14	2.81	4.93	SS
100.	361.3	6	1.0	1.0	10000.0	9.14	7.33	8.54	SS
200.	244.1	6	1.0	1.0	10000.0	9.14	10.85	9.83	SS
300.	182.2	6	1.0	1.0	10000.0	9.14	14.26	10.76	SS
400.	142.9	6	1.0	1.0	10000.0	9.14	17.60	11.84	SS
500.	116.1	6	1.0	1.0	10000.0	9.14	20.87	12.85	SS
600.	96.74	6	1.0	1.0	10000.0	9.14	24.10	13.82	SS
700.	83.26	6	1.0	1.0	10000.0	9.14	27.28	14.46	SS
800.	72.04	6	1.0	1.0	10000.0	9.14	30.43	15.31	SS
900.	63.14	6	1.0	1.0	10000.0	9.14	33.54	16.13	SS

EPN - 5 Boiler Pseudo Point Stack height 30 ft

1000.	55.91	6	1.0	1.0	10000.0	9.14	36.62	16.93	SS
1100.	49.96	6	1.0	1.0	10000.0	9.14	39.68	17.71	SS
1200.	44.99	6	1.0	1.0	10000.0	9.14	42.70	18.47	SS
1300.	40.79	6	1.0	1.0	10000.0	9.14	45.71	19.21	SS
1400.	37.19	6	1.0	1.0	10000.0	9.14	48.70	19.93	SS
1500.	34.09	6	1.0	1.0	10000.0	9.14	51.66	20.64	SS
1600.	31.40	6	1.0	1.0	10000.0	9.14	54.61	21.34	SS
1700.	29.76	6	1.0	1.0	10000.0	9.14	57.54	21.38	SS
1800.	27.66	6	1.0	1.0	10000.0	9.14	60.45	22.00	SS
1900.	25.84	6	1.0	1.0	10000.0	9.14	63.35	22.57	SS
2000.	24.21	6	1.0	1.0	10000.0	9.14	66.24	23.14	SS
2100.	22.74	6	1.0	1.0	10000.0	9.14	69.10	23.69	SS
2200.	21.42	6	1.0	1.0	10000.0	9.14	71.96	24.23	SS
2300.	20.23	6	1.0	1.0	10000.0	9.14	74.80	24.76	SS
2400.	19.14	6	1.0	1.0	10000.0	9.14	77.63	25.28	SS
2500.	18.15	6	1.0	1.0	10000.0	9.14	80.45	25.80	SS
2600.	17.24	6	1.0	1.0	10000.0	9.14	83.26	26.30	SS
2700.	16.41	6	1.0	1.0	10000.0	9.14	86.05	26.80	SS
2800.	15.91	6	1.0	1.0	10000.0	9.14	88.84	26.77	SS
2900.	15.20	6	1.0	1.0	10000.0	9.14	91.61	27.21	SS
3000.	14.56	6	1.0	1.0	10000.0	9.14	94.38	27.62	SS
3500.	11.96	6	1.0	1.0	10000.0	9.14	108.07	29.58	SS
4000.	10.07	6	1.0	1.0	10000.0	9.14	121.55	31.39	SS
4500.	8.650	6	1.0	1.0	10000.0	9.14	134.85	33.10	SS
5000.	7.543	6	1.0	1.0	10000.0	9.14	147.99	34.70	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 25. M:

34.	531.6	4	1.0	1.0	320.0	9.14	3.48	5.53	SS
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DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
857.	66.75	6	1.0	1.0	10000.0	9.14	32.20	15.78	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

EPN - 5 Boiler Pseudo Point Stack height 30 ft
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, $X < 3 \cdot LB$

*** REGULATORY (Default) ***
 PERFORMING CAVITY CALCULATIONS
 WITH ORIGINAL SCREEN CAVITY MODEL
 (BRODE, 1988)

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3) = 0.000
 CRIT WS @10M (M/S) = 99.99
 CRIT WS @ HS (M/S) = 99.99
 DILUTION WS (M/S) = 99.99
 CAVITY HT (M) = 7.62
 CAVITY LENGTH (M) = 46.45
 ALONGWIND DIM (M) = 93.57

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3) = 0.000
 CRIT WS @10M (M/S) = 99.99
 CRIT WS @ HS (M/S) = 99.99
 DILUTION WS (M/S) = 99.99
 CAVITY HT (M) = 7.62
 CAVITY LENGTH (M) = 40.23
 ALONGWIND DIM (M) = 205.50

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

END OF CAVITY CALCULATIONS

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	531.6	34.	0.

EPN - RTO stack height 41 ft

10/08/20
16:14:10

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EPN RTO

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	0.126000
STACK HEIGHT (M)	=	12.4968
STK INSIDE DIAM (M)	=	1.1049
STK EXIT VELOCITY (M/S)	=	10.0066
STK GAS EXIT TEMP (K)	=	326.4278
AMBIENT AIR TEMP (K)	=	293.1500
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	7.6200
MIN HORIZ BLDG DIM (M)	=	93.5736
MAX HORIZ BLDG DIM (M)	=	205.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 3.053 M**4/S**3; MOM. FLUX = 27.445 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
17.	0.8712E-14	1	3.0	3.0	960.0	28.74	5.67	3.26	NO
100.	12.95	4	10.0	10.3	3200.0	16.11	8.31	10.10	HS
200.	9.613	4	5.0	5.2	1600.0	22.07	15.80	13.55	HS
300.	8.707	4	4.0	4.1	1280.0	24.46	22.87	16.74	HS
400.	7.852	4	3.5	3.6	1120.0	26.17	29.71	19.76	HS
500.	6.897	4	3.5	3.6	1120.0	26.17	36.36	22.59	HS
600.	5.981	4	3.5	3.6	1120.0	26.17	42.90	25.34	HS
700.	5.580	4	2.5	2.6	800.0	31.64	49.49	24.65	NO
800.	5.259	4	2.0	2.1	640.0	36.43	55.99	27.64	NO
900.	4.987	4	2.0	2.1	640.0	36.43	62.26	30.25	NO

EPN - RTO stack height 41 ft									
1000.	4.662	4	2.0	2.1	640.0	36.43	68.47	32.81	NO
1100.	4.437	4	1.5	1.6	480.0	44.40	74.87	35.32	NO
1200.	4.213	4	1.5	1.6	480.0	44.40	80.95	37.22	NO
1300.	3.989	4	1.5	1.6	480.0	44.40	87.00	39.08	NO
1400.	3.771	4	1.5	1.6	480.0	44.40	93.00	40.89	NO
1500.	3.563	4	1.5	1.6	480.0	44.40	98.96	42.65	NO
1600.	3.368	4	1.5	1.6	480.0	44.40	104.89	44.38	NO
1700.	3.355	5	1.0	1.1	10000.0	54.52	83.44	32.52	NO
1800.	3.365	5	1.0	1.1	10000.0	54.52	87.80	33.56	NO
1900.	3.360	5	1.0	1.1	10000.0	54.52	92.13	34.57	NO
2000.	3.342	5	1.0	1.1	10000.0	54.52	96.45	35.58	NO
2100.	3.377	6	1.0	1.1	10000.0	46.85	67.28	24.28	NO
2200.	3.428	6	1.0	1.1	10000.0	46.85	70.11	24.81	NO
2300.	3.468	6	1.0	1.1	10000.0	46.85	72.94	25.32	NO
2400.	3.498	6	1.0	1.1	10000.0	46.85	75.76	25.83	NO
2500.	3.520	6	1.0	1.1	10000.0	46.85	78.56	26.32	NO
2600.	3.534	6	1.0	1.1	10000.0	46.85	81.36	26.81	NO
2700.	3.541	6	1.0	1.1	10000.0	46.85	84.14	27.30	NO
2800.	3.542	6	1.0	1.1	10000.0	46.85	86.92	27.77	NO
2900.	3.538	6	1.0	1.1	10000.0	46.85	89.69	28.24	NO
3000.	3.529	6	1.0	1.1	10000.0	46.85	92.45	28.71	NO
3500.	3.384	6	1.0	1.1	10000.0	46.85	106.11	30.60	NO
4000.	3.215	6	1.0	1.1	10000.0	46.85	119.57	32.36	NO
4500.	3.041	6	1.0	1.1	10000.0	46.85	132.86	34.02	NO
5000.	2.871	6	1.0	1.1	10000.0	46.85	146.00	35.59	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 17. M:									
23.	19.46	4	20.0	20.7	6400.0	11.19	2.19	5.42	HS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
281.	8.865	4	4.5	4.7	1440.0	23.13	21.50	16.09	HS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED

EPN - RTO stack height 41 ft
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, $X < 3 \times LB$

*** REGULATORY (Default) ***
 PERFORMING CAVITY CALCULATIONS
 WITH ORIGINAL SCREEN CAVITY MODEL
 (BRODE, 1988)

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3) = 0.000
 CRIT WS @10M (M/S) = 99.99
 CRIT WS @ HS (M/S) = 99.99
 DILUTION WS (M/S) = 99.99
 CAVITY HT (M) = 7.62
 CAVITY LENGTH (M) = 46.45
 ALONGWIND DIM (M) = 93.57

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3) = 0.000
 CRIT WS @10M (M/S) = 99.99
 CRIT WS @ HS (M/S) = 99.99
 DILUTION WS (M/S) = 99.99
 CAVITY HT (M) = 7.62
 CAVITY LENGTH (M) = 40.23
 ALONGWIND DIM (M) = 205.50

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

END OF CAVITY CALCULATIONS

*** INVERSION BREAK-UP FUMIGATION CALC. ***

CONC (UG/M**3) = 0.000
 DIST TO MAX (M) = 844.18

DIST TO MAX IS < 2000. M. CONC SET = 0.0

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
----- SIMPLE TERRAIN	----- 19.46	----- 23.	----- 0.

EPN 7 - Baghouse 50 ft stack height

10/08/20
16:42:34

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EPN 7 - Baghouse

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = 0.126000
STACK HEIGHT (M) = 15.2400
STK INSIDE DIAM (M) = 1.5240
STK EXIT VELOCITY (M/S) = 18.1051
STK GAS EXIT TEMP (K) = 293.1500
AMBIENT AIR TEMP (K) = 293.1500
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = RURAL
BUILDING HEIGHT (M) = 7.6200
MIN HORIZ BLDG DIM (M) = 93.5736
MAX HORIZ BLDG DIM (M) = 205.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 190.332 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
14.	0.2536E-03	5	1.0	1.2	10000.0	43.02	8.00	7.97	NO
100.	5.373	4	20.0	21.3	6400.0	17.07	8.27	10.07	HS
200.	4.228	4	15.0	16.0	4800.0	19.30	15.63	13.35	HS
300.	3.498	3	5.0	5.2	1600.0	31.11	34.59	20.83	NO
400.	3.405	3	4.0	4.2	1280.0	35.08	45.01	27.05	NO
500.	3.179	3	3.0	3.1	960.0	41.69	55.29	33.30	NO
600.	2.950	4	5.0	5.3	1600.0	30.78	42.95	21.67	NO
700.	3.190	5	1.0	1.2	10000.0	43.02	37.62	18.32	NO
800.	3.988	5	1.0	1.2	10000.0	43.02	42.30	19.92	NO
900.	4.627	5	1.0	1.2	10000.0	43.02	46.94	21.49	NO

EPN 7 - Baghouse 50 ft stack height

1000.	5.098	5	1.0	1.2	10000.0	43.02	51.55	23.04	NO
1100.	5.296	5	1.0	1.2	10000.0	43.02	56.13	24.30	NO
1200.	5.403	5	1.0	1.2	10000.0	43.02	60.67	25.53	NO
1300.	5.440	5	1.0	1.2	10000.0	43.02	65.18	26.73	NO
1400.	5.423	5	1.0	1.2	10000.0	43.02	69.67	27.89	NO
1500.	5.367	5	1.0	1.2	10000.0	43.02	74.12	29.04	NO
1600.	5.282	5	1.0	1.2	10000.0	43.02	78.55	30.15	NO
1700.	5.176	5	1.0	1.2	10000.0	43.02	82.96	31.25	NO
1800.	5.057	5	1.0	1.2	10000.0	43.02	87.33	32.32	NO
1900.	4.929	5	1.0	1.2	10000.0	43.02	91.69	33.38	NO
2000.	4.795	5	1.0	1.2	10000.0	43.02	96.03	34.42	NO
2100.	4.727	6	1.0	1.3	10000.0	39.84	66.93	23.30	NO
2200.	4.732	6	1.0	1.3	10000.0	39.84	69.78	23.84	NO
2300.	4.725	6	1.0	1.3	10000.0	39.84	72.62	24.37	NO
2400.	4.707	6	1.0	1.3	10000.0	39.84	75.45	24.90	NO
2500.	4.681	6	1.0	1.3	10000.0	39.84	78.26	25.42	NO
2600.	4.646	6	1.0	1.3	10000.0	39.84	81.07	25.92	NO
2700.	4.606	6	1.0	1.3	10000.0	39.84	83.87	26.42	NO
2800.	4.560	6	1.0	1.3	10000.0	39.84	86.65	26.91	NO
2900.	4.511	6	1.0	1.3	10000.0	39.84	89.43	27.40	NO
3000.	4.458	6	1.0	1.3	10000.0	39.84	92.19	27.88	NO
3500.	4.127	6	1.0	1.3	10000.0	39.84	105.89	29.82	NO
4000.	3.811	6	1.0	1.3	10000.0	39.84	119.38	31.63	NO
4500.	3.520	6	1.0	1.3	10000.0	39.84	132.69	33.32	NO
5000.	3.258	6	1.0	1.3	10000.0	39.84	145.84	34.92	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 14. M:

1314.	5.440	5	1.0	1.2	10000.0	43.02	65.77	26.88	NO
-------	-------	---	-----	-----	---------	-------	-------	-------	----

DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
840.	4.264	5	1.0	1.2	10000.0	43.02	44.16	20.55	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

EPN 7 - Baghouse 50 ft stack height
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, $X < 3 \cdot LB$

*** REGULATORY (Default) ***
 PERFORMING CAVITY CALCULATIONS
 WITH ORIGINAL SCREEN CAVITY MODEL
 (BRODE, 1988)

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3) = 0.000
 CRIT WS @10M (M/S) = 99.99
 CRIT WS @ HS (M/S) = 99.99
 DILUTION WS (M/S) = 99.99
 CAVITY HT (M) = 7.62
 CAVITY LENGTH (M) = 46.45
 ALONGWIND DIM (M) = 93.57

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3) = 0.000
 CRIT WS @10M (M/S) = 99.99
 CRIT WS @ HS (M/S) = 99.99
 DILUTION WS (M/S) = 99.99
 CAVITY HT (M) = 7.62
 CAVITY LENGTH (M) = 40.23
 ALONGWIND DIM (M) = 205.50

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

END OF CAVITY CALCULATIONS

*** INVERSION BREAK-UP FUMIGATION CALC. ***

CONC (UG/M**3) = 0.000
 DIST TO MAX (M) = 556.74

DIST TO MAX IS < 2000. M. CONC SET = 0.0

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
----- SIMPLE TERRAIN	----- 5.440	----- 1314.	----- 0.



4433 Chesapeake Drive
Charlotte, NC 28216
704 998-2600
www.mikropul.com

Date September 30, 2020
Re Filter Efficiency for BSI Group, Austin, TX
SN Unknown
To Natalia Rojas

This letter is to confirm that the Pneumafil RAF dust collector, sized properly for your application, in good working condition, and under normal working environment, will reduce emissions as long as the following conditions are met.

Condition	Value
Dust	Wood dust
Particle Size	≥ 5 micron
Model	RAF 13.5-448-12
Serial Number	Unknown
Media	16 oz Polyester
Total Square Feet	448 bags x 15.5 square feet = 6720 square feet
Airflow	$\leq 67,200$ actual cubic feet per minute
Temperature	Ambient
Filter Rate	≤ 10.00 feet per minute
Inlet Grain Loading	≤ 5 grains per cubic foot *See Note
Pressure Drop	2" to 6" water gauge across the filters
Outlet Emissions	0.002 grains per cubic foot (99.96% efficiency) *See Note

*Note: As Mikropul is not responsible for the actual production process and thus the actual operating conditions (inlet grain loading), we can only give efficiency statements based on assumed operating conditions. For actual emissions monitoring, Mikropul recommends leak detection equipment to efficiently monitor any outlet emissions.

Sincerely,

John Hildebrand

John Hildebrand
Project Engineering Supervisor
Nederman Mikropul
jhildebrand@mikropul.com
704-998-2610



EHS Services and Solutions
7000 North MoPac Expressway
Suite 200
Austin, TX 78731
800.790.6236
bsigroup.com

September 14, 2020

Mr. Alexander Au
Air Permits Division (MC-163)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin TX 78711

**Re: Nations Cabinetry LLC – US 90 Facility
4600 US Highway 90 (US90)
San Antonio, TX 78237
Bexar County**

**NSR Air permit No. 43104
CN 605051838
RN 100542828**

Request for Additional Information Response

Dear Mr. Au:

This correspondence is in response to your letter dated August 14, 2020 requesting additional information associated with the New Source Review (NSR) amendment and renewal under review for Nations Cabinetry Products, Inc. The request has been copied directly from the August 14 letter, and applicant responses are provided in **bold** below.

1. *NSR Workbook – BACT*: The specific control efficiencies for the filter and baghouses are not specified. Please specify the exact efficiencies used for all control devices and filters in the “Additional Notes” column.

Applicant Response: Specific control efficiencies for the filter and baghouse has been added to the NSR workbook – BACT tab.

2. *EMEW*: The submitted EMEW is incomplete. While several sections on the EMEW are addressed in the calculation workbook, the EMEW should still be completed. Please revise the EMEW so that all relevant sections are complete.

Applicant Response: The coatings calculation workbook downloaded from the TCEQ’s website originally included an Effects Screening Levels (ESLs) extraction dated 06/17/18. BSI extracted ESLs on 05/21/20 and replaced the 2018 extraction in the workbook.

Additionally, while the modeling parameters are included in the EMEW, the health effects review and National Ambient Air Quality Standards (NAAQS) analysis are included in the coatings calculation workbook.

3. *Process Description:*

a. *Painting Operations – Stain Line:*

- i. This section represents that coating transfer efficiency for the Stain Line Spray Booth is 80% with a 25% overspray. This appears to be a typographical error, as this does not add up to 100%. Please verify the transfer efficiency and overspray percentages and verify the section so that they add up to 100%.

Applicant response: The process description has been updated to match the overspray percentage representation utilized in the emissions calculations for the Stain Line Spray Booth.

- ii. An assumption is made that 95% of spent stain cleaning solvent is collected for waste disposal, but no basis was provided for this assumption. Please provide justification supporting the 95% collection efficiency.

Applicant response: Spent stain cleaning solvent is collected from the trolley wiping system and transported to a waste collection container that is located below the conveyor belt. The collected spent solvent is then transferred to a 55-gallon drum that is located next to the Stain Line Spray Booth. The drum remains closed when not in use. When the drum is “full” it is transferred to the coating waste storage area. This process is the same for the Clear Line Spray Booth. Waste capture/collection efficiencies for the cleaning solvent used in the Stain Line Spray Booth and Clear Line Spray Booth have been updated to assume a 50% capture/collection efficiency.

The Paint Line utilizes a paper roll in the spray booth. Paint line cleaning solvent is sprayed on to the paper roll. It has conservatively been assumed that 0% cleaning solvent is captured/collected. For short-term emissions calculations, however, the annual capture/collection efficiency for the paint line cleaning solvent has been updated to 80% (captured on paper, rolled up, and disposed of).

The updated short- and long-term cleaning solvent waste capture/collection efficiencies are summarized in the table below.

Coating Line	Short-term Capture as Waste (%)	Long-term Capture as Waste (%)
Stain Line	50	50
Clear Line	50	50
Paint Line	0	80

b. *Painting Operations – Clear Line:*

- i. The assumed filter efficiency for a water scrubber filtration efficiency used in this line is 99%. All filter data supplied with the application indicate that only dry filter systems are used. Please clearly identify whether the water scrubber system is the correct type of filtration system used during this part of the process. If so, please provide manufacturer data for the water filters that support the claimed 99% efficiency.

Applicant response: The scrubber filtration system is a wet process. The 99% filtration efficiency corresponds to Particulate Matter (PM) emissions. The Applicant does not claimed a VOC control efficiency at the scrubber. The scrubber filtration system vents to the RTO (Emission Point Number [EPN] RTO).

The scrubber filtration system was installed over 20 years ago under a previous owner/operator of this facility. The Applicant performed an exhaustive documentation review through a TCEQ open records request and onsite documentation review and was not able to find manufacturer data on this system. To the best of the Applicant's knowledge, the assumed filter efficiency of the scrubber remains consistent with prior application submittals.

- ii. The section represents that cabinet pieces that have been coated and dried are hand-sanded. However, no emissions are being represented from this process. Please clarify where emissions from this process are being emitted.

Applicant response: Manual hand sanding operations using hand sanding blocks, or the like, occurs in between coats on the Clear Line. It is assumed that the dust generated from this process is localized at the point of occurrence. The sanded cabinet parts pass back through the coating line that utilizes a dust extractor that is routed to a baghouse (EPN 7) prior to entry into the paint booth. Similar hand-sanding operations occur in the Paint Line.

Please see attached pictures of the hand-sanding operations as reference.

- c. Stain Line and Clear Line operations represent a coatings usage of 30 gal/hr., and Paint Line operations represent a coatings usage of 20 gal/hr. Please note that this seems like an excessive amount of coating for this process type. Please verify that the amount of coating used is correct, and revise the process description, emission calculations, and impacts analysis as applicable.

Applicant response: The hourly coating usage rates represented in the application were conservatively estimated based on spray tip design specifications. However, per TCEQ request and guidance, hourly coating usage rates have been reevaluated using the "Paint Coverage" calculation spreadsheet developed by TCEQ.

Additionally, the applicant has reevaluated annual coating usage rates. Updated hourly and annual coating usage rates are summarized in the following table.

Coating Line	Hourly Usage Rate (gal/hr.)	Annual Usage Rate (gal/yr.)
Stain Line	13	40,000 (no update)
Clear Line	15	45,000 (updated)
Paint Line	13	22,000 (no update)

- d. Please provide pictures of the conveyor system and any enclosures within the building so that capture calculations may be verified.

Applicant response: Please see attached the conveyor belt photo log.

Additionally, per TCEQ request and guidance, the capture calculations have been reevaluated to review the Spray Room Finish Department (Spray Room) as a whole rather than per piece of equipment. The updated calculations are attached (refer to Table 18). It has been determined that the face velocity at the natural draft openings into the Spray Room is greater than 100 feet per minute (ft/min); therefore, EPN 10 Spray Room Finish Department Fugitives has been removed from the application and the associated emissions routed to their respective emission point(s).

4. *Area Map:*

- a. As we currently only have access to an electronic copy of the application, the scale used for the submitted area maps (1 inch = 3,000 feet and 1 inch = 500 feet) cannot be used. Please submit an area map with a fixed scale.

Applicant response: Attached are updated area map, plot plan 1, and plot plan 2 with a graphic scale.

- b. Please provide a zoning overlay for the area map. Since one of the pollutants has a GLC_{max} greater than the ESL, zoning around the property must be known to verify that the pollutant will meet a Tier II Impacts *Analysis*.

Applicant response: The air dispersion modeling exercise has been updated based on various modeling parameters changes and emission calculation updates made within the application. The updated modeling exercise does not predict Ground Level Concentrations (GLCs) in exceedance of 1 times the short-term or annual ESL for speciated pollutants; therefore, a zoning overlay for the area map has not been provided at this time.

Floor Plan: The current floor plan shows the operational areas and it is unclear how the ventilation systems in each area are configured to achieve isolation from each other. For example, will any of the VOCs from the coating system be exhausted through the wood shop dust collector? Isolation is often achieved through the use of walls, doors, and air curtains. Please provide a revised floor plan that includes the location of all the interior walls in the manufacturing areas, the location of the interior and exterior doors and their dimensions and whether or not they are closed during production operations. The drawing should also depict the location of the pickup points in each of the ventilation systems in each of the manufacturing areas as well as the general duct routing to the EPNs.

Applicant response: Attached is an updated building layout map which now identifies the locations of natural draft openings into the Spray Room Finish Department (Spray Room).

5. *BACT:* Spray gun cleanup is performed by spraying acetone through the guns directly onto the conveyor belt. Please note that this is not BACT, and acetone should be sprayed directly into waste containers to meet BACT. Please revise the application so that cleanup operations meet BACT.

Applicant response: For the Stain Line, at the end of the second shift, acetone is flushed through the Stain Line Spray Booth coating application system. The acetone is sprayed out of the spray guns onto the Stain Line Spray Booth conveyor belt in order to clean out the coating application system and to clean excess overspray on the belt. The spray booth cleaning system

(cleaning trolley, wiping blade, etc.) is in operation during this cleanup period. Excess acetone that is not evaporated in the booth or collected in the cleaning system waste collection container is manually wiped down. Spent wipes are disposed of in closed containers. Ventilation in the Stain Line Spray Booth to the RTO remains on during this cleanup process.

Additionally, at the beginning of the first shift of each week, typically on Monday, the Stain Line coating application system is flushed with acetone prior to operational startup. The cleanup and collection process is the same as previously noted for end of shift cleanup.

The Stain Line Spray Booth operates in such a manner that when cleanup solvent is sprayed through the oscillating spray arms the conveyor belt is also in motion. The cleanup solvent that is pumped through the hoses and guns is sprayed on the moving conveyor belt, which is wiped clean with the cleaning trolley wiping blade. Cleaning solvent material that is collected from the trolley wiping is transported to a waste collection container that is located below the conveyor belt. Collecting spent cleanup solvent within the Stain Line Spray Booth is technically impractical for this operation. A similar cleanup process occurs with the Clear Line Spray Booth. Collecting spent cleanup solvent within the Clear Line Spray Booth is also technically impractical.

6. *Emission Calculations:*

- a. The painting calculation spreadsheet was converted to a PDF format. Please submit the original Excel workbook for emission calculations and the impacts analysis.

Applicant response: The Excel version of the coatings calculation workbook was too large in size to email and was therefore uploaded to the TCEQ's FTP site. Alexander Au has confirmed via a phone conversation that the workbook that was submitted with the initial application has been located.

- b. *Table 1D:* "Top Coat – Clear Conversion Varnish 30 Sheen" is listed as a cleaning solvent. Based on the name of the product and its chemical speciation, this does not appear to be a cleaning solvent. Please remove this product from this table and the cleanup calculations (Table 6).

Applicant response: It has been confirmed with the Applicant that virgin Conversion Varnish 30 Sheen (no catalyst, no reducer) is used for cleaning the guns and hoses in the Clear Line Spray Booth. Therefore, this product has not been removed from Table 6.

- c. *Table 2B:* Table 1B represents that a catalyst is mixed with the clear coat at a 0.03:1 ratio. However, Table 2B does not include the catalyst as part of the coatings speciation. Please include the catalyst to determine the mixed coating's speciation on Table 2B.

Applicant response: Table 2B depicts Clear Line Spray Booth coatings speciation without thinners and catalysts. Table 3B depicts the speciation of the associated thinners and catalysts used in the Clear Line Spray Booth. Table 4B mixes the items in Table 2B and 3B. The mixing ratios represented in Table 1B are used in Table 4B to calculate the maximum weight percent in mixed coating(s). Please refer to Table 4B as this table represents the mixing in Table 1B.

- d. *Table 2C*: Table 2C does not represent all of the products being mixed as represented on Table 1C. Please include all components that are to be mixed to determine the mixed coating's speciation.

Applicant response: Table 2C depicts Paint Line Spray Booth coatings speciation without thinners and catalysts. Table 3C depicts the speciation of the associated thinners and catalysts used in the Paint Line Spray Booth. Table 4C mixes the items in Table 2C and 3C. The mixing ratios represented in Table 1C are used in Table 4C to calculate the maximum weight percent in mixed coating. Please refer to Table 4C as this table represents the mixing in Table 1C.

- e. *Table 6*:

- i. Per item 3a.ii of this letter, insufficient justification was provided for 95% waste capture efficiency. Please provide a basis for the 95% waste capture efficiency. Please note that "Company Data" is not considered sufficient justification when providing a capture efficiency.

Applicant response: Please see response to Question 3.a.ii.

- ii. Per item 7b of this letter, "Top Coat - Clear Conversion Varnish 30 Sheen" does not appear to be a cleaning solvent. Please remove this product from the cleanup emission calculations.

Applicant response: Please see response to Question 6.b.

- f. *Table 11*: Particle size distribution was used to determine PM_{10} and $PM_{2.5}$ emissions for the baghouse. This is not allowed when using outlet grain loading, and $PM = PM_{10} = PM_{2.5}$ should be used. Please revise PM calculations from the baghouse to represent this.

Applicant response: The applicant has contacted the baghouse vendor/manufacture and is currently awaiting receipt of more current design/emission factor details. Upon receipt of the data, the applicant will provide the updated information and update the emission calculations to assume $PM = PM_{10} = PM_{2.5}$ since the outlet grain loading calculation methodology is being used to estimate emissions.

- g. *Table 13*: Natural gas fugitive emissions are negligible for an operation of this type. Please remove this table and the relevant EPN from this application.

Applicant response: Please find attached updated NSR workbook, process description, process flow diagram, emissions calculations, building layout, and plot plan 2 which exclude the historically reference natural-gas piping EPN (EPN 9).

- h. *Table 19*: The openings for the clear line oven appear to be very small. Please remeasure the openings and verify that they are correct.

Applicant response: The openings for the Clear Line Oven have been remeasured. The measurement for the exit point of the Clear Line Oven is 4.75 ft wide and 0.42 ft high rather than 0.42 ft wide and 0.42 ft high as previously identified.

Note as previously stated in this response that per TCEQ request and guidance, the capture calculations have been reevaluated to review the Spray Room Finish Department (Spray Room) as a whole rather than per piece of equipment. The updated calculations are

attached (refer to Table 18). It has been determined that the face velocity at the natural draft openings into the Spray Room is greater than 100 feet per minute (ft/min); therefore, EPN 10 Spray Room Finish Department Fugitives has been removed from the application and the associated emissions routed to their respective emission point(s). The Enclosure Capture Velocities Table, previously labeled as table 19, has been renamed as Table 18.

7. *Modeling and Impacts:*

- a. The gas exit temperature for the boiler appears to be very low. A temperature of 293.15K (ambient air) was used for the modeling, but the temperature should be closer to 377K (220 F). Please verify and revise the exit temperature used to model the boiler.

Applicant response: Based on information obtained from historic permit exercises, the boiler was initially modeled as a point source. However, it has been determined that the boiler stack has a rain cap installed at the exhaust point. Therefore, the boiler has been remodeled as a pseudo point source.

Additionally, the modeling exercise for the boiler has been updated to address an exit temperature of 377K.

- b. Please provide justification for why the makeup air heater was modeled as an area source, and why the space heater and paint fugitives were modeled as volume sources.

Applicant response: Based on information obtained from historic permit exercises, the Makeup Air Heater was previously modeled as an area source. However, upon further review of the makeup heater, it has been determined that the unit is a source of “direct” heat rather than “indirect” heat into the Spray Room Finish Department (Spray Room) [products of combustion are vented into the Spray Room]. Therefore, EPN 6 has been removed from the application and the associated emissions from natural gas products of combustion (POCs) have been “routed” to the RTO. No control efficiency has been taken for the POC emissions. The NAAQS review has been updated according to account for additional combustion emissions at the exhaust point of the RTO.

The space heaters were modeled as a volume source as the natural gas products of combustion from the heaters vent into the building, with the exception of the Spray Room Finish Department, and exit the building through natural draft openings.

Paint fugitives were modeled as a volume source; however, upon further review of the capture efficiency of the Spray Room Finish Department (Spray Room) and as previously stated within this response, paint fugitives have been removed from the application.

- c. Please provide pictures of the heaters and all EPN stacks so that the source types used in the modeling may be verified.

Applicant response: Please find attached pictures of the boiler, dust collector, and RTO stacks.

Please note that it has been determined that the dust collector stack does not have vertical exhaust without obstruction to airflow; therefore, the dust collector has been remodeled as a pseudo source rather than a point source.

At this time, the dust collector design and/or the modeling exercise requires additional attention by the applicant to address PM₁₀ 1-hour and PM_{2.5} 1-hour and annual averaging period predicted ground level concentrations. The applicant is currently awaiting design/emission factor details from the baghouse vendor/manufacturer. Upon receipt of the data, the calculations and/or modeling exercise will be re-evaluated.

- d. The GLC_{max} of formaldehyde is greater than the ESL. Please identify where the exceedance occurs and what the property type at that location is (i.e., is it industrial?) Additionally, please identify the nearest nonindustrial property and determine the GLC_{max} at that point (GLC_{ni}). In order to meet Tier II Impacts, the GLC_{ni} must be less than the ESL.

Applicant response: The sitewide air dispersion modeling exercise has been updated based on various modeling parameter changes and emission calculation updates made within the application. The updated modeling exercise does not predict Ground Level Concentrations (GLCs) for formaldehyde in exceedance of 1-times the short-term or annual ESL for this pollutant; therefore, no additional action has been taken in response to this item.

8. *Manufacturer Data:*

- a. The project scope includes updates to the coatings list. Please identify if there are any new coatings, and provide manufacturer data sheets supporting the chemical speciation for these coatings.

Applicant response: The speciated breakdown of current products used was at the site is included in the coatings calculation workbook (Confidential Table 1 A through D). The information provided demonstrates complete speciation of each product; therefore, no manufacturer data sheets are attached at this time and can be provided upon further request.

- b. Some of the manufacturer data was received in 1999 and may no longer be relevant (e.g., heaters, Cefla Group Spray System, Makor Spray System, oven systems). Please provide more recent manufacturer data for on-site equipment

Applicant response: Existing equipment was installed over 20 years ago under a previous owner/operator of this facility. The Applicant performed an exhaustive documentation review through TCEQ open records request and onsite documentation review and was not able to find more current manufacturer data than what was previously submitted within the application.

- c. The SAMES Kremlin *spray* gun has an air atomization pressure of 36.2 psi. This does not meet the HVLP definition of 10 psi atomization pressure, and is therefore not BACT.

Please revise the application so that all spray guns being used at the site meet BACT.

Applicant response: Per a phone conversation on August 20, 2020 between BSI representatives and Alexander Au, the existing Stain Line Spray Booth will be replaced with a modern piece of equipment (Cefla Reciprocating Spraying Machine). The new booth and gun tip specifications are attached. The associated RTO air flow/design, coating application rates, and conveyor belt speed will remain the same as the current Stain Line Spray Booth.

The new booth will employee eight (8) SAMES KREMLIN AVX Automatic Airmix Spray Guns with 12-154 tips.

- d. Please verify what the Applied Air heating system is used for. Is this comfort air or the air makeup unit *for* the paint booth?

Applicant response: the makeup air heating unit is used to provide makeup air into to the Spray Room Finish Department (Spray Room).

- e. The outlet grain loading was calculated by using an assumed inlet grain loading and a filter efficiency. This does not represent the maximum outlet grain loading. Please provide *recent* manufacturer data for the baghouse that supports the represented outlet grain loading.

Applicant response: The applicant has contacted the baghouse vendor/manufacturer and is currently awaiting receipt of more current design/emission factor details. Upon receipt of the data, the applicant will provide the updated information.

Please note that an emissions calculations legend which includes a short description of the information available in each emission calculations table has been included in this response as a guide to further assistance with application review.

Should you have any questions concerning this request, please contact Natalia Rojas at 512.717.9410, or via email at natalia.rojas@bsigroup.com.

Regards,

Natalia Rojas

Natalia Rojas, EIT
Consulting Specialist

Attachments

Reviewed by:

Lindsey Renfro

Lindsey Renfro
Principal Consultant, Manager

cc: Mr. Oscar Rodriguez, Sr. Human Resources Manager, Nations – San Antonio, TX

Attachments

Updated Form PI-1 General Application (*updated Workbook tabs*)

- Unit Types – Emission Rates
- Stack Parameters
- Public Notice
- BACT
- Monitoring

Updated Process Description

Updated Process Flow Diagram

Updated Area Map

Updated Plot Plan 1

Updated Plot Plan 2

Photo log (new attachment to application)

- Stain Line Conveyor Belts
- Clear Line Conveyor Belts
- Clear Line Hand Sanding
- Exhaust Stacks

Updated Building Layout

Emissions Calculations Table of Contents (new attachment to application)

Updated Emissions Calculations

- Table 5A – Short-Term and Annual VOC, Exempt Solvent, and PM Emissions Coating Line with Open Conveyor – Stain Line Operations – EPN RTO
- Table 5B – Short-Term and Annual VOC, Exempt Solvent, and PM Emissions Coating Line with Open Conveyor – Clear Line Operations – EPN RTO
- Table 5C – Short-Term and Annual VOC, Exempt Solvent, and PM Emissions Coating Line with Open Conveyor – Paint Line Operations – EPN 11
- Table 6 – Short-Term and Annual VOC, Exempt Solvent, and PM Emissions Application Equipment Cleanup
- Table 7 – Short-Term and Annual VOC, Exempt Solvent and PM Emissions Coating Operations - Total Emissions by EPN

- TABLE 8A – Short-Term VOC, Exempt Solvent, and PM Species Emission Rates – Stain Line with an Open Conveyor - EPN RTO
- TABLE 8B – Short-Term VOC, Exempt Solvent, and PM Species Emission Rates – Clear Line with an Open Conveyor - EPN RTO
- TABLE 8C – Short-Term VOC, Exempt Solvent, and PM Species Emission Rates – Paint Line with an Open Conveyor – EPN 11
- TABLE 8D – Short-Term VOC, Exempt Solvent, and PM Species Emission Rates – Coating Booth – EPN Misc.SprayBooth (PBR Registration No. 74161)
- Table 9A – Normal Operations (No Spray Equipment Cleanup) Maximum Speciated VOC and PM Off-Site Cumulative GLCs (ug/m3)
- Table 9B – Spray Equipment Cleanup Maximum Speciated VOC and PM Off-Site Cumulative GLCs (ug/m3)
- Table 10 – Products of Combustion
- Table 13 – Modeling Input Parameters (*previously Table 14*)
- Table 17 – Emission Distributions for Conveyorized Painting Operations (*previously Table 18*)
- Table 18 – Enclosure Capture Velocities (*previously Table 19*)

SCREEN 3 Modeling Runs

- Updated EPN 5 – Boiler

Equipment Specifications

- Cefla Reciprocating Spraying Machine (Stain Line)
- Kremlin AVX guns with a #12-154 tip (Stain Line)

Texas Commission on Environmental Quality
Form PI-1 General Application
Unit Types - Emission Rates

Date: _____
 Permit #: _____
 Company: _____

Permit primary industry (must be selected for workbook to function) Coatings

Action Requested (only 1 action per FIN)	Include these emissions in annual (tpy) summary?	Facility ID Number (FIN)	Emission Point Number (EPN)	Source Name	Pollutant	Current Short- Term (lb/hr)	Current Long- Term (tpy)	Consolidated Current Short- Term (lb/hr)	Consolidated Current Long- Term (tpy)	Proposed Short- Term (lb/hr)	Proposed Long- Term (tpy)	Short-Term Difference (lb/hr)	Long-Term Difference (tpy)	Unit Type (Used for reviewing BACT and Monitoring Requirements)	Unit Type Notes (only if "other" unit type in Column O)
New/Modified	Yes	RTO	RTO	Regenerative Thermal Oxidizers - Process	VOC	8.46				0.72	1.56	-7.74	1.56	Control: Oxidizer (Thermal)	
					Exempt Solvents	--				0.56	0.88	0.56	0.88		
					PM					<0.01	<0.01	0.01	0.01		
					PM10					<0.01	<0.01	0.01	0.01		
					PM2.5					<0.01	<0.01	0.01	0.01		
New/Modified	Yes	RTO	RTO	Regenerative Thermal Oxidizers - Combustion	VOC	0.03	0.02			0.06	0.28	0.03	0.26	Control: Oxidizer (Thermal)	
					NOx	0.59	0.21			0.59	2.58	0	2.37		
					CO	0.5	0.18			0.49	2.16	-0.01	1.98		
					SO2	<0.01	0.02			<0.01	0.02	0	0		
					PM	0.05	0.02			0.04	0.2	-0.01	0.18		
					PM10	0.05	0.02			0.04	0.2	-0.01	0.18		
					PM2.5					0.04	0.2	0.04	0.2		
Remove	Yes	Stain,Seal,Seal3, Seal4	1,2,3,4	Stain Booth with Dryer and Topcoat/Sealer Booth with Dryers Vented Uncontrolled	VOC	167						-167	0		
					Exempt Solvents							0	0		
					PM	0.65						-0.65	0		
					PM10	0.65						-0.65	0		
Remove	Yes	Stain,Seal,Seal3, Seal4	RTO,1,2,3,4	Booth and Dryers Controlled and Uncontrolled	VOC		40					0	-40		
					Exempt Solvents							0	0		
					PM		2.85					0	-2.85		
					PM10		2.85					0	-2.85		
New/Modified	Yes	Boil	5	Boiler	VOC	0.02	0.09			0.05	0.21	0.03	0.12	Boiler: Liquid and Gas Fuel, ≤ 40 MMBtu/hr	
					PM	0.03	0.11			0.03	0.15	0	0.04		
					PM10	0.03	0.11			0.03	0.15	0	0.04		
					PM2.5					0.03	0.15	0.03	0.15		
					NOx	0.34	1.5			0.44	1.93	0.1	0.43		
					CO	0.29	1.27			0.37	1.62	0.08	0.35		
					SO2	<0.01	0.01			<0.01	0.01	0	0		
Remove	Yes	Heat	6	Makeup Air Heater	VOC	0.03	0.13					-0.03	-0.13	Heater	
					PM	0.04	0.18					-0.04	-0.18		
					PM10	0.04	0.18					-0.04	-0.18		
					PM2.5							0	0		
					NOx	0.54	2.37					-0.54	-2.37		
					CO	0.45	1.99					-0.45	-1.99		
					SO2	<0.01	0.01					-0.01	-0.01		
New/Modified	Yes	Shop	7	Baghouse	PM	0.69	3.03			0.69	3.03	0	0	Control: Baghouse, Cartridge Filter System, Bin Vent Filter	
					PM10	0.69	3.03			0.37	1.6	-0.32	-1.43		
					PM2.5					0.2	0.89	0.2	0.89		
New/Modified	Yes	Shop	8	Wood Shop Glue and Space Heater Fugitives	VOC	3.64	1.82			0.03	0.07	-3.61	-1.75	Heater	
					VOC	0.01	0.02			0.01	0.05	0	0.03		
					PM	0.01	0.03			0.01	0.03	0	0		
					PM10	0.01	0.03			0.01	0.03	0	0		
					PM2.5					0.01	0.03	0.01	0.03		
					NOx	0.09	0.41			0.09	0.41	0	0		
					CO	0.04	0.18			0.08	0.35	0.04	0.17		
					SO2	<0.01	<0.01			<0.01	<0.01	0	0		
Remove	Yes	Fug	9	Valve, Connection, and	VOC	0.02	0.06					-0.02	-0.06	Other	NG piping fugitives
New/Modified	Yes	Paint	11	Paint Line	VOC					60.32	26.09	60.32	26.09	Painting/Surface Coating (Enclosed)	
					Exempt Solvents					26.36	7.62	26.36	7.62		
					PM					<0.01	<0.01	0.01	0.01		
					PM10					<0.01	<0.01	0.01	0.01		
					PM2.5					<0.01	<0.01	0.01	0.01		
New/Modified	Yes	Heat	RTO	Regenerative Thermal Oxidizers - Makeup Heater	VOC					0.06	0.26	0.06	0.26	Heater	
					PM					0.04	0.18	0.04	0.18		
					PM10					0.04	0.18	0.04	0.18		
					PM2.5					0.04	0.18	0.04	0.18		
					NOx					0.54	2.36	0.54	2.36		
					CO					0.45	1.98	0.45	1.98		
					SO2					<0.01	0.01	0.01	0.01		
												0	0		

Date: _____
Permit #: _____
Company: _____

[illegible]

Texas Commission on Environmental Quality
Form PI-1 General Application
Public Notice

Date: _____
 Permit #: _____
 Company: _____

I. Public Notice Applicability

A. Application Type

Is this an application for a renewal?	Yes
Is this an application for a minor permit amendment?	Yes
Is there any change in character of emissions in this application (a new criteria pollutant or a new VOC or PM species)?	Yes
Is there a new air contaminant in this application?	Yes

B. Project Increases and Public Notice Thresholds (for Initial and Amendment Projects)

For public notice applicability, the agency does not include consolidation or incorporation of any previously authorized facility or activity (PBR, standard permits, etc.), changes to permitted allowable emission rates when exclusively due to changes to standardized emission factors, or reductions in emissions which are not enforceable through the amended permit. Thus, the total emissions increase would be the sum of emissions increases under the amended permit and the emissions decreases under the amended permit for each air contaminant.

The table below will generate emission increases based on the values represented on the "Unit Types - Emission Rates" sheet. Use the "yes" and "no" options in column B of the "Unit Types - Emission Rates" worksheet to indicate if a unit's proposed change of emissions should be included in these totals.

Notes:

1. Emissions of PM, PM10, and/or PM2.5 may have been previously quantified and authorized as PM, PM10, and/or PM2.5. These emissions will be speciated based on current guidance and policy to demonstrate compliance with current standards and public notice requirements may change during the permit review.

2. All renewals require public notice.

This row is optional. If you do not think the table below accurately represents public notice applicability increases for your project, provide discussion here (1000 characters).	
--	--

Do the facilities handle, load, unload, dry, manufacture, or process grain, seed, legumes, or vegetable fibers (agricultural facilities)?	No
---	----

Texas Commission on Environmental Quality
Form PI-1 General Application
Public Notice

Date: _____
 Permit #: _____
 Company: _____

Pollutant	Current Long-Term (tpy)	Consolidated Emissions (tpy)	Proposed Long-Term (tpy)	Project Change in Allowable (tpy)	PN Threshold	Notice required?
VOC	42.14	0.00	28.52	-13.62	5	No
PM	6.22	0.00	3.61	-2.61	5	No
PM ₁₀	6.22	0.00	2.18	-4.04	5	No
PM _{2.5}	0.00	0.00	1.47	1.47	5	No
NO _x	4.49	0.00	7.28	2.79	5	No
CO	3.62	0.00	6.11	2.49	50	No
SO ₂	0.05	0.00	0.05	0.00	10	No
Pb	0.00	0.00	0.00	0.00	0.6	No
Exempt Solvents	0	0	8.5	8.5	5	Yes

* Notice is required for PM, PM10, and PM2.5 if one of these pollutants is above the threshold.

** Notice of a GHG action is determined by action type. Initial and major modification always require notice. Voluntary updates require a consolidated notice if there is a change to BACT. Project emission increases of CO2e (CO2 equivalent) are not relevant for determining public notice of GHG permit actions.

C. Is public notice required for this project as represented in this workbook? If no, proceed to Section III Small Business Classification. Note: public notice applicability for this project may change throughout the technical review.	Yes
D. Are any HAPs to be authorized/re-authorized with this project? The category "HAPs" must be specifically listed in the public notice if the project authorizes (reauthorizes for renewals) any HAP pollutants.	Yes

II. Public Notice Information

Complete this section if public notice is required (determined in the above section) or if you are not sure if public notice is required.

A. Contact Information

Enter the contact information for the **person responsible for publishing**. This is a designated representative who is responsible for ensuring public notice is properly published in the appropriate newspaper and signs are posted at the facility site. This person will be contacted directly when the TCEQ is ready to authorize public notice for the application.

Prefix (Mr., Ms., Dr., etc.):	Mr.
First Name:	Oscar
Last Name:	Rodriguez
Title:	Senior HR Director
Company Name:	Nations Cabinetry

Texas Commission on Environmental Quality
Form PI-1 General Application
Public Notice

Date: _____
 Permit #: _____
 Company: _____

Mailing Address:	4600 W US Highway 90
Address Line 2:	
City:	San Antonio
State:	Texas
ZIP Code:	78237
Telephone Number:	(210)684-1611
Fax Number:	
Email Address:	o.rodriquez@nationscabinetry.com

Enter the contact information for the **Technical Contact**. This is the designated representative who will be listed in the public notice as a contact for additional information.

Prefix (Mr., Ms., Dr., etc.):	Mr.
First Name:	Oscar
Last Name:	Rodriguez
Title:	Senior HR Director
Company Name:	Nations Cabinetry
Mailing Address:	4600 W US Highway 90
Address Line 2:	
City:	San Antonio
State:	Texas
ZIP Code:	78237
Telephone Number:	(210)684-1611
Fax Number:	
Email Address:	o.rodriquez@nationscabinetry.com

B. Public place

Place a copy of the full application (including all of this workbook and all attachments) at a public place in the county where the facilities are or will be located. You must state where in the county the application will be available for public review and comment. The location must be a public place and described in the notice. A public place is a location which is owned and operated by public funds (such as libraries, county courthouses, city halls) and cannot be a commercial enterprise. You are required to pre-arrange this availability with the public place indicated below. The application must remain available from the first day of publication through the designated comment period.

If this is an application for a PSD, nonattainment, or FCAA §112(g) permit, the public place must have internet access available for the public as required in 30 TAC § 39.411(f)(3).

If the application is submitted to the agency with information marked as Confidential, you are required to indicate which specific portions of the application are not being made available to the public. These portions of the application must be accompanied with the following statement: ***Any request for portions of this application that are marked as confidential must be submitted in writing, pursuant to the Public Information Act, to the TCEQ Public Information Coordinator, MC 197, P.O. Box 13087, Austin, Texas 78711-3087.***

Name of Public Place:	Nations Cabinetry Website	
Physical Address:	https://nationscabinetry.com/nations-cabinetry-renews-air-permit/	
Address Line 2:		
City:		
ZIP Code:		
County:		
Has the public place granted authorization to place the application for public viewing and copying?	Yes	

Date: _____
Permit #: _____
Company: _____

In some cases, public notice in an alternate language is required. If an elementary or middle school nearest to the facility is in a school district required by the Texas Education Code to have a bilingual program, a bilingual notice will be required. If there is no bilingual program required in the school nearest the facility, but children who would normally attend those schools are eligible to attend bilingual programs elsewhere in the school district, the bilingual notice will also be required. If it is determined that alternate language notice is required, you are responsible for ensuring that the publication in the alternate language is complete and accurate in that language.

Is a bilingual program required by the Texas Education Code in the School District?	Yes
Are the children who attend either the elementary school or the middle school closest to your facility eligible to be enrolled in a bilingual program provided by the district?	Yes
If yes to either question above, list which language(s) are required by the bilingual program?	Spanish

[illegible]

Texas Commission on Environmental Quality
Form PI-1 General Application
Public Notice

Date: _____
Permit #: _____
Company: _____

III. Small Business Classification

Complete this section to determine small business classification. If a small business requests a permit, agency rules (30 TAC § 39.603(f)(1)(A)) allow for alternative public notification requirements if all of the following criteria are met. If these requirements are met, public notice does not have to include publication of the prominent (12 square inch) newspaper notice.

Does the company (including parent companies and subsidiary companies) have fewer than 100 employees or less than \$6 million in annual gross receipts?	No
Small business classification:	No

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: _____
 Permit #: _____
 Company: _____

Plant Type	Current Tier I BACT	Confirm	Additional Notes

Action Requested	FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
New/Modified	RTO	Control: Oxidizer (Thermal)	VOC	Specify Industry Type: 98% destruction efficiency or greater. Semiconductor - The thermal control device with a rotor concentrator must achieve an overall efficiency of at least 95% or greater. The thermal control device without a rotor concentrator must achieve an efficiency of at least 98% or greater.	Yes	Coatings RTO has a destruction efficiency of 99.1%.
			Exempt Solvents	Specify Industry Type: 98% destruction efficiency or greater. Semiconductor - The thermal control device with a rotor concentrator must achieve an overall efficiency of at least 95% or greater. The thermal control device without a rotor concentrator must achieve an efficiency of at least 98% or greater.	Yes	Coatings RTO has a destruction efficiency of 99.1%
			PM	The emission reduction techniques for PM10 and PM2.5 will follow the technique for PM. See Additional Notes:	Yes	Coatings
			MSS	Same as normal operation BACT requirements. Coating/Semiconductor/FRP/Printing operations: Maintenance: Limiting process operation while the thermal control device is down for planned maintenance. Impacts for criteria pollutants and individual species must be acceptable during control device bypass. Limited to 120 hours of control device bypass. Startup/shutdown: Venting ductwork and control device to atmosphere to eliminate explosive conditions prior to start of control device operation. Control device shall be in normal operation and at the appropriate temperature prior to start of process operation. Control device shall remain in normal operation at least 30 minutes after the completion of the surface coating operation prior to shutdown.	Yes	
New/Modified	Boil	Boiler: Liquid and Gas Fuel, ≤ 40 MMBtu/hr	VOC	Firing pipeline quality sweet natural gas and good combustion practices.	Yes	
			PM	The emission reduction techniques for PM10 and PM2.5 will follow the technique for PM. Firing pipeline quality sweet natural gas and good combustion practices. Opacity shall not exceed 5% and/or no visible emissions from each stack or vent.	Yes	
			NOx	Firing pipeline quality sweet natural gas and good combustion practices.	Yes	
			CO	Firing pipeline quality sweet natural gas and good combustion practices.	Yes	
			SO2	Firing pipeline quality sweet natural gas and good combustion practices.	Yes	

Texas Commission on Environmental Quality
Form PI-1 General Application
BACT

Date: _____
 Permit #: _____
 Company: _____

Action Requested	FINs	Unit Type	Pollutant	Current Tier I BACT	Confirm	Additional Notes
			MSS	Same as normal operation BACT requirements.	Yes	
New/Modified	Shop	Control: Baghouse, Cartridge Filter System, Bin Vent Filter	PM	The emission reduction techniques for PM10 and PM2.5 will follow the technique for PM. Specify Industry Type: Abrasive Blasting, Coating and Ink Manufacturing - Outlet grain loading of ≤ 0.002 grains/dry standard cubic foot or an efficiency of at least 99.9%. Opacity shall not exceed 5% and/or no visible emissions from each stack or vent. Specify technique. Surface Coating, Cultured Marble, FRP - Use of dry filters with a control efficiency of 99% or greater in the grinding booths/room.	Yes	Wood working Outlet grain loading of ≤ 0.002 grains/dry standard cubic foot
			MSS	Fabric filters should be in good repair with an acceptable pressure drop prior to the start of operation. Removal of spent filters in such a manner to minimize PM emissions and placing the spent filters in a leakable bag or other leakable container prior to removal from the site.	Yes	
New/Modified	Paint	Painting/Surface Coating (Enclosed)	VOC	Use of high transfer efficiency application equipment: airless, air-assisted airless, or electrostatic high-volume low-pressure spray equipment or brushes, rollers, dipping, and/or flow coating. Please specify which application type(s). Use of 30 TAC §115.453 or 115.421 (as applicable) compliant coatings. Alternate controls as specified in 30 TAC §115.454 or 115.423 may be used to meet the applicable VOC content limits. Good housekeeping and best management practices. See applicable 30 TAC §115 and/or 40 CFR Part 63 requirements. Collecting and venting VOC and exempt solvent to an add-on control device may be required if the combined VOC and exempt solvent emissions in total ≥ 60 tpy (site-wide) for manual operations and ≥ 30 tpy (site-wide) for automated operations. Efficiency of thermal control device is 98% or greater. Provide details of site and, if applicable, control device.	Yes	Automated system; independent of other coating lines onsite; utilizing non-electrostatic airless application and low and no VOC coating products; site-wide speciated health effects impacts review for as mixed coatings are favorable (<2 times the ESLs); site-wide criteria pollutant NAAQS analysis/impacts are favorable (less than standards)

Date: _____
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Date: _____
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Version 4.0 Page 1

Date: _____
Permit #: _____
Company: _____

Nations Cabinetry, LLC– US 90, San Antonio

Process Description

Nations Cabinetry, LLC (Nations) located at 4600 U.S. Highway 90 West, San Antonio, Bexar County, TX, 78237, manufactures wood cabinets for commercial & residential use. Production processes include milling, sanding, coating/finishing, and final assembly.

Facility Hours Operations

The facility has 2 operating shifts. Each shift is 8 hours per day (hr/day), 5 days a week (day/wk), and 51 weeks per year (wk/yr), or 4,080 hours per year (hr/yr).

Raw Material Receipt

Particleboard and plywood are received at the facility in material reception located within the Lumber and Raw Material Storage area (refer to Building Layout). These materials are unloaded from trucks and initially stored in the Raw Wood Material Storage and/or Raw Frame Materials Storage Area which is part of the Lumber and Raw Material Storage Area.

Coatings (stains, varnishes, clear coats, paints, thinners, catalyst, etc.), in a variety of container sizes, are received in material reception and then moved to the Raw Coating and Solvent Storage area within the Spray Room Finish Department (refer to Building Layout). Product is moved to respective coating areas as needed for mixing and application.

Glue and other items are received in the materials reception area and moved to their respective storage areas through the facility.

Cutting and Initial Cabinet Assembly

As needed, particleboard and/or plywood are transferred from storage to the cutting department located within the Cutting and Initial Cabinet Assembly area (refer to Building layout) where material is cut to size.

The cutting department is comprised of a collection of manually operated and automated saw/cutting machines.

The cutting and sawing of particleboard and plywood generates sawdust/Particulate Matter (PM). Sawdust generated from the cutting process is removed at the machines through ductwork routed to a baghouse (Emission Point Number [EPN] 7 - Baghouse) via vacuum suction. The baghouse deposits collected material into a sealed dumpster. The collected sawdust is recycled by a third-party subcontractor.

EPN	Source Name	Max Air Flow (scfm)	Outlet Grain Loading (gr/dscf)	Operating Schedule (hr/yr)
7	Baghouse	67,200	0.0012	8,760

The baghouse employs a reversed air bag cleaning method.

When bag filters (filters) are removed for replacement, spent filters are handled in a manner to minimize PM emissions. Spent bags are placed in sealable bags or other sealable containers prior to removal from the site.

Nations Cabinetry, LLC– US 90, San Antonio

Process Description

Unusable wood scraps collected at each machine/workstation are placed in a separate dumpster for either recycling or disposal.

After the initial cutting process, wood pieces are transferred to either the Assembly Department or the Door and Drawer Department, located in the Cutting and Initial Cabinet Assembly area, where they are assembled, glued, if necessary, and sanded using orbital sanders. The sawdust generated by the sanding operations is extracted by vacuum and collected by the baghouse (EPN7).

After sanding, doors are sent to a UV light station to remove glue residues. Subsequently, the doors are sent to a lock boring station to make the holes needed install the door hinges. PM emissions generated by the sanding and boring stations are extracted by vacuum and collected by the baghouse (EPN7).

Saw dust that is not collected by the baghouse is swept up regularly and collected in containers for disposal or swept into ‘floor sweeps’ which are routed to the baghouse (EPN 7).

Painting Operations

Doors and drawers are sent to the Spray Room Finish Department (Spray Room). The Spray Room includes three automated coating lines which are referred to as the Stain Line, Clear Line, and Paint Line. The Spray Room also includes an open face paint booth for miscellaneous touchups (EPN Misc.SprayBooth; authorized under Permit By Rule [PBR] Registration Number 74161).

Stain Line

Cabinet pieces that require stain are placed flat on a conveyor belt. The pieces first pass under a dust extractor, equipped with vacuum suction routed to the baghouse (EPN 7), to remove residual particulates from the surface.

The pieces then enter the automated Stain Line Spray Booth (new booth to be installed: Cefla Reciprocating Spraying Machine) where stain is applied via eight (8) high efficiency non-electrostatic airless spray guns (SAMES KREMLIN AVX Automatic Airmix Spray Guns with 12-154 tips.).

The coating transfer efficiency for this automated booth is assumed to be 80% (20% overspray) [spraying relatively flat surfaces]. This booth operates with a sensor. If there are not product/cabinet pieces in the booth or in the path of the spray guns, coatings are not sprayed. Stain is pumped from 55-gallon containers located next to the booth to the spray application system. There is no mixing or thinning of stains. Stains are applied as received by the manufacturer.

The new Stain Line Spray Booth will be equipped with high efficiency dry filters, which collect residual particulate emissions during stain application. Three different filters are used in this booth (Com-Pleat Filter PAF-2020, Air Filtration Co. Fiber Glass Filter PA15-45X132-13, and Air Filtration Co. Paint Pockets PP020-020-030. The paint pockets have a filter efficiency of 99.83%.

Nations Cabinetry, LLC– US 90, San Antonio
Process Description

As the cabinet pieces exit the automated spray booth, the conveyor belt transports the cabinet pieces to a progressive oven system (Stain Line Oven) where the coating is dried and cured.

The cabinet pieces that are transported on the conveyor to the oven are not dry; therefore, emissions from the conveyor belt are considered a source of flash emissions and routed to RTO (EPN RTO).

The conveyor speed of the Stain Line is set to approximately 24 feet per minute (ft/min). The total Stain Line conveyor is approximately 96 ft from start to finish. The length of conveyor that is not ‘enclosed’ between the exit point of Stain Line Spray Booth and the entry point of the Stain Line Oven is approximately 25 ft. Therefore, the exposure time between the Stain Line Spray Booth and the Stain Line Oven is approximately 1.04 minutes.

The progressive oven system (Models FEV EU2/8, FEV UR2/6, and TT 16350/SCR) utilizes hot-air heat exchange to aid in the drying/curing of the coating. The heat used in the progressive oven system is supplied by a natural gas-fired water heater/boiler (Teledyne Laars, Model HH4500IN18KCACXX) with a maximum heat input rating of 4.5 million British thermal units per hour (MMBtu/hr) [EPN 5]. The boiler is used to heat water which is circulated through an insulated distribution/pipe system to the oven. Heat from the water is transferred to ambient and/or recirculated air using a heat exchanger. A recirculation valve system is used to control the heat flow, and a blower with a damper are used to maintain the air flow to produce the desired oven zone temperature.

EPN	Source Name	Fuel	Rating (MMBtu/hr)	Operating Schedule (hr/yr)
5	Boiler	NG	4.5	8,760

Emissions from the Stain Line Spray Booth and Oven are collected through a common vent line which is routed to a natural gas Regenerative Thermal Oxidizer (RTO) [EPN RTO – Regenerative Thermal Oxidizer] manufactured by Anguil Environmental Systems, Inc. The RTO has a destruction rate efficiency (DRE) of 99.1% (see attached test report). The RTO is also equipped with a Twin City blower Size 365, Model BCS, and with a 150 horsepower (hp) motor.

Additionally, the RTO utilizes a natural gas fired burner with a maximum heat input rating of 6.0 MMBtu/hr. Emissions from the combustion of natural gas in the RTO are vented from the RTO stack (EPN RTO).

EPN	Source Name	Fuel	Blower Rating (CFM)	Motor Rating (hp)	Combustion Chamber Set Point (deg F)	DRE	Burner Rating (MMBtu/hr)	Operating Schedule (hr/yr)
RTO	Regenerative Thermal Oxidizer	NG	25,000	150	1,500	99.1%	6.0	4,080

Nations Cabinetry, LLC– US 90, San Antonio
Process Description

*The operating schedule is not reflective of actual business hours for the facility. The RTO is used when coating operations are occurring. “Coating” Operating Schedule is based on two shifts: 8 hours/day, 5 days/week and 51 weeks/year for a total of 4,080 hours/year.

Note that the RTO was initially tested in 2006; however, the chamber temperature was not monitored during the testing event; therefore, Nations is committed to retesting the RTO upon request of the Texas Commission on Environmental Quality (TCEQ).

Collection efficiency to the RTO from the Stain Line is 100% as demonstrated in the emissions calculations section of this application.

As pieces exit the Stain Line Oven they are collected and taken back to the front of the Stain Line, turned over and placed flat on the conveyor belt to pass through the Stain Line a second time to coat the opposite side. After both sides are coated, the pieces are then transferred either to the Clear Line or to assembly, depending on product specifications.

During scheduled or planned RTO maintenance activities, the Stain Line, and other coating lines routed to the RTO, will not operate.

However, during upset conditions of the RTO, emissions from the Stain Line Spray Booth and Oven will bypass the RTO line through a common vent to atmosphere (EPN 1 – Stain Line RTO Bypass). Should this occur, Nations will take the necessary steps to shut down the Stain Line and other affected coatings lines until the RTO can be brought back online. During these upset events, emissions reporting requirements will be assessed and processed as applicable. Since this EPN is not intended to be used during normal operations it has not been represented in this application other than in this process description and on the plot plan.

The following are the proposed coating rates for the Stain Line operations.

Equipment	Coating ID	Hourly Usage Rate (gal/hr)	Annual Usage Rate (gal/yr)
Stain Line Booth	Natural Hybrid Stain	13	40,000
	Charcoal Hybrid Stain		
	Chestnut Hybrid Stain		
	Cinnamon Hybrid Stain		
	Brandy Hybrid Stain		
	Mocha Hybrid Stain		
	New UV Hybrid Espresso		
	Smoke Hybrid Stain		
	Toffee Hybrid Stain		
	Dusk Hybrid Stain		
	Wheat Hybrid Stain		
	Pecan Hybrid Stain		

Clear Line

Cabinet pieces that are stained in the Stain Line which require sealer are treated through the Clear Line system.

Nations Cabinetry, LLC– US 90, San Antonio
Process Description

Cabinet pieces are placed top side up/flat on a conveyor belt. The pieces first pass through a panel brushing machine (Model VS/33-ACT-F) which is connected to a dust extractor, equipped with vacuum suction routed to the baghouse (EPN 7), to remove residual particulates from the surface. The panel brushing machine uses brushes and an anti-static ionization bar to assist with dust removal.

As pieces leave the panel brushing machine, the conveyor belt transports the cabinet pieces to the automated Clear Line Spray Booth (Cefla Model EcoSprayer SGM16) where clearcoat/sealer is applied via 8 high efficiency non-electrostatic airless spray guns (Graco, Model 288046/288044 G40). The coating transfer efficiency for this automated booth is assumed to be 80% (20% overspray) [spraying relatively flat surfaces]. This booth operates with a sensor. If there are not product/cabinet pieces in the booth or in the path of the spray guns, coatings are not sprayed. Clearcoat/sealer is mixed in a mixing drum located next to the Clear Line Spray Booth.

Prior to use, coating and catalyst are mixed at a ratio of approximately 1 to 0.03, respectively. The mixing drum is covered and with the assistance of a mechanical agitator, the clearcoat/sealer and catalyst are mixed in the prescribed ratio. The mixing process takes approximately 20 to 30 minutes. After mixing is completed, the coating is then pumped to the Clear Line Spray Booth.

The Clear Line Spray Booth is equipped with a water scrubber filtration system to remove coating overspray. The assumed 'filter efficiency' applied for this system is 99%. The collected overspray by the water scrubber is transferred to a skimmer that uses a mineral coagulant to filter solids from water. Filtered water is recycled and reused in the water scrubber to remove overspray.

As the cabinet pieces exit the automated spray booth, the conveyor belt transports the cabinet pieces to a progressive oven system (Clear Line Oven) where the coating is dried and cured.

The cabinet pieces that are transported on the conveyor to the oven are not dry; therefore, emissions from the conveyor belt are considered a source of flash emissions and routed to RTO (EPN RTO)

The conveyor speed of the Clear Line is set to approximately 18 ft/min. The total Clear Line conveyor is approximately 120 ft from start to finish. The length of conveyor that is not 'enclosed' between the exit point of Clear Line Spray Booth and the entry point of the Clear Line Oven is approximately 45 ft. Therefore, the exposure time between the Clear Line Spray Booth and the Clear Line Oven is approximately 2.5 minutes.

The progressive Clear Line Oven (Models FV4/3500/133/122/AER) has four zones/chambers where parts are progressively heated and dried and then cooled. The first, second and third zones/chambers utilize hot-air heat exchange to aid in the drying/curing of the coating. The heat used in the Clear Line Oven is supplied by the natural gas-fired boiler [EPN 5]. The fourth chamber is the cooling chamber.

Emissions from the Clear Line Spray Booth and Oven Chambers 1, 2 and 3 are collected and routed to the RTO (EPN RTO). Pieces are considered to be dry as they leave the third oven

Nations Cabinetry, LLC– US 90, San Antonio
Process Description

zone/chamber into the fourth zone/chamber (cooling zone/chamber). The fourth chamber is vented to atmosphere for heat release purposes only. No emissions are expected or estimated for this stack exhaust.

Collection efficiency to the RTO from the Clear Line is 100% as demonstrated in the emissions calculations section of this application.

Dried cabinet pieces are conveyed out of the oven where they are picked up for light manual hand sanding. Hand sanding blocks are used for this process. Sanded pieces are placed again flat on a conveyor belt that passes through the panel brushing machine and then for a second coating on the same side that was previously sprayed.

As pieces exit the Clear Line Oven for the second time, they are collected and taken back to the beginning of the Clear Line, turned over, and placed flat on the conveyor belt to pass through the Clear Line two times to coat the opposite side. The coating process on the opposite side is the same as previously noted. After both sides are coated twice, the pieces are then transferred to assembly.

During scheduled or planned RTO maintenance activities, the Clear Line, and other coating lines routed to the RTO, will not operate.

However, during upset conditions of the RTO, emissions from the Clear Line Spray Booth and Oven will bypass the RTO. Emissions from the Clear Line Spray Booth will exhaust to atmosphere directly from the booth through a stack (EPN 2 – Clear Line Spray Booth RTO Bypass). Emissions from the Clear Line Oven zones/chambers 1 and 2 will vent through a common stack to atmosphere (EPN 3 – Clear Line Flash-off Oven Chambers 1 and 2 RTO Bypass) and zone/chamber 3 will vent directly to atmosphere through a separate stack (EPN 4 – Clear Line Flash-off Oven Chamber 3 RTO Bypass).

Should these upset conditions occur, Nations will take the necessary steps to shut down the Clear Line and other affected coatings lines until the RTO can be brought back online. During these upset events, emissions reporting requirements will be assessed and processed as applicable. Since this EPN is not intended to be used during normal operations it has not been represented in this application other than in this process description and on the plot plan.

The following are the proposed coating rates for the Stain Line operations.

Equipment	Coating ID	Hourly Usage Rate (gal/hr)	Annual Usage Rate (gal/yr)
Clear Line Spray Booth	Topcoat Clear Conversion Varnish 30 Sheen	15	45,000
	Sher-wood Kemvar Catalyst		

Paint Line

Cabinet pieces which require primer and topcoat are processed through the Paint Line. It should be noted that the Paint Line operates independently from the Stain and Clear Lines. Pieces that

Nations Cabinetry, LLC– US 90, San Antonio

Process Description

are coated in the Paint Line are not coated in the Stain and Clear Lines and pieces that are coating in the Stain and Clear Lines are not coated in the Paint Line.

Cabinet pieces are placed flat on a conveyor belt. The pieces first pass under a dust extractor, equipped with vacuum suction routed to a baghouse (EPN 7), to remove residual particulates from the surface.

The pieces then enter the automated Paint Line Spray Booth (Makor K-TWO Hybrid) where primer is applied. The booth contains two chambers. Each chamber consists of one oscillating arm. Each arm is equipped with four high efficiency non-electrostatic airless guns (Model Kremlin AVX), of which two guns are operated on each arm. The coating transfer efficiency for this automated booth is assumed to be 80% (20% overspray) [spraying relatively flat surfaces]. This booth operates with a sensor. If there are not product/cabinet pieces in the booth or in the path of the spray guns, coatings are not sprayed. Coating is pumped from 55-gallon containers located next to the booth to the spray application system.

Primer is pumped from 55-gallon containers located next to the booth to the spray application system. There is no mixing or thinning of the primer. Primer is applied as received by the manufacturer. However, prior to applying topcoat, the coating, catalyst, and reducer are mixed in a designated work area next to the Paint Line Spray Booth. During the hotter months of the year methyl amyl ketone (MAK) is added to assist with flow. Coating, catalyst, reducer, and MAK are mixed at a ratio of approximately 1:0.15:0.06:0.01, respectively. Thorough mixing is accomplished with the aid of an air agitator and then transfer to the booth coating drum(s) where it is then pumped into the coating application system.

The Paint Line Booth is equipped with high efficiency dry filters, which collect residual particulate emissions during coating application. Two different filters are using in this booth (Com-Pleat Filter PAF-2020 and Air Filtration Co. Fiber Glass Filter PA15-45X132-13). The fiber glass filters have a filter efficiency of at least 99.03%.

As the cabinet pieces exit the automated spray booth, the conveyor belt transports the cabinet pieces to a multilevel oven system (Paint Line Oven) where the coating is dried and cured.

The cabinet pieces that are transported on the conveyor to the oven are not dry; therefore, emissions from the conveyor belt are consider a source of flash emissions and routed to Paint Line Booth and Oven system Stack (EPN 11 – Paint Line).

The conveyor speed of the Paint Line is set to approximately 14.5 feet per minute (ft/min). The total Paint Line conveyor is approximately 85 ft from start to finish. The length of conveyor that is not ‘enclosed’ between the exit point of Paint Line Booth and the entry point of the Paint Line Oven is approximately 4.42 ft. Therefore, the exposure time between the Paint Line Booth and the Paint Line Oven is approximately 0.30 minutes.

The Paint Line Oven system (Models Makor Model MLJLTILEVEL 5500/6) utilizes hot-air heat exchange to aid in the drying/curing of the coating. The heat used in the Paint Line Oven is supplied by the natural gas-fired boiler [EPN 5]. As pieces exit the multilevel oven, they enter

Nations Cabinetry, LLC– US 90, San Antonio
Process Description

an enclosed infrared (IR) curing oven. As pieces exit the IR curing oven, they are considered dried and cured.

Emissions from the Paint Line Spray Booth and Oven system are collected through a common vent line and routed to the atmosphere (EPN 11).

Collection efficiency to the EPN 11 from the Paint Line is 100% as demonstrated in the emissions calculations section of this application.

Pieces that are coated with primer are lightly hand sanded and transferred back to the beginning of the Paint Line where primer is being applied to the opposite side. Hand sanding blocks are used for the sanding process. The primer coating and drying process on the opposite side of the cabinet piece is the same as previously noted.

After cabinet pieces have been coated with primer on both sides, the pieces are then coated with topcoat on both sides. The top coating and drying process is the same on both sides as previously noted with the exception of the hand sanding step.

Cabinet pieces from the Paint Line that have been coated, dried, and cured are then transferred to the product assembly area.

The following are the proposed coating rates for the Paint Line operations.

Equipment	Product	Coating ID	Hourly Usage Rate (gal/hr)	Annual Usage Rate (gal/yr)
Paint Line Booth	Primer	Gen II Universal Primer, White	13	22,000
	Topcoat	Sher-wood White Varnish		
		Sher-wood Kemvar Catalyst		
		Reducer R6K18		
		MAK		

Miscellaneous Spray Booth

As previously noted, the Spray Room is equipped with a Miscellaneous Spray Booth (EPN Misc.SprayBooth) used to for touchup of cabinet pieces that were first coated in one of the coating lines (Stain, Clear, or Paint). The Miscellaneous Spray Booth is also used to paint cabinet pieces that require a special color, based on client requests.

Emissions from the Miscellaneous Spray Booth are routed directly to atmosphere and are authorized by PBR No. 74161, issued on November 24, 2004.

Final Cabinet Assembly

Once cabinet pieces are coated based on product specifications, they are transported from the Spray Room Finish Department to the Final Assembly, QA/QC, and Warehouse.

Pieces that require decorative glazing are transported to the Hand Glazing Area within the Final Assembly, QA/QC, and Warehouse (refer to Building Layout). Glazing is applied manually

Nations Cabinetry, LLC– US 90, San Antonio

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using hand applicators (approximate size applicators hold 6-12-ounce). It is estimated that no more than 6 ounces (0.05 gallons) of glazed is applied in an hour. Emission from hand glazing are consider a source of fugitive emissions (EPN HG-FUG). Emissions from hand glazing are authorized by 30 TAC 106.433 without registration as emissions are less than 0.25 pounds per hour (lb/hr).

Assembled cabinets are sent to Quality Assurance and Quality Control (QA/QC) to ensure cabinets meets product specifications. Defective cabinets or pieces are sent back to production for repair. Cabinets that passes the QA/QC process are then conveyed to the shipment department where the cabinets are wrapped and load into trailers for delivery.

Equipment Clean Up

Stain Line

The Stain Line Spray Booth is equipped with a cleaning system to clean overspray on the spray booth conveyor belt. The cleaning system consists of a longitudinally removable cleaning trolley, wiping blade, and waste collection container. This cleaning system is located under the spray booth at the exit side of the booth and operates simultaneously with the spray booth (if the booth is in operation, the cleaning trolley/wiping blade is in operation). Approximately 35 gallons per shift (70 gal/day) of stain cleaning solvent (Hybrid Belt Cleaner) is pumped to the trolley to clean the conveyor belt. The Collected spent solvent is then transferred to a 55-gallon drum that is located next to the Stain Line Spray Booth. The drum remains closed when not in use. When the drum is 'full' it is transferred to the coating waste storage area. It is conservatively assumed that during short- and long-term basis, at least 50% of spent stain cleaning solvent is collected for waste disposal. Emissions from this cleaning systems are routed to the RTO (EPN RTO).

At the end of the second shift each operational day, approximately 5 gallons of acetone (5 gal/day) is flushed through the Stain Line Spray Booth coating application system. The acetone is sprayed out of the spray guns onto Stain Line Spray Booth conveyor belt in order to clean out the coating application system and to clean excess overspray on the belt. The spray booth cleaning system (cleaning trolley, wiping blade, etc.) is in operation during this cleanup period. Excess acetone that is not evaporated in the booth or collected in the cleaning system waste collection container is manually wiped down. Spent wipes are disposed of in closed containers. Ventilation in the Stain Line Spray Booth to the RTO remains on during this cleanup process.

Additionally, at the beginning of the first shift of each week, typically on Monday, the Stain Line coating application system is flushed with 5 gallons of acetone (10 gal/day on Monday) prior to operational startup. The cleanup and collection process are the same as previously noted for end of shift cleanup.

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Process Description

EPN	Source Description	Product ID	Hourly Usage (gal/hr)	Annual Usage (gal/yr)
10	Stain Line Overspray/Belt Cleaning	Hybrid Belt Cleaner	4.5	17,850
RTO	Stain Line Spray Equipment Cleanup	Acetone	5	1,530

Clear Line

The Clear Line Spray Booth is equipped with a cleaning system to clean overspray on the spray booth conveyor belt. The cleaning system consists of a longitudinally removable cleaning trolley, wiping blade, and waste collection container. This cleaning system is located under the spray booth at the exit side of the booth and operates simultaneously with the spray booth (if the booth is in operation, the cleaning trolley/wiping blade is in operation). Approximately 48 gallons per shift (96 gal/day) of clearcoat cleaning solvent (50/50 Blend) is pumped to the trolley to clean the conveyor belt. The collected spent solvent is then transferred to a 55-gallon drum that is located next to the Clear Line Spray Booth. The drum remains closed when not in use. When the drum is ‘full’ it is transferred to the coating waste storage area. It is conservatively assumed that during short- and long-term basis, at least 50% of spent stain cleaning solvent is collected for waste disposal. Emissions from this cleaning systems are routed to the RTO (EPN RTO).

At the end of the second shift each operational day, approximately 5 gallons of virgin Topcoat Clear Conversion Varnish 30 Sheen [‘Virgin’ Varnish] (5 gal/day) is flushed through the Clear Line Spray Booth coating application system. The ‘Virgin’ Varnish is sprayed out of the spray guns onto Clear Line Spray Booth conveyor belt in order to clean out the coating application system and to clean excess overspray on the belt. The spray booth cleaning system (cleaning trolley, wiping blade, etc.) is in operation during this cleanup period. Excess Virgin’ Varnish that is not evaporated in the booth or collected in the cleaning system waste collection container is manually wiped down. Spent wipes are disposed of in closed containers. Ventilation in the Clear Line Spray Booth to the RTO remains on during this cleanup process.

EPN	Source Description	Product ID	Hourly Usage (gal/hr)	Annual Usage (gal/yr)
10	Clear Line Overspray/Belt Cleaning	50/50 Blend	6	24,480
RTO	Clear Line Spray Equipment Cleanup	‘Virgin’ Topcoat Clear Conversion Varnish 30 Sheen (no catalyst)	5	1,275

Paint Line

The Paint Booth is equipped with a paper collection system (paper unrolling and rewinding roll). The unrolling system is placed at the entrance of the booth and the rewinding device at the exit of the booth to maintain constant tension of the paper. The paper unrolling/rewinding roll is in

Nations Cabinetry, LLC– US 90, San Antonio
Process Description

used during coating applications of product and during coating application system cleanup. Overspray from the coatings application and cleanup solvent is collected on the paper belt.

At the end of the second shift each operational day, approximately 4 gallons of acetone (8 gal/day) is flushed through the Paint Line Spray Booth coating application system. The acetone is sprayed out of the spray guns onto Paint Line Spray Booth ‘paper’ conveyor belt in order to clean out the coating application system. Spent paper is removed from the system and collected in for waste disposal. It has been conservatively assumed that on a short-term basis that 0% of the cleaning solvent is captured; however, on an annual basis it has been assumed that 80% of cleaning solvent is collected on the paper roll, rolled up, and disposed of. Ventilation in the Paint Line Spray Booth remains on during this cleanup process (EPN 11).

Additionally, at the beginning of the first shift of each week, typically on Monday, the Paint Line coating application system is flushed with 3 gallons of Methyl Ethyl Ketone (MEK) prior to operational startup. The cleanup and collection process are the same as previously noted for end of shift cleanup.

EPN	Source Description	Product ID	Hourly Usage (gal/hr)	Annual Usage (gal/yr)
11	Paint Line Spray Equipment Cleanup	Acetone	4	1,020
		MEK	3	765

Makeup Air Heater

A makeup air heater is used to provide 50,000 (cfm) of gas-heated warm air inside the Spray Room Finish Department to maintain a positive pressure in the room. The makeup air unit is a 5.5 MMBtu/hr natural gas-fired heater. The makeup air unit is a source of direct heat into the Spray Room (natural gas products of combustion vent into the room) and emissions are vented to the RTO (EPN RTO)

Miscellaneous Processes

The facility uses 30 x 32,000 Btu/hr natural gas fired space heaters (EPN 8 – Wood Glue and Space Heater Fugitives) to heat the facility as needed. Combustion emissions from these heaters are vented as fugitives throughout the facility.

EPN	Source Description	Rating per Heater (BTU/hr)	Operating Hours (hr/yr)
8	30 Natural Gas heaters	32,000	8,760

Wood glue is used throughout the assembly process. Utilization of wood glue is a source of fugitive emissions (EPN 8).

Nations Cabinetry, LLC– US 90, San Antonio
Process Description

EPN	Source Description	Product ID	Average Hourly Usage (lb/hr)	Annual Usage (gal/yr)
8	Wood Glue	Multibond 2000	2.45	1,100
		3M Hi-Strength 94 ET	0.07	35
		3M Hi-Strength Spray Adhesive 90	0.03	20

Supporting Activities

A BBQ Pit is stored and periodically utilized at the site for company business. No significant emissions are expected to be associated with the use of the BBQ pit. BBQ pits are authorized, without registration, by 30 TAC §106.244 – *Ovens, Barbecue Pits, and Cookers*.

Hand-held and manually operated machines may be utilized on site to conduct equipment maintenance, building repairs, etc. No significant emissions are expected to be associated with these activities which are authorized, without registration, by 30 TAC §106.265 – *Hand-held and Manually Operated Machines*.

Welding associated with maintenance activities can be conducted at various locations on property, as needed. The associated emissions from this activity are expected to be insignificant and are authorized, without registration, under 30 TAC 106.227 - *Soldering, Brazing, and Welding*.

Maintenance, Startup and Shutdown (MSS) Emissions

In addition to the activities detailed in other sections of this process description, Nations performs the following routine Maintenance, Start-up, and Shutdown (MSS) activities at the site which may result in the release of emissions:

Activity	Frequency	Description	Authorization Mechanism
Misc. Maintenance - Calibration	Daily, Monthly, Annually	Calibration of miscellaneous equipment	30 TAC §106.263(c)(1)
Misc. Maintenance - Lubrication	Daily, Monthly, Annually	Lubrication of miscellaneous equipment	30 TAC §106.263(c)(1)
Filter Cleaning/Replacement	Daily, Monthly, Annually	Cleaning and/or replacement of filters	30 TAC §106.263(c)(1)
Routine maintenance, startup, and shutdown	Daily, Monthly, Annually	Scheduled start-up or shutdown of process equipment	30 TAC §106.263(c)(3)
Surface Preparation of Structures and Fixed Equipment	Annually	Surface preparation (including abrasive blasting) of buildings, structures, and fixed equipment	30 TAC §106.263(c)(3)(A)

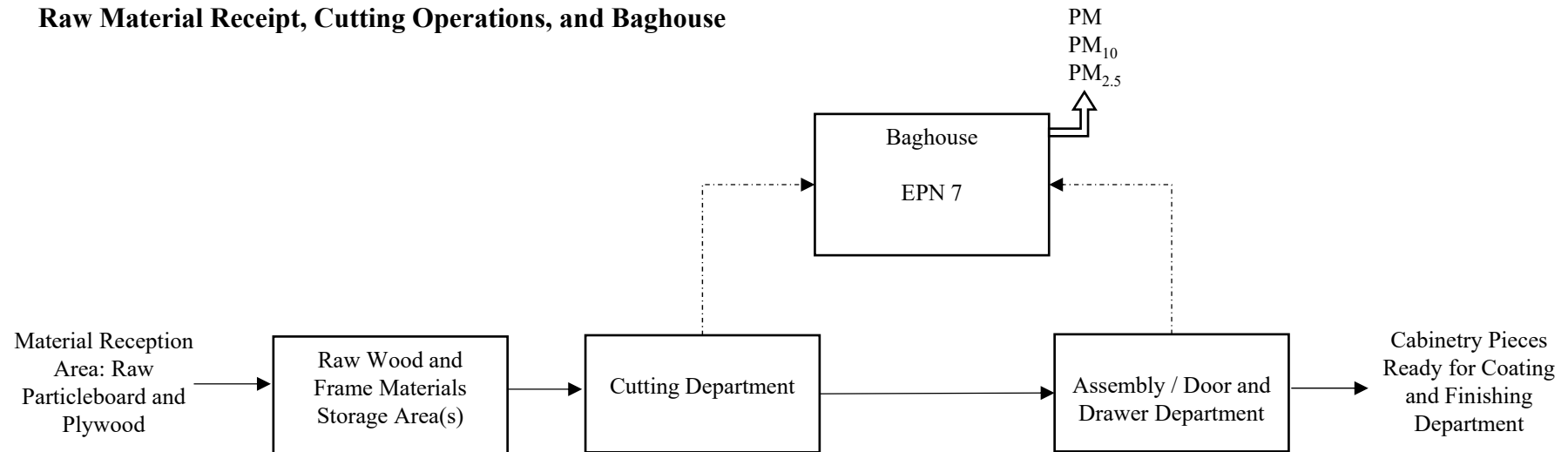
Nations Cabinetry, LLC– US 90, San Antonio
Process Description

Activity	Frequency	Description	Authorization Mechanism
Surface Coating of Structures and Fixed Equipment	Annually	Painting of buildings, structures, and fixed equipment	30 TAC §106.263(c)(3)(A)
Office Equipment	Daily	Everyday office equipment use	30 TAC §116.119(a)(1)

Nations Cabinetry, LLC– US 90, San Antonio

Process Flow Diagram

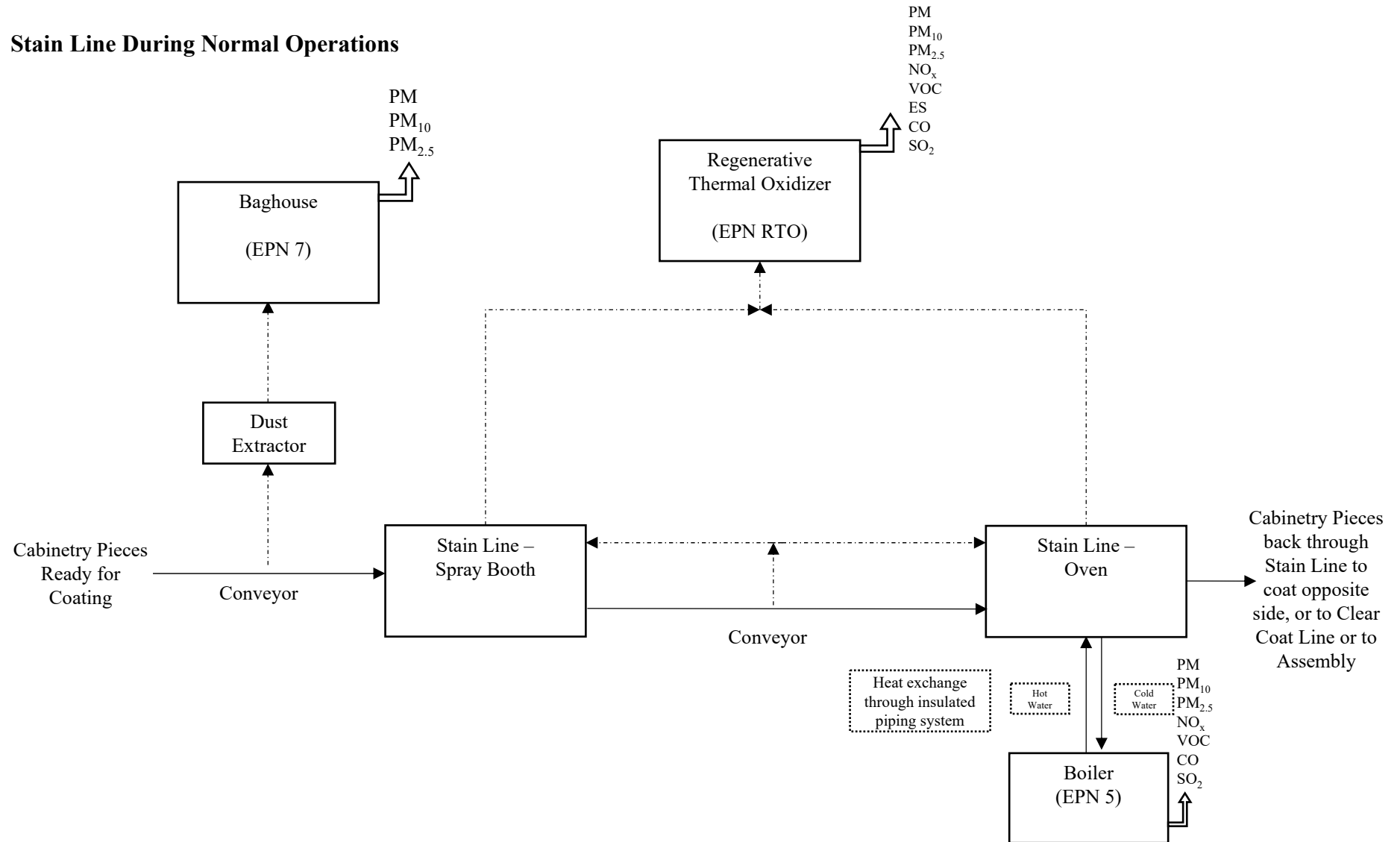
Raw Material Receipt, Cutting Operations, and Baghouse



- Key**
- : Emissions to Atmosphere
 - : Emission to Control/Exhaust Point
 - : Process Flow
 - CO = Carbon Monoxide
 - EPN = Emission Point Number
 - ES = Exempt Solvents
 - NO_x = Nitrogen Oxides
 - PBR = Permit By Rule
 - PM = Particulate Matter
 - PM₁₀ = Particulate Matter less than 10 microns in diameter
 - PM_{2.5} = Particulate Matter less than 2.5 microns in diameter
 - SO₂ = Sulfuric Dioxide
 - VOC = Volatile Organic Compounds

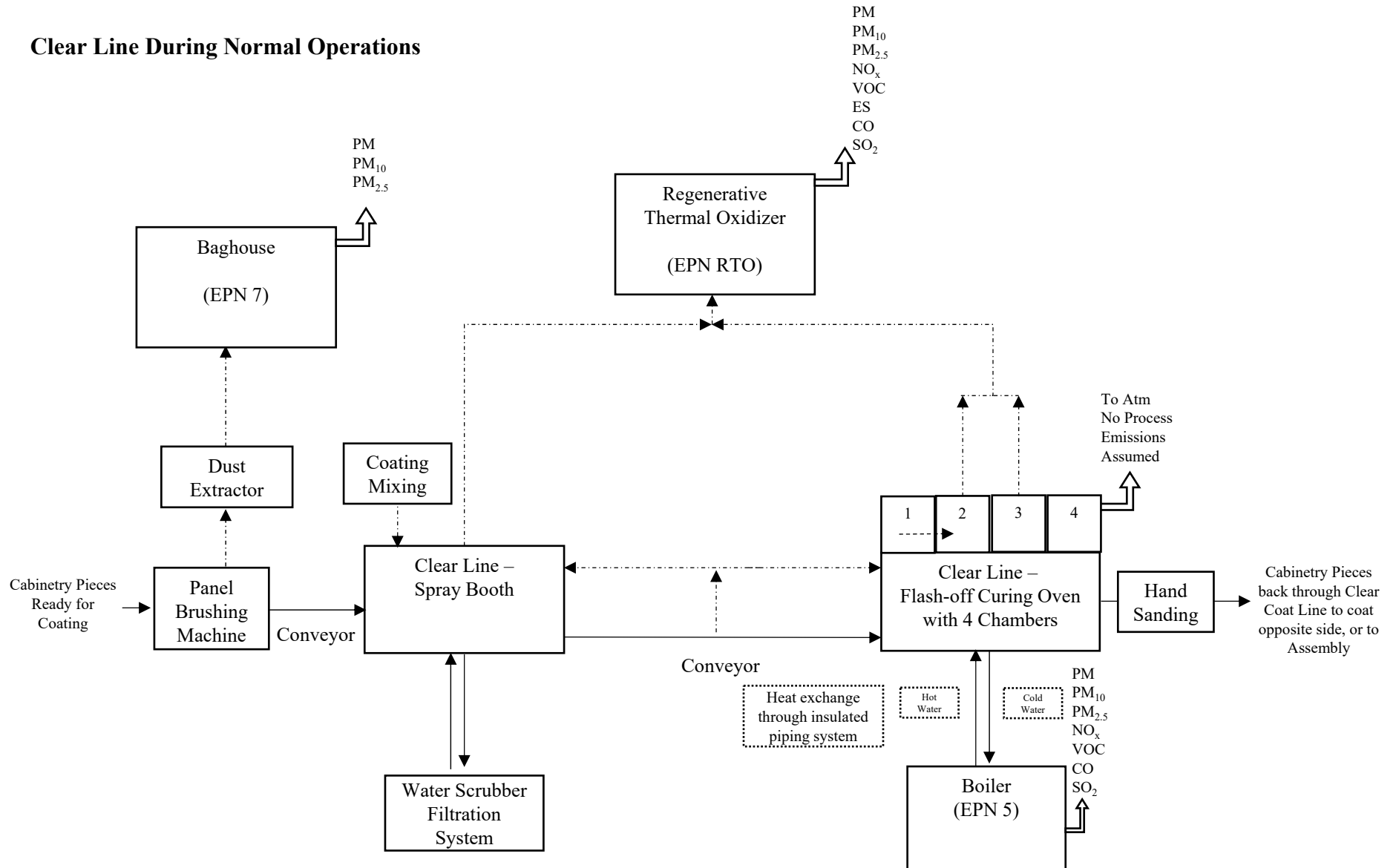
Nations Cabinetry, LLC– US 90, San Antonio Process Flow Diagram

Stain Line During Normal Operations



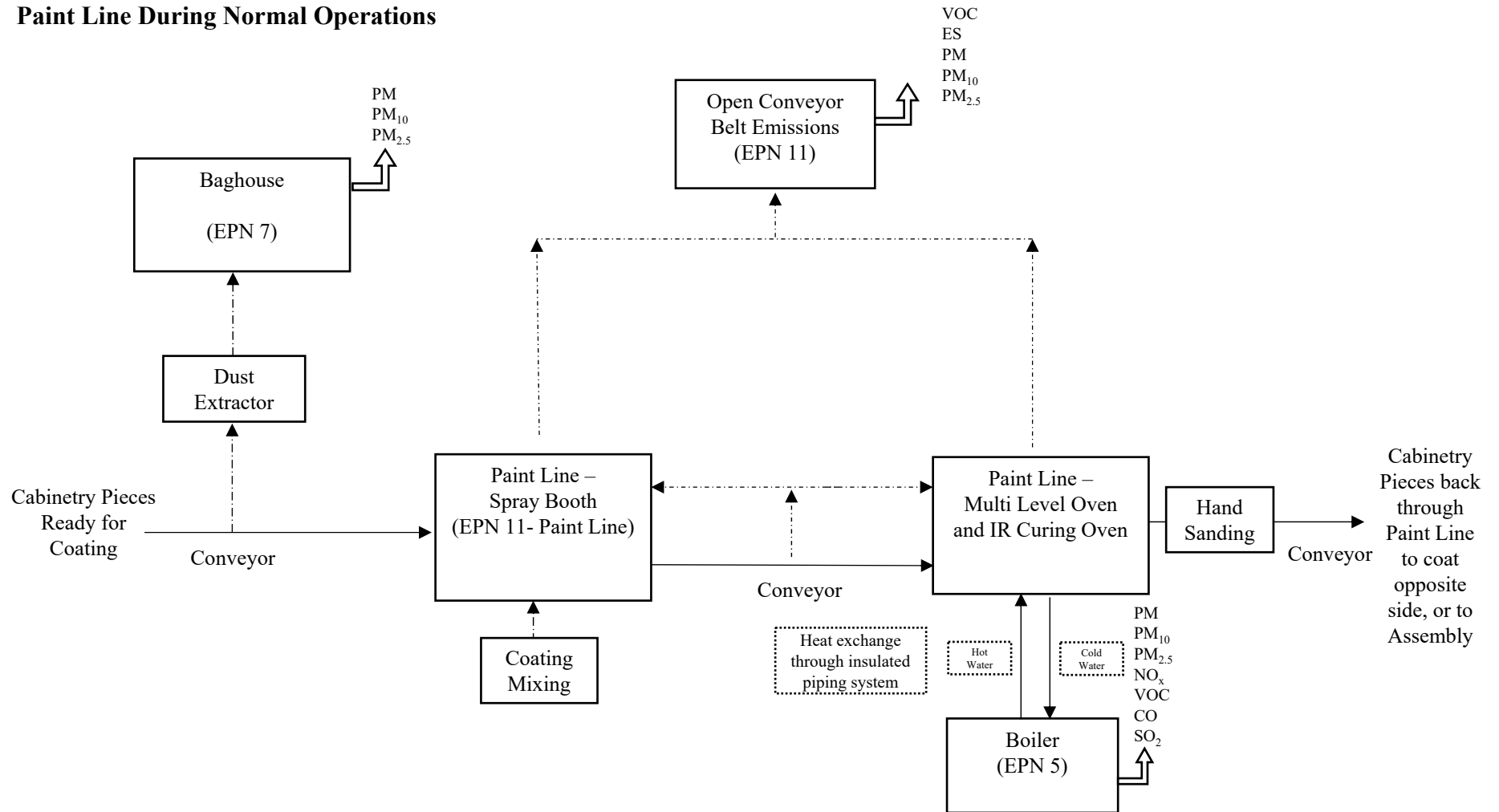
Nations Cabinetry, LLC– US 90, San Antonio
Process Flow Diagram

Clear Line During Normal Operations



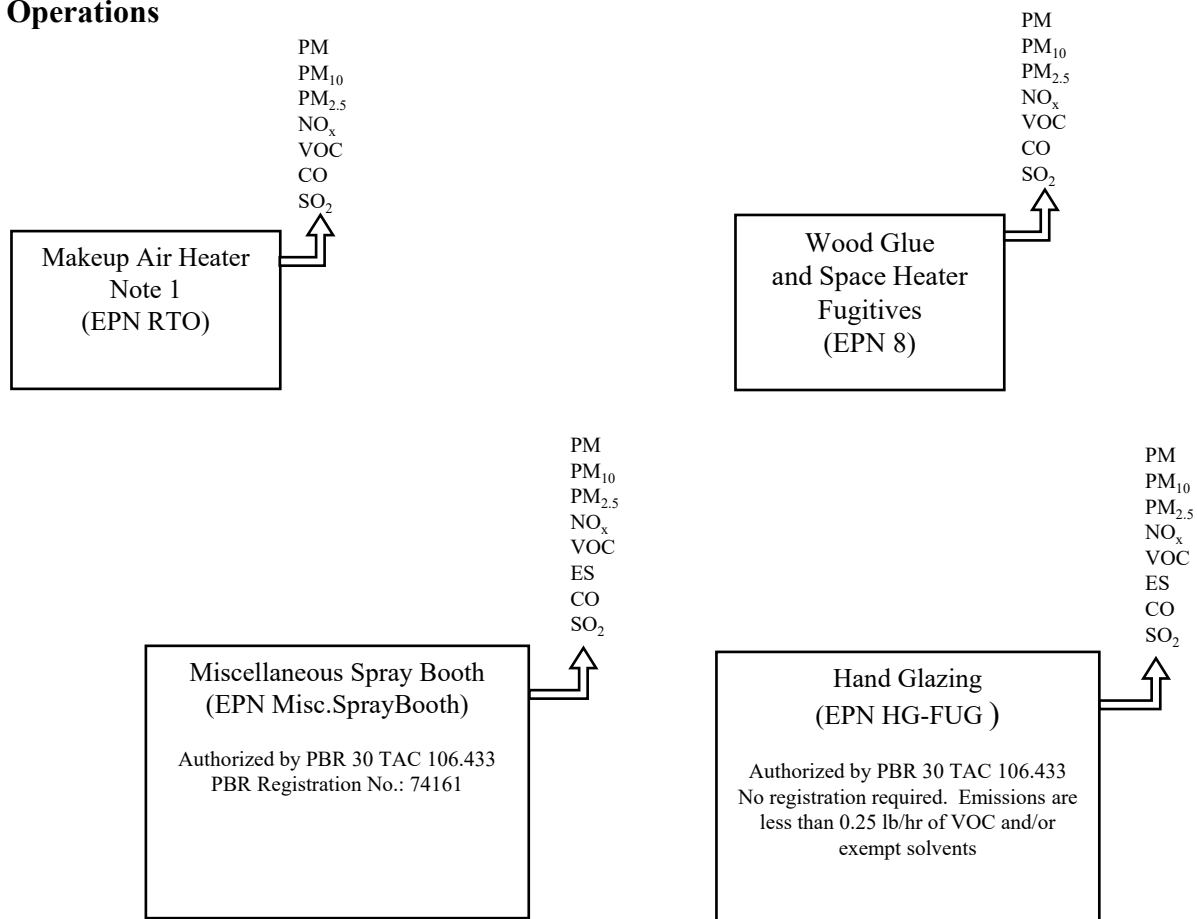
**Nations Cabinetry, LLC – US 90, San Antonio
Process Flow Diagram**

Paint Line During Normal Operations




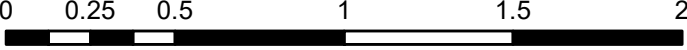
Nation's Cabinetry, LLC– US 90, San Antonio
Process Flow Diagram

Miscellaneous Operations



Note 1. The Makeup Air Heater is a 'direct' source of heat; venting combustion emissions into the Spray Room Finish Department (Spray Room). Combustion emissions from the heater are captured in the Spray Room and routed to the RTO.



<p>Legend</p> <p> 3000 ft Radius</p> <p> Property Line</p>	<p>Source: ESRI World Imagery</p> <p>Datum: WGS 1984</p>		<p>N</p> 	<p>Map Details</p> <p>Area Map</p> <p>Nations Cabinetry</p> <p>4600 US 90 Access Rd</p>
	<p>bsi.</p> <p>7000 North MoPac Expressway, Suite 200 Austin, Texas 78731</p>	<p>Location: 29.405556° -98.579444°</p>	<p>0 0.25 0.5 1 1.5 2 Miles</p> 	
			<p>Date: September 2020</p>	



Legend

- PBR Permit
- Benchmark Locations
- Property Line

Source: ESRI World Imagery

Datum: WGS 1984



Map Details
Plot Plan 1
Nations Cabinetry
4600 US 90 Access Rd

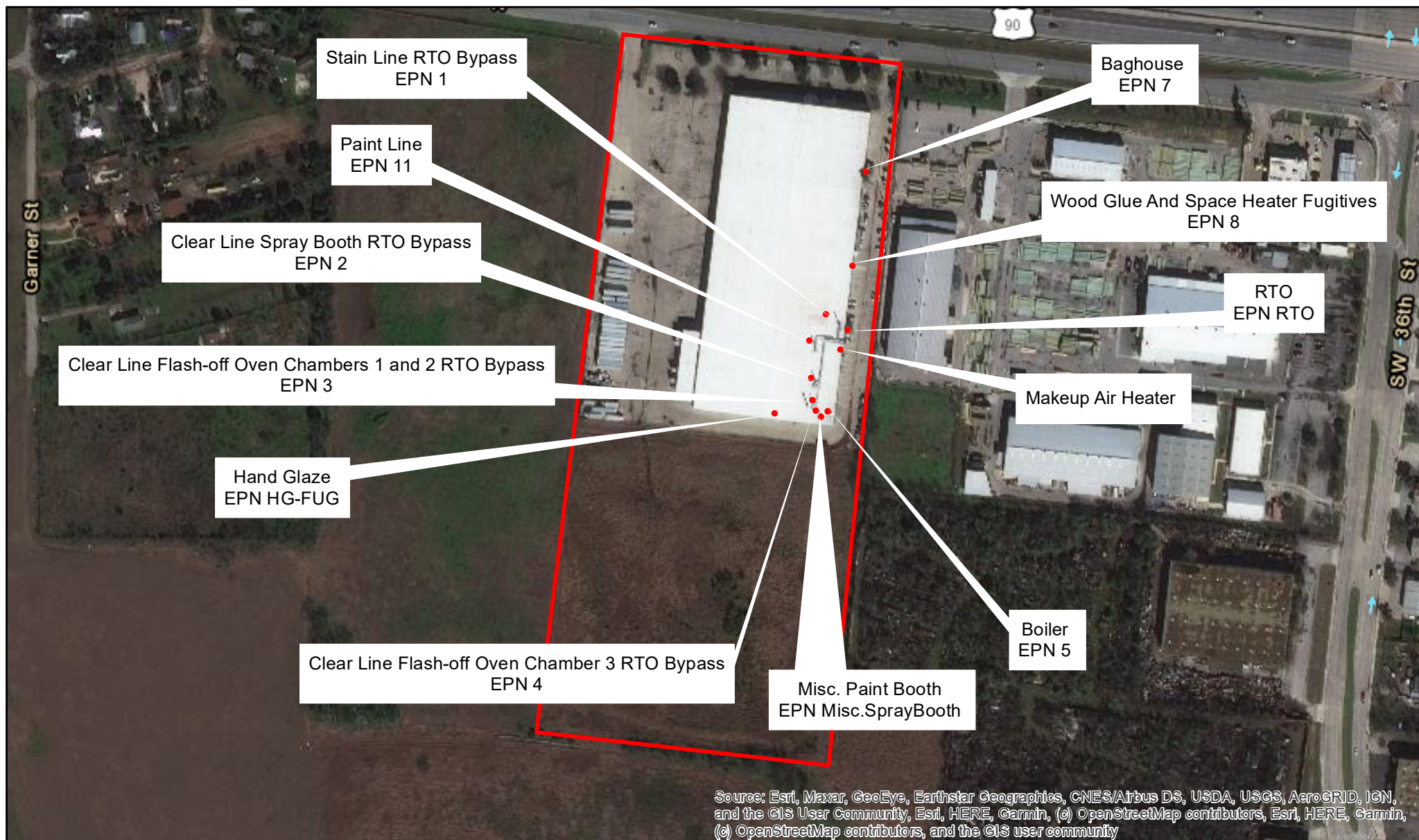
bsi.

7000 North MoPac Expressway, Suite 200
Austin, Texas 78746

Location:
29.405556°
-98.579444°

0 0.0425 0.085 0.17 0.255 0.34 Miles

Date:
September 2020



Legend

• Approx. Equip. Loc

□ Property Line

Source: ESRI World Imagery

Datum: WGS 1984



Map Details

Plot Plan 2

Nations Cabinetry

4600 US 90 Access Rd. San Antonio, TX 78237

bsi.

7000 North MoPac Expressway, Suite 200
Austin, Texas 78746





Location:
29.405556°
-98.579444°

0 0.0275 0.055 0.11 0.165 0.22 Miles

Date:
September 2020

Nations Cabinetry, LLC– US 90, San Antonio
Photo Log

Stain Line Conveyor Belts

 A wide-angle photograph of a large industrial facility. In the foreground, there are stacks of wooden cabinet frames. In the background, a large spray booth is visible with several workers standing nearby. The ceiling is high with exposed steel trusses and industrial lighting.	 A photograph showing the exit of a spray booth. A large, curved metal duct system is visible, leading from the booth area towards the right side of the frame. The floor is concrete, and there are some wooden materials in the foreground.
<p>Photo 1: Entrance to Stain Line Spray booth</p>	<p>Photo 2: Exit of Stain Line Spray booth and connected conveyor belt to the Stain Line Oven</p>
 A close-up photograph of a conveyor belt system. Several dark-stained wooden cabinet pieces are moving along the belt. The belt has a blue, textured surface. A date stamp in the bottom right corner reads "8/13/2019 14:37".	 A photograph showing the exit of a progressive oven system. A conveyor belt is visible, with a metal grate or screen in the foreground. The background shows industrial equipment and a large metal structure. A date stamp in the bottom right corner reads "8/13/2019 14:53".
<p>Photo 3: Cabinet pieces entering the progressive oven system in the Stain Line</p>	<p>Photo 4: Exit of the progressive oven system in the Stain Line</p>

**Nations Cabinetry, LLC– US 90, San Antonio
Photo Log**

Clear Line Conveyor Belts



Photo 5: Cabinet pieces that required sealer are place at the entrance of the of the panel brushing machine and transported to the Clear Line Spray Booth



Photo 6: Exit of the Clear Line Spray Booth






Photo 7: Cabinet pieces that were sprayed in the Clear Line Spray Booth are conveyed to Oven Progressive Clear Line Oven



Photo 8: Entrance and exit of the Oven Progressive Clear Line Oven

Nations Cabinetry, LLC– US 90, San Antonio
Photo Log

Clear Line Hand Sanding

	
Photo 10: Manual hand sanding using hand sanding blocks	Photo 11: Manual hand sanding using hand sanding blocks
	
Photo 12: Manual hand sanding using hand sanding blocks	

Nations Cabinetry, LLC– US 90, San Antonio
Photo Log

Exhaust Stack Photos



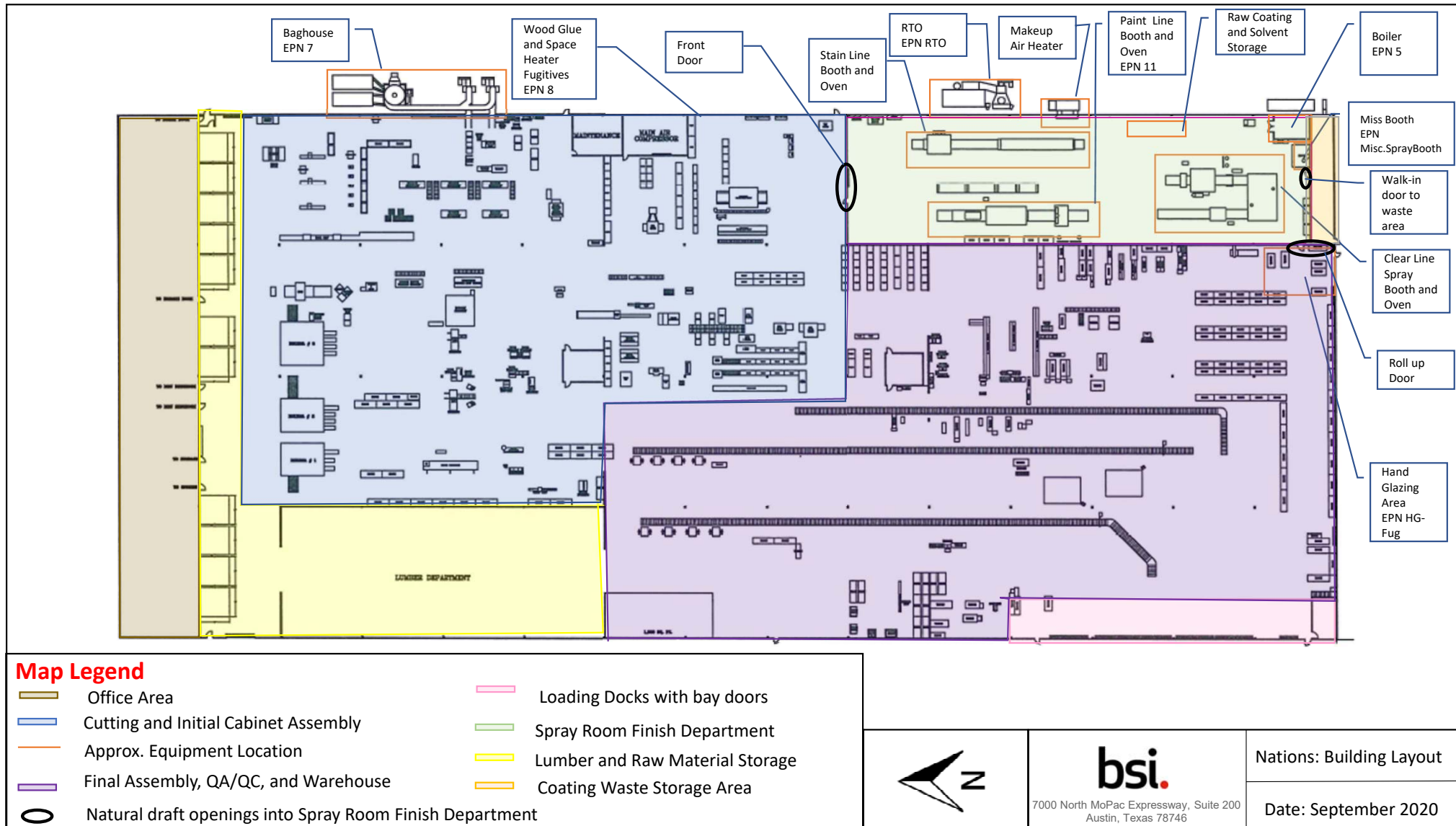
Photo 13: Boiler stack is on the left



Photo 14: Dust collector stack



Photo 15: RTO Stack



Nations Cabinetry, LLC – US 90, San Antonio
NSR Permit No. 43104: Emission Calculations Table of Content

Please find below a summary of the information that can be available at each tab of the emissions calculations.

Tables No.	Table Name	Summary of Available Information
1A, 1B, and 1C	Coating Properties	These tables depict the vendor and coating name listed in each SDS, coating data, mixing ratio provided by vendor, and as mixed coating properties. Tables 1A, 1B, and 1C show the coating properties for the stain, clear, and paint line coatings, respectively.
1D	Cleanup Solvent Properties	This table shows the properties that are listed in the SDS for each solvent cleaner that is used in the Stain, Clear and Paint Line.
2A, 2B, and 2C	Coating Speciation – Confidential	These tables depict the species in the coatings, classifies the species as Volatile (V), Particulate (P), or as not emitted (NE). Table 2 series used the density and mix ratio from Table 1 series. It also calculates the maximum weight fractions super paint. Tables 2A, 2B, and 2C show the species in the coatings that are used in the Stain, Clear, and Paint line Booth, respectively.
3A, 3B, and 3C	Thinner Speciation - Confidential	These tables identify species in the thinner and catalyst, classify the species as Volatile (V), Particulate (P), or as not emitted (NE). The maximum weight fractions super thinner is calculated in these tables. Note that Stain Line does not use thinners.
3D	Cleanup Solvent Speciation – Confidential	Depicts species in the cleanup solvents that are used in the Stain, Clear and Paint Line Booths.
4A, AB, and 4C	As-Mixed and Thinned Speciation.	These tables combine the super paint from Table 2 (A, B, or C) and super thinner from Table 3 (A, B, or C) into a super paint as-mixed using the mixing ratios that were listed in Tables 1 (A, B, and C). Tables 4A, 4B, and 4C show the super paint as-mixed for the stain, clear, and paint line coatings, respectively.
5A	Coating Line with Open Conveyor - Stain Line Operations - EPN RTO	This table calculates the short- and long-term VOC, ES, PM, PM ₁₀ , and PM _{2.5} emissions rates from the Stain Line Operations. It calculates the emissions by using the coating properties from Table 1A, physical configuration, and process data from the facility. This table uses the emissions distribution from Table 17 (Emission Distribution) to calculate emissions distribution in the Stain Line Booth, Open Conveyor, and Oven.
5B	Coating Line with Open Conveyor - Clear Line Operations - EPN RTO	This table calculates the short- and long-term VOC, ES, PM, PM ₁₀ , and PM _{2.5} emissions rates from the Clear Line Operations. It calculates the emissions by using the coating properties from Table 1B, physical configuration, and process data from the facility. This table uses the emissions distribution from Table 17 (Emission Distribution) to calculate emissions distribution in the Clear Line Booth, Open Conveyor, and Oven.
5C	Coating Line with Open Conveyor - Paint Line Operations - EPN 11	This table calculates the short- and long-term VOC, ES, PM, PM ₁₀ , and PM _{2.5} emissions rates from the Paint Line Operations. It calculates the emissions by using the coating properties from Table 1C, physical configuration, and process data from the facility. This table uses the emissions distribution from Table 17 (Emission

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Tables No.	Table Name	Summary of Available Information
		Distribution) to calculate emissions distribution in the Paint Line Booth, Open Conveyor, and Oven.
5D	Coating Booth - EPN Misc.SprayBooth (PBR Registration No. 74161)	This table calculates the short- and long-term VOC, ES, PM, PM ₁₀ , and PM _{2.5} emissions rates from the Misc.SprayBooth. It calculates the emissions by using the maximum coating properties from the Stain, Clear, and Paint Line coatings from Tables 1A, 1B, and 1C and process data from the facility.
6	Application Equipment Cleanup	This table calculates the short- and long-term emissions from the solvent cleanup operations in the Stain, Clear, and Paint Line. It calculates the emissions by using the maximum coating properties from Table 1D and process data from the facility.
7	Coating Operations - Total Emissions by EPN	This table compiles the results of the criteria pollutant emissions calculations from Tables 5A, 5B, 5C, and 6.
8A	Stain Line with an Open Conveyor - EPNs RTO	This table depicts the speciated emission rate calculations by combining the Stain Line emissions rates in Table 5A and the speciated information from the super paint as-mixed for the Stain Line in Table 4A. Data such as spray rate, filter efficiency, fall out, transfer efficiency, and maximum coating density is pulled from Table 5A to calculate a lb/hr Wt% factor. Multiplying this factor by the Wt% of a species results in the species emission rate in lb/hr. This table also adds speciated emissions from the Stain Line Booth, Open Conveyor, and Oven that are vented through the RTO (EPN RTO).
8B	Clear Line with an Open Conveyor - EPNs RTO	This table depicts the speciated emission rate calculations by combining the Clear Line emissions rates in Table 5B and the speciated information from the super paint as-mixed for the Clear Line in Table 4B. Data such as spray rate, filter efficiency, fall out, transfer efficiency, and maximum coating density is pulled from Table 5B to calculate a lb/hr Wt% factor. Multiplying this factor by the Wt% of a species results in the species emission rate in lb/hr. This table also adds speciated emissions from the Clear Line Booth, Open Conveyor, and Oven that are vented through the RTO (EPN RTO).
8C	Paint Line with an Open Conveyor - EPNs 11	This table depicts the speciated emission rate calculations by combining the Paint Line emissions rates in Table 5C and the speciated information from the super paint as-mixed for the Paint Line in Table 4C. Data such as spray rate, filter efficiency, fall out, transfer efficiency, and maximum coating density is pulled from Table 5C to calculate a lb/hr Wt% factor. Multiplying this factor by the Wt% of a species results in the species emission rate in lb/hr. This table also adds speciated emissions from the Paint Line Booth, Open Conveyor, and Oven that are vented through the common vent line (EPN – 11).

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Tables No.	Table Name	Summary of Available Information
8D	Coating Booth - EPN Misc.SprayBooth (PBR Registration No. 74161)	This table depicts the speciated emission rate for the Miscellaneous Spray Booth by combining the Miscellaneous Booth emissions rates in Table 5D, and maximum speciated information from the super paint as-mixed for the in Tables 4A, 4B, and 4C. Data such as spray rate, filter efficiency, fall out, transfer efficiency, and maximum coating density is pulled from Table 5D to calculate a lb/hr Wt% factor. Multiplying this factor by the Wt% of a species results in the species emission rate in lb/hr.
9A	Normal Operations (No Spray Equipment Cleanup) Maximum Speciated VOC and PM Off-Site Cumulative GLCs (ug/m3)	This table pulls the speciated emissions rates from each source in tables 8A, 8B, 8C, and 8D, dispersion modeling results in Table 14, and the effects screening levels (ESLs) from the TAMIS database to provide the off-property concentrations used in the impacts analysis. Impacts are determined by multiplying the species emission rate (lb/hr) for a source by the Unit Impact Multiplier ($\mu\text{g}/\text{m}^3$ per lb/hr) (UIM) to obtain a maximum off-property concentration. The impacts for the sources for a species are then summed and compared to the ESL.
9B	Spray Equipment Cleanup Maximum Speciated VOC and PM Off-Site Cumulative GLCs (ug/m3)	This table pulls the speciated emissions rates from each solvent cleanup source in Table 6, dispersion modeling results in Table 14, and the effects screening levels (ESLs) from the TAMIS database to provide the off-property concentrations used in the impacts analysis. Impacts are determined by multiplying the species emission rate (lb/hr) for a source by the Unit Impact Multiplier ($\mu\text{g}/\text{m}^3$ per lb/hr) (UIM) to obtain a maximum off-property concentration. The impacts for the sources for a species are then summed and compared to the ESL.
10	Products of Combustion	This table calculates the products of combustion of natural gas from the air makeup units, RTO, boiler, and space heater using the emission factors from the EPA Compilation of Air Pollutant Emission Factors, Section 1.4 for natural gas.
11	EPN 7 - Baghouse Emissions Calculations	This table calculates the baghouse PM, PM10, and PM2.5 emissions using airflow rate, hours of operations and conversion factors.
12	EPN 8 - Wood Shop Glue Emissions Calculations	This table lists the various glues that are used in the facility and calculates hourly and annual VOC emissions.
13	Modeling Input Parameters	This table shows the input data for SCREEN3, information on source characterization (point, pseudo point, area, and volume), building dimensions for downwash, and dispersion coefficient.
14	Unit Impact Multipliers Using SCREEN3	This table calculates the impact analysis ($\mu\text{g}/\text{m}^3$ per lb/hr) for each source using the SCREEN3 results, averaging period for the National Ambient Air Quality Standards (NAAQS) and EPA conversion factors.
15	NAAQS SIL Analysis and Impacts Analysis	This table shows the NAAQS analysis for both the solids emissions (PM/PM10/PM2.5) from painting and the products of combustion, including RTO, space heaters, boiler, and air makeup units. This

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Tables No.	Table Name	Summary of Available Information
		table uses emissions rates from Table 7 and Table 10, and unit impact multipliers from Table 14.
16	Background NAAQS Monitor Values	This table shows the ambient monitoring data is required only for pollutants for which the increase in off property concentrations from the project is greater than the Significant Impacts Level (SIL).
17	Emission Distributions for Conveyorized Painting Operations	This table uses the existing flash curves to calculate the emission distribution for each coating line between the booth, open conveyor belt, and oven.
18	Enclosure Capture Velocities	This table calculates the capture efficiency in the Spray Room Finish Department (Spray Room) using the ventilation system flow rate, number of enclosure opening, and area of the openings.

Table 5A
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Stain Line Operations - EPN RTO

Stain Line Spray Booth	Parameters	Data	Units	Information Source
	Maximum Application Rate	13.00	gal/hr	Company Data
	Annual Usage	40,000	gal/yr	Company Data
	Maximum Coating Density	8.44	lbs/gal	SDS
	Maximum VOC Content (Short-Term)	0.79	lbs/gal	SDS
	Maximum VOC Content (Annual)	0.58	lbs/gal	SDS
	Minimum VOC Content	0.00	lbs/gal	SDS
	Maximum Exempt Solvent Content (Short-Term)	4.76	lbs/gal	SDS
	Maximum Exempt Solvent Content (Annual)	3.07	lbs/gal	SDS
	Maximum Solids Content	0.19	lbs/gal	SDS
	VOC Control Efficiency	99.10%	-	RTO test data
	Percent Overspray	20.00%	-	TCEQ Guidance for Airless Application Equipment
	Transfer Efficiency	80.00%	-	TCEQ Guidance for Airless Application Equipment
	Filter Efficiency - Booth	99.83%	-	Vendor Data
	PM ₁₀ Filter Efficiency - Booth	99.83%	-	Vendor Data
	PM _{2.5} Filter Efficiency - Booth	99.83%	-	Vendor Data
	VOC Flashoff Short Term	100.00%	-	AP-40 Figure 655
	VOC Flashoff Annual	100.00%	-	Assumed Worst Case
	PM Fallout	98.56%	-	TCEQ Guidance for Airless Application Equipment
	PM ₁₀ Fallout	99.87%	-	TCEQ Guidance for Airless Application Equipment
	PM _{2.5} Fallout	99.99%	-	TCEQ Guidance for Airless Application Equipment

Total Short-term VOC Emissions Prior to Transfer Efficiency, Control Efficiency, Flash Off, and Emission Distribution

Spray Rate (gal/hr)		Max VOC Content (lbs/gal)			
13.00	X	0.79	=	10.2661	lb VOC/hr

Total PM Emissions - Cabinet Parts Coating Operations in Stain Line Spray Booth (EPN RTO)

PM Emissions¹	Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	13.00	X	0.19	X	20.00%	X	0.17%	X	1.44%	=	0.0000 lb PM/hr
PM₁₀ Emissions	Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	13.00	X	0.19	X	20.00%	X	0.17%	X	0.13%	=	0.0000 lb PM₁₀/hr
PM_{2.5} Emissions	Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	13.00	X	0.19	X	20.00%	X	0.17%	X	0.01%	=	0.0000 lb PM_{2.5}/hr
Annual PM Emission Rates											
PM Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (tons/yr)
	40,000	X	0.19	X	20.00%	X	0.17%	X	1.44%	=	0.0000 tons PM/yr
PM₁₀ Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (tons/yr)
	40,000	X	0.19	X	20.00%	X	0.17%	X	0.13%	=	0.0000 tons PM₁₀/yr
PM_{2.5} Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (tons/yr)
	40,000	X	0.19	X	20.00%	X	0.17%	X	0.01%	=	0.0000 tons PM_{2.5}/yr

¹ Stain Line Spray Booth has 100% capture efficiency and PM emissions are exhausted through filters, to the RTO filter house and then through the RTO stack.

Table 5A
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Stain Line Operations - EPN RTO

Emission Distribution Data

Flashoff Fractions for Parts - Table 18 (Emission Distributions for Conveyorized Painting Operations)

Source Name	EPN	Solvent Loss Fraction
Stain Line Spray Booth	RTO	0.62
Stain Line Open Conveyor	RTO	0.05
Stain Line Oven	RTO	0.33
Total		<u>1.00</u>

Flashoff Fraction for Overspray

Source Name	EPN	Solvent Loss Fraction
Stain Line Spray Booth	RTO	1.00
Total		<u>1.00</u>

Short-term Emission Rates

Solvent Loss in the Stain Line Spray Booth (EPN RTO)

		Overspray									
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		(1 - Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (lbs/hr)
VOC Emissions		13.00	X	0.79	X	20.00%	X	100.00%	X	0.90%	= 0.02 lbs VOC/hr
		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		(1 - Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (lbs/hr)
Exempt Solvent		13.00	X	4.76	X	20.00%	X	100.00%	X	0.90%	= 0.11 lbs Exempt Solvent/hr
		Parts									
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (lbs/hr)
VOC Emissions		13.00	X	0.79	X	80.00%	X	62.00%	X	0.90%	= 0.05 lbs VOC/hr
		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (lbs/hr)
Exempt Solvent		13.00	X	4.76	X	80.00%	X	62.00%	X	0.90%	= 0.28 lbs Exempt Solvent/hr
Total Short-Term Solvent Loss in the Stain Line Spray Booth											
VOC Emissions											0.06 lbs VOC/hr
Exempt Solvent											0.39 lbs Exempt Solvent/hr

Solvent Loss to Stain Line Open Conveyor (EPN RTO)

		Parts									
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (lbs/hr)
VOC Emissions		13.00	X	0.79	X	80.00%	X	5.00%	X	0.90%	= 0.00 lbs VOC/hr
		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (lbs/hr)
Exempt Solvent		13.00	X	4.76	X	80.00%	X	5.00%	X	0.90%	= 0.02 lbs Exempt Solvent/hr

Table 5A
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Stain Line Operations - EPN RTO

Solvent Loss to Stain Line Oven (EPN RTO)

Short-Term	Parts									
	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (lbs/hr)
VOC Emissions	13.00	X	0.79	X	80.00%	X	33.00%	X	0.90%	= 0.02 lbs VOC/hr
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (lbs/hr)
	13.00	X	4.76	X	80.00%	X	33.00%	X	0.90%	= 0.15 lbs Exempt Solvent/hr

Annual Emission Rates

Solvent Loss in the Stain Line Spray Booth (EPN RTO)

Annual	Overspray									
	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		(1-Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (tons/yr)
VOC Emissions	40,000	X	0.58	X	20.00%	X	100.00%	X	0.90%	= 0.02 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		(1-Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (tons/yr)
	40,000	X	3.07	X	20.00%	X	100.00%	X	0.90%	= 0.11 tons Exempt Solvent/yr
Annual	Parts									
	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (tons/yr)
VOC Emissions	40,000	X	0.58	X	80.00%	X	62.00%	X	0.90%	= 0.05 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (tons/yr)
	40,000	X	3.07	X	80.00%	X	62.00%	X	0.90%	= 0.27 tons Exempt Solvent/yr
Total Annual Solvent Loss in the Stain Line Spray Booth										
VOC Emissions										0.07 tons VOC/yr
Exempt Solvent										0.38 tons Exempt Solvent/yr

Solvent Loss to Stain Line Open Conveyor (EPN RTO)

Annual	Parts									
	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (tons/yr)
VOC Emissions	40,000	X	0.58	X	80.00%	X	5.00%	X	0.90%	= 0.00 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (tons/yr)
	40,000	X	3.07	X	80.00%	X	5.00%	X	0.90%	= 0.02 tons Exempt Solvent/yr

Solvent Loss to Stain Line Oven (EPN RTO)

Annual	Parts									
	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (tons/yr)
VOC Emissions	40,000	X	0.58	X	80.00%	X	33.00%	X	0.90%	= 0.03 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (tons/yr)
	40,000	X	3.07	X	80.00%	X	33.00%	X	0.90%	= 0.15 tons Exempt Solvent/yr

Table 5B
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Clear Line Operations - EPN RTO

Clear Line Spray Booth				
Parameters	Data	Units	Information Source	
Maximum Application Rate	15.00	gal/hr	Company Data	
Annual Usage	45,000	gal/yr	Company Data	
Maximum Coating Density	7.69	lbs/gal	SDS	
Maximum VOC Content (Short-Term)	4.62	lbs/gal	SDS	
Maximum VOC Content (Annual)	4.62	lbs/gal	SDS	
Minimum VOC Content	4.62	lbs/gal	SDS	
Maximum Exempt Solvent Content (Short-Term)	0.00	lbs/gal	SDS	
Maximum Exempt Solvent Content (Annual)	0.00	lbs/gal	SDS	
Maximum Solids Content	3.05	lbs/gal	SDS	
VOC Control Efficiency	99.10%	-	RTO test data	
Percent Overspray	20.00%	-	TCEQ Guidance for Airless Application Equipment	
Transfer Efficiency	80.00%	-	TCEQ Guidance for Airless Application Equipment	
Filter Efficiency - Booth	99.00%	-	water filter	
PM ₁₀ Filter Efficiency - Booth	99.00%	-	water filter	
PM _{2.5} Filter Efficiency - Booth	99.00%	-	water filter	
VOC Flashoff Short Term	100.00%	-	AP-40 Figure 655	
VOC Flashoff Annual	100.00%	-	Assumed Worst Case	
PM Fallout	98.56%	-	TCEQ Guidance for Airless Application Equipment	
PM ₁₀ Fallout	99.87%	-	TCEQ Guidance for Airless Application Equipment	
PM _{2.5} Fallout	99.99%	-	TCEQ Guidance for Airless Application Equipment	

Total PM Emissions - Cabinet Parts Coating Operations in Clear Line (RTO)

Short-Term PM Emission Rates

PM Emissions ¹	Spray Rate		Max PM Content	(1 - Transfer Efficiency)		(1 - Filter Efficiency)		(1 - Fallout)		Total PM Emissions	
	(gal/hr)		(lbs/gal)	(%)	(%)	(%)	(%)	(%)		(lbs/hr)	
	15.00	X	3.05	X	20.00%	X	1.00%	X	1.44%	=	0.0013 lb PM/hr
PM ₁₀ Emissions	Spray Rate		Max PM Content	(1 - Transfer Efficiency)		(1 - Filter Efficiency)		(1 - Fallout)		Total PM Emissions	
	(gal/hr)		(lbs/gal)	(%)	(%)	(%)	(%)	(%)		(lbs/hr)	
	15.00	X	3.05	X	20.00%	X	1.00%	X	0.13%	=	0.0001 lb PM ₁₀ /hr
PM _{2.5} Emissions	Spray Rate		Max PM Content	(1 - Transfer Efficiency)		(1 - Filter Efficiency)		(1 - Fallout)		Total PM Emissions	
	(gal/hr)		(lbs/gal)	(%)	(%)	(%)	(%)	(%)		(lbs/hr)	
	15.00	X	3.05	X	20.00%	X	1.00%	X	0.01%	=	0.0000 lb PM _{2.5} /hr
Annual PM Emission Rates											
PM Emissions	Spray Rate		Max PM Content	(1 - Transfer Efficiency)		(1 - Filter Efficiency)		(1 - Fallout)		Total PM Emissions	
	(gal/yr)		(lbs/gal)	(%)	(%)	(%)	(%)	(%)		(tons/yr)	
	45,000	X	3.05	X	20.00%	X	1.00%	X	1.44%	=	0.0020 tons PM/yr
PM ₁₀ Emissions	Spray Rate		Max PM Content	(1 - Transfer Efficiency)		(1 - Filter Efficiency)		(1 - Fallout)		Total PM Emissions	
	(gal/yr)		(lbs/gal)	(%)	(%)	(%)	(%)	(%)		(tons/yr)	
	45,000	X	3.05	X	20.00%	X	1.00%	X	0.13%	=	0.0002 tons PM ₁₀ /yr
PM _{2.5} Emissions	Spray Rate		Max PM Content	(1 - Transfer Efficiency)		(1 - Filter Efficiency)		(1 - Fallout)		Total PM Emissions	
	(gal/yr)		(lbs/gal)	(%)	(%)	(%)	(%)	(%)		(tons/yr)	
	45,000	X	3.05	X	20.00%	X	1.00%	X	0.01%	=	0.0000 tons PM _{2.5} /yr

¹ Clear Line Spray Booth has 100% capture efficiency and PM emissions are exhausted through filters, to the RTO filter house and then through the RTO stack.

Table 5B
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Clear Line Operations - EPN RTO

Emission Distribution Data

Flashoff Fractions for Parts - Table 18 (Emission Distributions for Conveyorized Painting Operations)

	EPN	Solvent Loss Fraction
Clear Line Spray Booth	RTO	0.36
Clear Line Open Conveyor	RTO	0.11
Clear Line Oven	RTO	0.53
Total		<u>1.00</u>

Flashoff Fraction for Overspray

Source Name	EPN	Solvent Loss Fraction
Clear Line Spray Booth	RTO	1.00
Total		<u>1.00</u>

Short-term Emission Rates

Solvent Loss in the Clear Line Spray Booth (EPN RTO)

		Overspray								
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	(1 - Transfer Efficiency) (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (lbs/hr)
VOC Emissions		15.00	X	4.62	20.00%	X	100.00%	0.90%	=	0.12 lbs VOC/hr
Exempt Solvent		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	(1 - Transfer Efficiency) (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (lbs/hr)
		15.00	X	0.00	20.00%	X	100.00%	0.90%	=	0.00 lbs Exempt Solvent/hr
		Parts								
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (lbs/hr)
VOC Emissions		15.00	X	4.62	80.00%	X	36.00%	0.90%	=	0.18 lbs VOC/hr
Exempt Solvent		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (lbs/hr)
		15.00	X	0.00	80.00%	X	36.00%	0.90%	=	0.00 lbs Exempt Solvent/hr
Total Short-Term Solvent Loss in the Clear Line Spray Booth										
VOC Emissions										0.30 lbs VOC/hr
Exempt Solvent										0.00 lbs Exempt Solvent/hr

Solvent Loss to Clear Line Open Conveyor (EPN RTO)

		Parts								
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (lbs/hr)
VOC Emissions		15.00	X	4.62	80.00%	X	11.00%	0.90%	=	0.05 lbs VOC/hr
Exempt Solvent		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (lbs/hr)
		15.00	X	0.00	80.00%	X	11.00%	0.90%	=	0.00 lbs Exempt Solvent/hr

Solvent Loss to Clear Line Oven (EPN RTO)

		Parts								
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (lbs/hr)
VOC Emissions		15.00	X	4.62	80.00%	X	53.00%	0.90%	=	0.26 lbs VOC/hr
Exempt Solvent		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (lbs/hr)
		15.00	X	0.00	80.00%	X	53.00%	0.90%	=	0.00 lbs Exempt Solvent/hr

Table 5B
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Clear Line Operations - EPN RTO

Annual Emission Rates

Solvent Loss in the Clear Line Spray Booth (EPN RTO)

		Overspray								
Annual	Spray Rate (gal/yr)	Max VOC Content (lbs/gal)	(1-Transfer Efficiency) (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)		
VOC Emissions	45,000	X 4.62	X 20.00%	X	100.00%	X 0.90%	=	0.19 tons VOC/yr		
Exempt Solvent	Spray Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)	(1-Transfer Efficiency) (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)		
	45,000	X 0.00	X 20.00%	X	100.00%	X 0.90%	=	0.00 tons Exempt Solvent/yr		
		Parts								
Annual	Spray Rate (gal/yr)	Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)		
VOC Emissions	45,000	X 4.62	X 80.00%	X	36.00%	X 0.90%	=	0.27 tons VOC/yr		
Exempt Solvent	Spray Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)		
	45,000	X 0.00	X 80.00%	X	36.00%	X 100.00%	=	0.00 tons Exempt Solvent/yr		
Total Annual Solvent Loss in the Clear Line Spray Booth										
VOC Emissions								0.46 tons VOC/yr		
Exempt Solvent								0.00 tons Exempt Solvent/yr		

Solvent Loss to Clear Line Open Conveyor (EPN RTO)

		Parts								
Annual	Spray Rate (gal/yr)	Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)		
VOC Emissions	45,000	X 4.62	X 80.00%	X	11.00%	X 0.90%	=	0.08 tons VOC/yr		
Exempt Solvent	Spray Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)		
	45,000	X 0.00	X 80.00%	X	11.00%	X 0.90%	=	0.00 tons Exempt Solvent/yr		

Solvent Loss to Clear Oven (EPN RTO)

		Parts								
Annual	Spray Rate (gal/yr)	Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)		
VOC Emissions	45,000	X 4.62	X 80.00%	X	53.00%	X 0.90%	=	0.40 tons VOC/yr		
Exempt Solvent	Spray Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)		
	45,000	X 0.00	X 80.00%	X	53.00%	X 0.90%	=	0.00 tons Exempt Solvent/yr		

Table 5C
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Paint Line Operations - EPN 11

Paint Line Spray Booth				
Parameters	Data	Units	Information Source	
Maximum Application Rate	13.00	gal/hr	Company Data	
Annual Usage	22,000	gal/yr	Company Data	
Maximum Coating Density	12.64	lbs/gal	SDS	
Maximum VOC Content (Short-Term)	4.64	lbs/gal	SDS	
Maximum VOC Content (Annual)	2.32	lbs/gal	SDS	
Minimum VOC Content	0.00	lbs/gal	SDS	
Maximum Exempt Solvent Content (Short-Term)	1.26	lbs/gal	SDS	
Maximum Exempt Solvent Content (Annual)	0.63	lbs/gal	SDS	
Maximum Solids Content	8.11	lbs/gal	SDS	
VOC Control Efficiency	0.00%	-	no control	
Percent Overspray	20.00%	-	TCEQ Guidance for Airless Application Equipment	
Transfer Efficiency	80.00%	-	TCEQ Guidance for Airless Application Equipment	
Filter Efficiency - Booth	99.03%	-	Vendor Data	
PM ₁₀ Filter Efficiency - Booth	99.03%	-	Vendor Data	
PM _{2.5} Filter Efficiency - Booth	99.03%	-	Vendor Data	
VOC Flashoff Short Term	100.00%	-	AP-40 Figure 655	
VOC Flashoff Annual	100.00%	-	Assumed Worst Case	
PM Fallout	98.56%	-	TCEQ Guidance for Airless Application Equipment	
PM ₁₀ Fallout	99.87%	-	TCEQ Guidance for Airless Application Equipment	
PM _{2.5} Fallout	99.99%	-	TCEQ Guidance for Airless Application Equipment	

Total PM Emissions - Cabinet Parts Coating Operations in Paint Line (EPN 11)

Short-Term PM Emission Rates

PM Emissions ¹		Spray Rate (gal/hr)	Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)	(1 - Filter Efficiency) (%)	(1 - Fallout) (%)	Total PM Emissions (lbs/hr)
PM₁₀ Emissions		13.00	8.11	20.00%	0.97%	1.44%	0.0029 lb PM/hr
		X		X	X		
PM_{2.5} Emissions		13.00	8.11	20.00%	0.97%	0.13%	0.0003 lb PM₁₀/hr
		X		X	X		
Annual PM Emission Rates		13.00	8.11	20.00%	0.97%	0.01%	0.0000 lb PM_{2.5}/hr
		X		X	X		
PM Emissions		Spray Rate (gal/yr)	Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)	(1 - Filter Efficiency) (%)	(1 - Fallout) (%)	Total PM Emissions (tons/yr)
PM₁₀ Emissions		22,000	8.11	20.00%	0.97%	1.44%	0.0025 tons PM/yr
		X		X	X		
PM_{2.5} Emissions		22,000	8.11	20.00%	0.97%	0.13%	0.0002 tons PM₁₀/yr
		X		X	X		
		22,000	8.11	20.00%	0.97%	0.01%	0.0000 tons PM_{2.5}/yr
		X		X	X		

¹ Paint Line Spray Booth has 100% capture efficiency and PM emissions are exhausted through the EPN 11.

Table 5C
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Paint Line Operations - EPN 11

Emission Distribution Data

Flashoff Fractions for Parts - Table 18 (Emission Distributions for Conveyorized Painting Operations)

Source Name	EPN	Solvent Loss Fraction
Paint Line Spray Booth	11	0.35
Paint Line Open Conveyor	11	0.01
Paint Line Oven	11	0.64
Total		<u>1.00</u>

Flashoff Fraction for Overspray

Source Name	EPN	Solvent Loss Fraction
Paint Line Spray Booth	11	1.00
Total		<u>1.00</u>

Short-term Emission Rates

Solvent Loss in the Paint Line Spray Booth (EPN 11)

		Overspray									
Short-Term	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		(1 - Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total VOC Emissions (lbs/hr)
VOC Emissions	13.00	X	4.64	X	20.00%	X	100.00%	X	100.00%	=	12.06 lbs VOC/hr
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		(1 - Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (lbs/hr)
	13.00	X	1.26	X	20.00%	X	100.00%	X	100.00%	=	3.28 lbs Exempt Solvent/hr
		Parts									
Short-Term	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total VOC Emissions (lbs/hr)
VOC Emissions	13.00	X	4.64	X	80.00%	X	35.00%	X	100.00%	=	16.89 lbs VOC/hr
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (lbs/hr)
	13.00	X	1.26	X	80.00%	X	35.00%	X	100.00%	=	4.60 lbs Exempt Solvent/hr
Total Short-Term Solvent Loss in the Paint Line Spray Booth											
VOC Emissions 28.95 lbs VOC/hr											
Exempt Solvent 7.88 lbs Exempt Solvent/hr											

Solvent Loss to Paint Line Open Conveyor (EPN 11)

		Parts									
Short-Term	Spray Rate (gal/hr)	Max VOC Content (lbs/gal)	Transfer Efficiency (%)	VOC Flashoff (%)	(1- VOC Control Eff.) (%)	Total VOC Emissions (lbs/hr)					
VOC Emissions	13.00	X 4.64	X 80.00%	X 1.00%	X 100.00%	=	0.48 lbs VOC/hr				
Exempt Solvent	Spray Rate (gal/hr)	Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)	VOC Flashoff (%)	(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (lbs/hr)					
	13.00	X 1.26	X 80.00%	X 1.00%	X 100.00%	=	0.13 lbs Exempt Solvent/hr				

Solvent Loss to Paint Line Oven (EPN 11)

		Parts									
Short-Term	Spray Rate (gal/hr)	Max VOC Content (lbs/gal)	Transfer Efficiency (%)	VOC Flashoff (%)	(1- VOC Control Eff.) (%)	Total VOC Emissions (lbs/hr)					
VOC Emissions	13.00	X 4.64	X 80.00%	X 64.00%	X 100.00%	=	30.88 lbs VOC/hr				
Exempt Solvent	Spray Rate (gal/hr)	Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)	VOC Flashoff (%)	(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (lbs/hr)					
	13.00	X 1.26	X 80.00%	X 64.00%	X 100.00%	=	8.41 lbs Exempt Solvent/hr				

Table 5C
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Paint Line Operations - EPN 11

Annual Emission Rates

Solvent Loss in the Paint Line Spray Booth (EPN 11)

		Overspray									
Annual	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		(1-Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)
VOC Emissions	22,000	X	2.32	X	20.00%	X	100.00%	X	100.00%	=	5.10 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		(1-Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)
	22,000	X	0.63	X	20.00%	X	100.00%	X	100.00%	=	1.39 tons Exempt Solvent/yr
		Parts									
Annual	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)
VOC Emissions	22,000	X	2.32	X	80.00%	X	35.00%	X	100.00%	=	7.15 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)
	22,000	X	0.63	X	80.00%	X	35.00%	X	100.00%	=	1.95 tons Exempt Solvent/yr
Total Annual Solvent Loss in the Paint Line Spray Booth											
VOC Emissions											12.25 tons VOC/yr
Exempt Solvent											3.33 tons Exempt Solvent/yr

Solvent Loss to Paint Line Open Conveyor (EPN 11)

		Parts									
Annual	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)
VOC Emissions	22,000	X	2.32	X	80.00%	X	1.00%	X	100.00%	=	0.20 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)
	22,000	X	0.63	X	80.00%	X	1.00%	X	100.00%	=	0.06 tons Exempt Solvent/yr

Solvent Loss to Paint Oven (EPN 11)

		Parts									
Annual	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)
VOC Emissions	22,000	X	2.32	X	80.00%	X	64.00%	X	100.00%	=	13.07 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)
	22,000	X	0.63	X	80.00%	X	64.00%	X	100.00%	=	3.56 tons Exempt Solvent/yr

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Stain Line Booth - EPNs RTO

Parameters	Overspray/Belt Cleaning EPN RTO		Spray Equipment Cleanup EPN RTO		Units	Information Source					
Product name	Hybrid Belt Cleaner		Acetone		--	Company Data					
Maximum Usage Rate	4.50		5.00		gal/hr	Company Data					
Annual Usage Rate	17,850		1,530		gal/yr	Company Data					
Maximum Solvent Density	8.345		6.59		lbs/gal	Assumed Worst Case					
Maximum VOC Content (Short-Term)	2.50		0.00		lbs/gal	SDS					
Maximum VOC Content (Annual)	2.50		0.00		lbs/gal	SDS					
Maximum Exempt Solvent Content (Short-Term)	7.51		6.59		lbs/gal	SDS					
Maximum Exempt Solvent Content (Annual)	7.51		6.59		lbs/gal	SDS					
VOC Control Efficiency	99.10%		99.10%		-	Test Data					
Collected to RTO	100.00%		100.00%		-						
Captured as Waste (short-term)	50.00%		50.00%		-	assuming 50% capture on a short-term and annual basis as material is collected in a collection bin below the conveyor belt; best management practices are in place					
Captured as Waste (annual)	50.00%		50.00%		-						
Emissions to EPN RTO - Overspray/Belt Cleaning											
Short-Term Criteria Pollutant Emission Rates											
VOC Emissions		Use Rate (gal/hr)	Max VOC Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total VOC Emissions (lbs/hr)
		4.50	X	2.50	X	100.00%	X	0.90%	X	50.00%	= 0.0507 lbs VOC/hr as CAS 111-76-2 2-butoxyethanol
Exempt Solvent		Use Rate (gal/hr)	Max Ex Solvent Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total Ex Solvent Emissions (lbs/hr)
		4.50	X	7.51	X	100.00%	X	0.90%	X	50.00%	= 0.1521 lbs Exempt Solvent/hr as CAS 67-64-1 acetone
Annual Criteria Pollutant Emission Rates											
VOC Emissions		Use Rate (gal/yr)	Max VOC Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total VOC Emissions (tons/yr)
		17,850	X	2.50	X	100.00%	X	0.90%	X	50.00%	= 0.1005 tons VOC/yr as CAS 111-76-2 2-butoxyethanol
Exempt Solvent		Use Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total Ex Solvent Emissions (tons/yr)
		17,850	X	7.51	X	100.00%	X	0.90%	X	50.00%	= 0.3016 tons Exempt Solvent/yr as CAS 67-64-1 acetone

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Emissions to EPN RTO - Spray Equipment Cleanup

Short-Term Criteria Pollutant Emission Rates

VOC Emissions

Use Rate (gal/hr)		Max VOC Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total VOC Emissions (lbs/hr)
5.00	X	0.00	X	100.00%	X	0.90%	X	50.00%	=	0.0000 lbs VOC/hr <i>no VOC</i>

Exempt Solvent

Use Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total Ex Solvent Emissions (lbs/hr)
5.00	X	6.59	X	100.00%	X	0.90%	X	50.00%	=	0.1483 lbs Exempt Solvent/hr <i>as CAS 67-64-1 acetone</i>

Annual Criteria Pollutant Emission Rates

VOC Emissions

Use Rate (gal/yr)		Max VOC Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total VOC Emissions (tons/yr)
1,530	X	0.00	X	100.00%	X	0.90%	X	50.00%	=	0.0000 tons VOC/yr <i>no VOC</i>

Exempt Solvent

Use Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total Ex Solvent Emissions (tons/yr)
1,530	X	6.59	X	100.00%	X	0.90%	X	50.00%	=	0.0227 tons Exempt Solvent/yr <i>as CAS 67-64-1 acetone</i>

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Clear Line - EPNs RTO

Parameters	Overspray/Belt Cleaning EPN RTO	Spray Equipment Cleanup EPN RTO	Units	Information Source
Product Name	50/50 Blend	'Virgin' Topcoat Clear Conversion Varnish 30 Sheen (no catalyst)		Company Data
Maximum Usage Rate	6.00	5.00	gal/hr	Company Data
Annual Usage Rate	24,480	1,275	gal/yr	Company Data
Maximum Solvent Density	7.09	7.67	lbs/gal	Assumed Worst Case
Maximum VOC Content (Short-Term)	7.09	4.62	lbs/gal	SDS
Maximum VOC Content (Annual)	7.09	4.62	lbs/gal	SDS
Maximum Exempt Solvent Content (Short-Term)	0.00	0.00	lbs/gal	SDS
Maximum Exempt Solvent Content (Annual)	0.00	0.00	lbs/gal	SDS
Maximum PM Content	--	3.05	lbs/gal	SDS
VOC Control Efficiency	99.10%	99.10%	-	Test Data
Percent Overspray	--	20.00%	-	TCEQ Guidance for Airless Application Equipment
Transfer Efficiency	--	80.00%	-	TCEQ Guidance for Airless Application Equipment
Filter Efficiency - Booth	--	99.00%	-	water filter
PM ₁₀ Filter Efficiency - Booth	--	99.00%	-	water filter
PM _{2.5} Filter Efficiency - Booth	--	99.00%	-	water filter
PM Fallout	--	98.56%	-	TCEQ Guidance for Airless Application Equipment
PM ₁₀ Fallout	--	99.87%	-	TCEQ Guidance for Airless Application Equipment
PM _{2.5} Fallout	--	99.99%	-	TCEQ Guidance for Airless Application Equipment
Collected to RTO	100.00%	100.00%	-	
Captured as Waste (short-term)	50.00%	50.00%	-	assuming 50% capture on a short-term and annual basis as material is collected in a collection bin below the conveyor belt; best management practices are in place
Captured as Waste (annual)	50.00%	50.00%	-	

Emissions to EPN RTO - Overspray/Belt Cleaning

Short-Term Criteria Pollutant Emission Rates

VOC Emissions

Use Rate (gal/hr)		Max VOC Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total VOC Emissions (lbs/hr)
6.00	X	7.09	X	100.00%	X	0.90%	X	50.00%	=	0.1914 lbs VOC/hr
				HAP		CAS 108-10-1		Methyl Isobutyl Ketone		0.0057 lb/hr
						CAS 123-86-4		n-butyl acetate		0.1149 lb/hr
						CAS 64-17-5		ethanol		0.0957 lb/hr
				HAP		CAS 67-56-1		methanol		0.0057 lb/hr
						CAS 67-63-0		2-propanol		0.0191 lb/hr

Exempt Solvent

Use Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total Ex Solvent Emissions (lbs/hr)
6.00	X	0.00	X	100.00%	X	0.90%	X	50.00%	=	0.0000 lbs Exempt Solvent/hr no exempt solvent

Annual Criteria Pollutant Emission Rates

VOC Emissions

Use Rate (gal/yr)		Max VOC Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total VOC Emissions (tons/yr)
24,480	X	7.09	X	100.00%	X	0.90%	X	50.00%	=	0.3905 tons VOC/yr
				HAP		CAS 108-10-1		Methyl Isobutyl Ketone		0.0117 ton/yr
						CAS 123-86-4		n-butyl acetate		0.2343 ton/yr
						CAS 64-17-5		ethanol		0.1953 ton/yr
				HAP		CAS 67-56-1		methanol		0.0117 ton/yr
						CAS 67-63-0		2-propanol		0.0391 ton/yr

Exempt Solvent

Use Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Collection Efficiency (%)		1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total Ex Solvent Emissions (tons/yr)
24,480	X	0.00	X	100.00%	X	0.90%	X	50.00%	=	0.0000 tons Exempt Solvent/yr no exempt solvent

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Emissions to EPN RTO - Spray Equipment Cleanup

Short-Term Criteria Pollutant Emission Rates

PM Emissions

Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
5.00	x	3.05	x	20.00%	x	1.00%	x	1.44%	=	0.0004 lb PM/hr

PM₁₀ Emissions

Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
5.00	x	3.05	x	20.00%	x	1.00%	x	0.13%	=	0.0000 lb PM₁₀/hr
Spray Rate (gal/hr)		Max Product Density (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		PM Wt% Factor (wt% lbs/hr)
5.00	x	7.67	x	20.00%	x	1.00%	x	0.13%	=	0.0001

CAS 119681-36-6	Polyester	0.0000 lb/hr
CAS 15467-06-8	Lithium Ricinoleate	0.0000 lb/hr
CAS 25973-55-1	Benzotriazole	0.0000 lb/hr
CAS 61791-92-2	Dipentylphenol	0.0000 lb/hr
	Defoamer	0.0000 lb/hr
CAS 64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	0.0000 lb/hr
CAS 67989-65-5	Polyester	0.0000 lb/hr
CAS 68002-18-6	Isobutylated Urea- Formaldehyde Polymer	0.0000 lb/hr
CAS 68002-20-0	Methylated Melamine- Formaldehyde Polymer	0.0000 lb/hr
CAS 7631-86-9	Amorphous Silica	0.0000 lb/hr
CAS 8002-74-2	Paraffin Wax	0.0000 lb/hr
CAS 9002-88-4	Polyethylene	0.0000 lb/hr
CAS 9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	0.0000 lb/hr
CAS Not Reported	Additive (As rheological additive (flow agent))	0.0000 lb/hr
CAS Not Reported	Defoamer	0.0000 lb/hr
	Glycol Ether (As glycol ether, generic, not otherwise specified)	0.0000 lb/hr
CAS Not Reported	Silicone Solids (As Silicone, Generic)	0.0000 lb/hr

HAP

PM_{2.5} Emissions

Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
5.00	x	3.05	x	20.00%	x	1.00%	x	0.01%	=	0.0000 lb PM_{2.5}/hr

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

VOC Emissions	Use Rate (gal/hr)	Max VOC Content (lbs/gal)	1 - VOC Control Eff. (%)	Total VOC Emissions (lbs/hr)	
	5.00	X 4.62	X 0.90%	=	0.2078 lbs VOC/hr
	Use Rate (gal/hr)	Max Product Density (lbs/gal)	1 - VOC Control Eff. (%)	VOC Wt% Factor (wt% lbs/hr)	
	5.00	X 7.67	X 0.90%	=	0.3453
	HAP	CAS 100-41-4	Ethylbenzene	0.0019	lb/hr
		CAS 108-67-8	1,3,5-Trimethylbenzene	0.0003	lb/hr
		CAS 109-60-4	n-Propyl Acetate	0.0020	lb/hr
		CAS 110-43-0	Methyl n-Amyl Ketone	0.0271	lb/hr
		CAS 123-86-4	n-butyl acetate	0.0425	lb/hr
	HAP	CAS 1330-20-7	Xylene	0.0104	lb/hr
	HAP	CAS 50-00-0	Formaldehyde	0.0005	lb/hr
		CAS 526-73-8	1,2,3-Trimethylbenzene	0.0001	lb/hr
		CAS 64-17-5	Ethanol	0.0317	lb/hr
		CAS 64742-82-1	Heavy Aliphatic Solvent	0.0023	lb/hr
		CAS 64742-88-7	Med. Aliphatic Hydrocarbon Solvent	0.0000	lb/hr
		CAS 64742-89-8	lt. aliphatic hydrocarbon solvent	0.0313	lb/hr
		CAS 64742-95-6	Light Aromatic Hydrocarbons	0.0008	lb/hr
		CAS 67-63-0	2-propanol	0.0016	lb/hr
		CAS 71-36-3	1-Butanol	0.0218	lb/hr
		CAS 763-69-9	Ethyl 3-Ethoxypropionate	0.0017	lb/hr
		CAS 78-83-1	2-methyl-1-propanol	0.0303	lb/hr
		CAS 95-63-6	1,2,4-Trimethylbenzene	0.0012	lb/hr
	HAP	CAS 98-82-8	Cumene	0.0002	lb/hr
Exempt Solvent	Use Rate (gal/hr)	Max Ex Solvent Content (lbs/gal)	1 - VOC Control Eff. (%)	Total Ex Solvent Emissions (lbs/hr)	
	5.00	X 0.00	X 0.90%	=	0.0000 lbs Exempt Solvent/hr no exempt solvent

Annual Criteria Pollutant Emission Rates

Table 6
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Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Paint Line - EPN 11

Parameters	Spray Equipment Cleanup EPN 11				Units	Information Source					
Product Name	Acetone		MEK			Company Data					
Maximum Usage Rate	4.00		3		gal/hr	Company Data					
Annual Usage Rate	1,020		765		gal/yr	Company Data					
Maximum Solvent Density	6.59		7.49		lbs/gal	Assumed Worst Case					
Maximum VOC Content (Short-Term)	0.00		7.49		lbs/gal	SDS					
Maximum VOC Content (Annual)	0.00		7.49		lbs/gal	SDS					
Maximum Exempt Solvent Content (Short-Term)	6.59		0.00		lbs/gal	SDS					
Maximum Exempt Solvent Content (Annual)	6.59		0.00		lbs/gal	SDS					
VOC Control Efficiency	0.00%		0.00%		-	Test Data					
Collected to EPN 11	100.00%		100.00%		-						
Captured as Waste (short-term)	0.00%		0.00%		-	cleaning solvent is sprayed onto paper roll; it is assumed that on a short-term basis that there is no capture for conservative purposes; however, on an annual basis a transfer efficiency from spray guns to paper is assumed to be 80% (captures as waste on paper)					
Captured as Waste (annual)	80.00%		80.00%		-						
Emissions to EPN 11 - Spray Equipment Cleanup											
Acetone											
Short-Term Criteria Pollutant Emission Rates											
		Use Rate (gal/hr)	Max VOC Content (lbs/gal)		Collection Efficiency (%)	1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total VOC Emissions (lbs/hr)	
VOC Emissions		4.00	X	0.00	X	100.00%	X	100.00%	X	100.00%	= 0.0000 lbs VOC/hr <i>no VOC</i>
		Use Rate (gal/hr)	Max Ex Solvent Content (lbs/gal)		Collection Efficiency (%)	1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total Ex Solvent Emissions (lbs/hr)	
Exempt Solvent		4.00	X	6.59	X	100.00%	X	100.00%	X	100.00%	= 26.3600 lbs Exempt Solvent/hr <i>as CAS 67-64-1 acetone</i>
Annual Criteria Pollutant Emission Rates											
		Use Rate (gal/yr)	Max VOC Content (lbs/gal)		Collection Efficiency (%)	1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total VOC Emissions (tons/yr)	
VOC Emissions		1,020	X	0.00	X	100.00%	X	100.00%	X	20.00%	= 0.0000 tons VOC/yr <i>no VOC</i>
		Use Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)		Collection Efficiency (%)	1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total Ex Solvent Emissions (tons/yr)	
Exempt Solvent		1,020	X	6.59	X	100.00%	X	100.00%	X	20.00%	= 0.6722 tons Exempt Solvent/yr <i>as CAS 67-64-1 acetone</i>
MEK											
Short-Term Criteria Pollutant Emission Rates											
		Use Rate (gal/hr)	Max VOC Content (lbs/gal)		Collection Efficiency (%)	1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total VOC Emissions (lbs/hr)	
VOC Emissions		3.00	X	7.49	X	100.00%	X	100.00%	X	100.00%	= 22.4700 lbs VOC/hr <i>as CAS 78-93-3 MEK</i>
		Use Rate (gal/hr)	Max Ex Solvent Content (lbs/gal)		Collection Efficiency (%)	1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total Ex Solvent Emissions (lbs/hr)	
Exempt Solvent		3.00	X	0.00	X	100.00%	X	100.00%	X	100.00%	= 0.0000 lbs Exempt Solvent/hr <i>no exempt solvent</i>
Annual Criteria Pollutant Emission Rates											
		Use Rate (gal/yr)	Max VOC Content (lbs/gal)		Collection Efficiency (%)	1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total VOC Emissions (tons/yr)	
VOC Emissions		765	X	7.49	X	100.00%	X	100.00%	X	20.00%	= 0.5730 tons VOC/yr <i>as CAS 78-93-3 MEK</i>
		Use Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)		Collection Efficiency (%)	1 - VOC Control Eff. (%)		(1-Captured as Waste) (%)		Total Ex Solvent Emissions (tons/yr)	
Exempt Solvent		765	X	0.00	X	100.00%	X	100.00%	X	20.00%	= 0.0000 tons Exempt Solvent/yr <i>no exempt solvent</i>

Table 7
Short-Term and Annual VOC, Exempt Solvent and PM Emissions
Coating Operations - Total Emissions by EPN

VOC

Coating Type	Emissions from Stain Line and Clear Line Spray Booths, Ovens, and Open Conveyor Belts to RTO EPN RTO		Emissions from Paint Line Spray Booth, Oven, and Open Conveyor Belt EPN 11	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Stain Line	0.0924	0.1040	--	--
Clear Line	0.6234	0.9351	--	--
Paint Line	--	--	60.3192	25.5197
Clean up Solvent	0.4499	0.5176	22.4700	0.5730
TOTAL	0.7158	1.5567	60.3192	26.0926

Exempt Solvent

Coating Type	Emissions from Stain Line and Clear Line Spray Booths, Ovens, and Open Conveyor Belts to RTO EPN RTO		Emissions from Paint Line Spray Booth, Oven, and Open Conveyor Belt EPN 11	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Stain Line	0.5569	0.5530	--	--
Clear Line	0.0000	0.0000	--	--
Paint Line	--	--	16.4198	6.9469
Clean up Solvent	0.3004	0.3243	26.3600	0.6722
TOTAL	0.5569	0.8773	26.3600	7.6190

Particulate Matter

Particulate Matter	Emissions from Spray Booths and Ovens to RTO EPN RTO		Emissions from Paint Line EPN 11	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
PM	0.0018	0.0021	0.0013	0.0020
PM ₁₀	0.0002	0.0002	0.0001	0.0002
PM _{2.5}	0.0000	0.0000	0.0000	0.0000

TABLE 8A
Short-Term VOC, Exempt Solvent, and PM Species Emission Rates
Stain Line with an Open Conveyor - EPN RTO

EPN RTO - Emissions from Stain Line Spray Booth

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Stain Line Booth Solvent Flash Fraction	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	13.00	8.44	62.00%	0.90%	0.6122	
PM Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	(1-T.E.) (%)	(1-F.E.) (%)	(1-Fallout) (%)	PM Wt% Factor (wt% lbs/hr)
	13.00	8.44	20.00%	0.17%	0.13%	0.0000

PM emissions only occur in the Stain Line Spray Booth
PM fallout values are based on PM₁₀ since TCEQ ESLs are for PM₁₀

EPN RTO - Stain Line - Emission from Open Conveyor

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Stain Line - Open Solvent Flash Fraction	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	13.00	8.44	5.00%	0.90%	0.0494	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

EPN RTO - Emissions from Stain Line Oven

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Stain Line Oven Solvent Flash Fraction	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	13.00	8.44	33.00%	0.90%	0.3259	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

					Stain Line Spray Booth EPN RTO		Stain Line Oven EPN RTO		Stain Line Open Conveyor EPN RTO		Stain Line Spray Booth, Open Conveyor, AND Oven EPN RTO
CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)
7732-18-5	Water	NE	No	97.44	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
104-15-4	4-Methylbenzenesulfonic Acid	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
1047-16-1	Quinacridone	P	No	0.17	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
112945-52-5	Fumed Amorphous Silica	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
119681-36-6	Polyester	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
12713-03-0	Umber	P	No	0.41	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
1309-37-1	iron oxide	P	No	1.40	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
1312-59-5	Clorite	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
1317-61-9	Iron Oxide	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
1332-58-7	Kaolin	P	No	0.03	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
1333-86-4	Carbon Black	P	No	0.93	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
13463-67-7	Titanium Dioxide	P	No	1.99	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
14807-96-6	Talc	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
14808-60-7	Crystalline Silica, respirable powder	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
15467-06-8	Lithium Ricinoleate	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
16389-88-1	Magnesium Calcium Carbonate	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
25973-55-1	Benzotriazole Dipentylphenol	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
2786-76-7	C.I. Pigment Red 170	P	No	0.15	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
51274-00-1	Iron Oxide	P	No	0.27	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.13	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
61791-92-2	Defoamer	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
669-11-6	Azo Brown	P	No	0.38	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
67989-65-5	Polyester	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
72797-02-5	Orange Dye	P	No	0.01	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
73003-33-5	C.I. Acid Red	P	No	0.09	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

					Stain Line Spray Booth EPN RTO		Stain Line Oven EPN RTO		Stain Line Open Conveyor EPN RTO		Stain Line Spray Booth, Open Conveyor, AND Oven EPN RTO
CAS No.	Species Name	Volatiles, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)
7631-86-9	Amorphous Silica	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
7727-43-7	Barium Sulfate	P	No	0.01	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
8002-74-2	Paraffin Wax	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
85711-46-2	Unsaturated Fatty Acids	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
857892-58-1	Polyoxyalkylene	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
9002-88-4	Polyethylene	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	0.14	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	0.07	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Additive (As rheological additive (flow agent))	P	No	0.11	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	0.02	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Defoamer	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Polysiloxane	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	0.00	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	0.26	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
100-41-4	Ethylbenzene	V	Yes	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
107-21-1	Ethylene Glycol	V	Yes	0.03	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
107-98-2	1-Methoxy-2-propanol	V	No	0.02	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
108-67-8	1,3,5-Trimethylbenzene	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
108-88-3	Toluene	V	Yes	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
109-60-4	n-Propyl Acetate	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
110-43-0	Methyl n-Amyl Ketone	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
111-76-2	2-Butoxyethanol	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
123-86-4	n-butyl acetate	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
1330-20-7	Xylene	V	Yes	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.26	0.6122	0.002	0.3259	0.001	0.0494	0.000	0.003
50-00-0	Formaldehyde	V	Yes	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
526-73-8	1,2,3-Trimethylbenzene	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
540-88-5	t-Butyl Acetate	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
57-55-6	Propylene Glycol	V	No	0.98	0.6122	0.006	0.3259	0.003	0.0494	0.000	0.010
64-17-5	Ethanol	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
64742-82-1	Heavy Aliphatic Solvent	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
67-56-1	Methanol	V	Yes	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
67-63-0	2-propanol	V	No	9.97	0.6122	0.061	0.3259	0.032	0.0494	0.005	0.098
67-64-1	Acetone	V	No	49.86	0.6122	0.305	0.3259	0.162	0.0494	0.025	0.492
71-36-3	1-Butanol	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
763-69-9	Ethyl 3-Ethoxypropionate	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
78-83-1	2-methyl-1-propanol	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
78-93-3	Meth Ethyl Ketone	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
8052-41-3	Stoddard Solvent	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
95-63-6	1,2,4-Trimethylbenzene	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
98-56-6	p-Chlorobenzotrifluoride	V	No	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000
98-82-8	Cumene	V	Yes	0.00	0.6122	0.000	0.3259	0.000	0.0494	0.000	0.000

TABLE 8B
Short-Term VOC, Exempt Solvent, and PM Species Emission Rates
Clear Line with an Open Conveyor - EPN RTO

EPN RTO - Emissions from Clear Line Spray Booth

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line Booth Solvent Flash Fraction	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	15.00	7.69	36.00%	0.90%	0.3735	
PM Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	(1-T.E.) (%)	(1-F.E.) (%)	(1-Fallout) (%)	PM Wt% Factor (wt% lbs/hr)
	15.00	7.69	20.00%	1.00%	0.13%	0.0003

PM emissions only occur in the Clear Line Spray Booth
PM fallout values are based on PM₁₀ since TCEQ ESLs are for PM₁₀

EPN RTO - Clear Line - Emission from Open Conveyor

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line - Open Solvent Flash Fraction	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	15.00	7.69	11.00%	0.90%	0.1141	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

EPN RTO - Emissions from Clear Line Oven

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line Oven Solvent Flash Fraction	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	15.00	7.69	53.00%	0.90%	0.5499	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

					Clear Line Spray Booth EPN RTO		Clear Line Oven EPN RTO		Clear Line Open Conveyor EPN RTO		Clear Line Spray Booth, Open Conveyor, AND Oven EPN RTO
CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)
7732-18-5	Water	NE	No	0.16	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
104-15-4	4-Methylbenzenesulfonic Acid	P	No	1.10	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
1047-16-1	Quinacridone	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
112945-52-5	Fumed Amorphous Silica	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
119681-36-6	Polyester	P	No	0.59	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
12713-03-0	Umber	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
1309-37-1	iron oxide	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
1312-59-5	Clorite	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
1317-61-9	Iron Oxide	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
1332-58-7	Kaolin	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
1333-86-4	Carbon Black	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
13463-67-7	Titanium Dioxide	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
14807-96-6	Talc	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
14808-60-7	Crystalline Silica, respirable powder	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
15467-06-8	Lithium Ricinoleate	P	No	0.02	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
16389-88-1	Magnesium Calcium Carbonate	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
25973-55-1	Benzotriazole Dipentylphenol	P	No	0.16	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
2786-76-7	C.I. Pigment Red 170	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
51274-00-1	Iron Oxide	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
61791-92-2	Defoamer	P	No	0.11	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.04	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
669-11-6	Azo Brown	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
67989-65-5	Polyester	P	No	21.22	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	11.69	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	3.72	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
72797-02-5	Orange Dye	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
73003-33-5	C.I. Acid Red	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Clear Line Spray Booth EPN RTO		Clear Line Oven EPN RTO		Clear Line Open Conveyor EPN RTO		Clear Line Spray Booth, Open Conveyor, AND Oven EPN RTO
					Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)
7631-86-9	Amorphous Silica	P	No	1.65	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
7727-43-7	Barium Sulfate	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
8002-74-2	Paraffin Wax	P	No	0.09	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
85711-46-2	Unsaturated Fatty Acids	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
857892-58-1	Polyoxyalkylene	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
9002-88-4	Polyethylene	P	No	0.07	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	0.05	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Additive (As rheological additive (flow agent))	P	No	0.12	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Defoamer	P	No	0.17	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	0.02	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Polysiloxane	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	0.05	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	0.00	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.000
100-41-4	Ethylbenzene	V	Yes	0.55	0.3735	0.002	0.5499	0.003	0.1141	0.001	0.006
107-21-1	Ethylene Glycol	V	Yes	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
107-98-2	1-Methoxy-2-propanol	V	No	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.06	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.001
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
108-67-8	1,3,5-Trimethylbenzene	V	No	0.09	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.001
108-88-3	Toluene	V	Yes	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
109-60-4	n-Propyl Acetate	V	No	0.57	0.3735	0.002	0.5499	0.003	0.1141	0.001	0.006
110-43-0	Methyl n-Amyl Ketone	V	No	7.86	0.3735	0.029	0.5499	0.043	0.1141	0.009	0.082
111-76-2	2-Butoxyethanol	V	No	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
123-86-4	n-butyl acetate	V	No	12.30	0.3735	0.046	0.5499	0.068	0.1141	0.014	0.128
1330-20-7	Xylene	V	Yes	3.02	0.3735	0.011	0.5499	0.017	0.1141	0.003	0.031
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
50-00-0	Formaldehyde	V	Yes	0.14	0.3735	0.001	0.5499	0.001	0.1141	0.000	0.001
526-73-8	1,2,3-Trimethylbenzene	V	No	0.03	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
540-88-5	t-Butyl Acetate	V	No	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
57-55-6	Propylene Glycol	V	No	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
64-17-5	Ethanol	V	No	10.77	0.3735	0.040	0.5499	0.059	0.1141	0.012	0.112
64742-82-1	Heavy Aliphatic Solvent	V	No	0.68	0.3735	0.003	0.5499	0.004	0.1141	0.001	0.007
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.01	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	9.08	0.3735	0.034	0.5499	0.050	0.1141	0.010	0.094
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.23	0.3735	0.001	0.5499	0.001	0.1141	0.000	0.002
67-56-1	Methanol	V	Yes	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
67-63-0	2-propanol	V	No	0.46	0.3735	0.002	0.5499	0.003	0.1141	0.001	0.005
67-64-1	Acetone	V	No	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
71-36-3	1-Butanol	V	No	6.32	0.3735	0.024	0.5499	0.035	0.1141	0.007	0.066
763-69-9	Ethyl 3-Ethoxypropionate	V	No	0.50	0.3735	0.002	0.5499	0.003	0.1141	0.001	0.005
78-83-1	2-methyl-1-propanol	V	No	8.77	0.3735	0.033	0.5499	0.048	0.1141	0.010	0.091
78-93-3	Methyl Ethyl Ketone	V	No	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
8052-41-3	Stoddard Solvent	V	No	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
95-63-6	1,2,4-Trimethylbenzene	V	No	0.36	0.3735	0.001	0.5499	0.002	0.1141	0.000	0.004
98-56-6	p-Chlorobenzotrifluoride	V	No	0.00	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.000
98-82-8	Cumene	V	Yes	0.05	0.3735	0.000	0.5499	0.000	0.1141	0.000	0.001

TABLE 8C
Short-Term VOC, Exempt Solvent, and PM Species Emission Rates
Pant Line with an Open Conveyor - EPN 11

EPN 11 - Emissions from Paint Line Spray Booth

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line Booth Solvent Flash Fraction	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	13.00	12.64	35.00%	100.00%	57.5120	
PM Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	(1-T.E.) (%)	(1-F.E.) (%)	(1-Fallout) (%)	PM Wt% Factor (wt% lbs/hr)
	13.00	12.64	20.00%	0.97%	0.13%	0.0004

PM emissions only occur in the Paint Line Spray Booth
PM fallout values are based on PM₁₀ since TCEQ ESLs are for PM₁₀

EPN 11 - Paint Line - Emissions from Open Conveyor

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line Booth Solvent Flash Fraction	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	13.00	12.64	1.00%	100.00%	1.6432	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

EPN 11 - Emissions from Paint Line Oven

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line Oven Solvent Flash Fraction	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	13.00	12.64	64.00%	100.00%	105.1648	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

					Paint Line Spray Booth EPN 11		Paint Line Oven EPN 11		Paint Line Open Conveyor EPN 11		Paint Line Spray Booth, Open Conveyor, AND Oven EPN 11
CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)
7732-18-5	Water	NE	No	36.12	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.000
104-15-4	4-Methylbenzenesulfonic Acid	P	No	2.27	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
1047-16-1	Quinacridone	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
112945-52-5	Fumed Amorphous Silica	P	No	0.31	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
119681-36-6	Polyester	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
12713-03-0	Umber	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
1309-37-1	Iron oxide	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
1312-59-5	Clorite	P	No	0.60	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
1317-61-9	Iron Oxide	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
1332-58-7	Kaolin	P	No	16.01	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
1333-86-4	Carbon Black	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
13463-67-7	Titanium Dioxide	P	No	50.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
14807-96-6	Talc	P	No	14.07	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
14808-60-7	Crystalline Silica, respirable powder	P	No	0.15	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
15467-06-8	Lithium Ricinoleate	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
16389-88-1	Magnesium Calcium Carbonate	P	No	0.15	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
25973-55-1	Benzotriazole Dipentylphenol	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
2786-76-7	C.I. Pigment Red 170	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
51274-00-1	Iron Oxide	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
61791-92-2	Defoamer	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
669-11-6	Azo Brown	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
67989-65-5	Polyester	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	10.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
72797-02-5	Orange Dye	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
73003-33-5	C.I. Acid Red	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

					Paint Line Spray Booth EPN 11		Paint Line Oven EPN 11		Paint Line Open Conveyor EPN 11		Paint Line Spray Booth, Open Conveyor, AND Oven EPN 11
CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)
7631-86-9	Amorphous Silica	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
7727-43-7	Barium Sulfate	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.06	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
8002-74-2	Paraffin Wax	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
85711-46-2	Unsaturated Fatty Acids	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
857892-58-1	Polyoxyalkylene	P	No	0.22	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
9002-88-4	Polyethylene	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	14.70	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Additive (As rheological additive (flow agent))	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Defoamer	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	0.41	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	0.05	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Polysiloxane	P	No	0.27	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	0.00	0.0004	0.000	0.0000	0.000	0.0000	0.000	0.000
100-41-4	Ethylbenzene	V	Yes	1.00	57.5120	0.575	105.1648	1.052	1.6432	0.016	1.643
107-21-1	Ethylene Glycol	V	Yes	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
107-98-2	1-Methoxy-2-propanol	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.13	57.5120	0.076	105.1648	0.139	1.6432	0.002	0.216
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
108-67-8	1,3,5-Trimethylbenzene	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
108-88-3	Toluene	V	Yes	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
109-60-4	n-Propyl Acetate	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
110-43-0	Methyl n-Amyl Ketone	V	No	6.02	57.5120	3.459	105.1648	6.326	1.6432	0.099	9.884
111-76-2	2-Butoxyethanol	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
123-86-4	n-butyl acetate	V	No	6.02	57.5120	3.459	105.1648	6.326	1.6432	0.099	9.884
1330-20-7	Xylene	V	Yes	5.00	57.5120	2.876	105.1648	5.258	1.6432	0.082	8.216
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
50-00-0	Formaldehyde	V	Yes	0.30	57.5120	0.173	105.1648	0.315	1.6432	0.005	0.493
526-73-8	1,2,3-Trimethylbenzene	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
540-88-5	t-Butyl Acetate	V	No	25.00	57.5120	14.378	105.1648	26.291	1.6432	0.411	41.080
57-55-6	Propylene Glycol	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
64-17-5	Ethanol	V	No	13.30	57.5120	7.646	105.1648	13.982	1.6432	0.218	21.846
64742-82-1	Heavy Aliphatic Solvent	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	0.03	57.5120	0.020	105.1648	0.037	1.6432	0.001	0.057
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.23	57.5120	0.132	105.1648	0.242	1.6432	0.004	0.378
67-56-1	Methanol	V	Yes	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
67-63-0	2-propanol	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
67-64-1	Acetone	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
71-36-3	1-Butanol	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
763-69-9	Ethyl 3-Ethoxypropionate	V	No	3.00	57.5120	1.725	105.1648	3.155	1.6432	0.049	4.930
78-63-1	2-methyl-1-propanol	V	No	5.00	57.5120	2.876	105.1648	5.258	1.6432	0.082	8.216
78-93-3	Methyl Ethyl Ketone	V	No	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000
8052-41-3	Stoddard Solvent	V	No	0.30	57.5120	0.173	105.1648	0.315	1.6432	0.005	0.493
95-63-6	1,2,4-Trimethylbenzene	V	No	0.30	57.5120	0.173	105.1648	0.315	1.6432	0.005	0.493
98-56-6	p-Chlorobenzotrifluoride	V	No	25.00	57.5120	14.378	105.1648	26.291	1.6432	0.411	41.080
98-82-8	Cumene	V	Yes	0.00	57.5120	0.000	105.1648	0.000	1.6432	0.000	0.000

Table 8D
Short-Term VOC, Exempt Solvent, and PM Species Emission Rates
Coating Booth - EPN Misc.SprayBooth (PBR Registration No. 74161)

Short-Term VOC Emissions Wt% Factor (Coating)	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	VOC Flashoff (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	0.50	12.64	100.00%	100.00%	6.32	
PM Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	(1-T.E.) (%)	(1-F.E.) (%)	(1-Fallout) (%)	PM Wt% Factor (wt% lbs/hr)
	0.50	12.64	35.00%	1.00%	10.00%	0.00221

PM fallout values are based on PM₁₀ since TCEQ ESLs are for PM₁₀

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)
7732-18-5	Water	NE	No	97.440	0.0000	0.0000
104-15-4	4-Methylbenzenesulfonic Acid	P	No	2.273	0.0022	0.0001
1047-16-1	Quinacridone	P	No	0.170	0.0022	0.0000
112945-52-5	Fumed Amorphous Silica	P	No	0.310	0.0022	0.0000
119681-36-6	Polyester	P	No	0.590	0.0022	0.0000
12713-03-0	Umber	P	No	0.410	0.0022	0.0000
1309-37-1	iron oxide	P	No	1.400	0.0022	0.0000
1312-59-5	Clorite	P	No	0.600	0.0022	0.0000
1317-61-9	Iron Oxide	P	No	0.000	0.0022	0.0000
1332-58-7	Kaolin	P	No	16.010	0.0022	0.0004
1333-86-4	Carbon Black	P	No	0.930	0.0022	0.0000
13463-67-7	Titanium Dioxide	P	No	50.000	0.0022	0.0011
14807-96-6	Talc	P	No	14.070	0.0022	0.0003
14808-60-7	Crystalline Silica, respirable powder	P	No	0.150	0.0022	0.0000
15467-06-8	Lithium Ricinoleate	P	No	0.020	0.0022	0.0000
16389-88-1	Magnesium Calcium Carbonate	P	No	0.150	0.0022	0.0000
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.000	0.0022	0.0000
25973-55-1	Benzotriazole Dipentylphenol	P	No	0.160	0.0022	0.0000
2786-76-7	C.I. Pigment Red 170	P	No	0.150	0.0022	0.0000
51274-00-1	Iron Oxide	P	No	0.270	0.0022	0.0000
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.130	0.0022	0.0000
61791-92-2	Defoamer	P	No	0.110	0.0022	0.0000
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.040	0.0022	0.0000
669-11-6	Azo Brown	P	No	0.380	0.0022	0.0000
67989-65-5	Polyester	P	No	21.220	0.0022	0.0005
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	11.690	0.0022	0.0003
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	3.720	0.0022	0.0001
72797-02-5	Orange Dye	P	No	0.010	0.0022	0.0000
73003-33-5	C.I. Acid Red	P	No	0.090	0.0022	0.0000
7631-86-9	Amorphous Silica	P	No	1.650	0.0022	0.0000
7727-43-7	Barium Sulfate	P	No	0.010	0.0022	0.0000
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.060	0.0022	0.0000
8002-74-2	Paraffin Wax	P	No	0.090	0.0022	0.0000
85711-46-2	Unsaturated Fatty Acids	P	No	0.000	0.0022	0.0000
857892-58-1	Polyoxyalkylene	P	No	0.220	0.0022	0.0000
9002-88-4	Polyethylene	P	No	0.070	0.0022	0.0000

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	0.140	0.0022	0.0000
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	0.050	0.0022	0.0000
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	14.700	0.0022	0.0003
Not Reported	Additive (As rheological additive (flow agent))	P	No	0.120	0.0022	0.0000
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	0.020	0.0022	0.0000
Not Reported	Defoamer	P	No	0.170	0.0022	0.0000
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	0.410	0.0022	0.0000
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	0.020	0.0022	0.0000
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	0.050	0.0022	0.0000
Not Reported	Polysiloxane	P	No	0.270	0.0022	0.0000
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	0.050	0.0022	0.0000
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	0.260	0.0022	0.0000
100-41-4	Ethylbenzene	V	Yes	1.000	6.3200	0.0632
107-21-1	Ethylene Glycol	V	Yes	0.030	6.3200	0.0019
107-98-2	1-Methoxy-2-propanol	V	No	0.020	6.3200	0.0013
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.132	6.3200	0.0083
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.000	6.3200	0.0000
108-67-8	1,3,5-Trimethylbenzene	V	No	0.090	6.3200	0.0057
108-88-3	Toluene	V	Yes	0.000	6.3200	0.0000
109-60-4	n-Propyl Acetate	V	No	0.570	6.3200	0.0360
110-43-0	Methyl n-Amyl Ketone	V	No	7.860	6.3200	0.4968
111-76-2	2-Butoxyethanol	V	No	0.000	6.3200	0.0000
123-86-4	n-butyl acetate	V	No	12.300	6.3200	0.7774
1330-20-7	Xylene	V	Yes	5.000	6.3200	0.3160
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.260	6.3200	0.0164
50-00-0	Formaldehyde	V	Yes	0.300	6.3200	0.0190
526-73-8	1,2,3-Trimethylbenzene	V	No	0.030	6.3200	0.0019
540-88-5	t-Butyl Acetate	V	No	25.000	6.3200	1.5800
57-55-6	Propylene Glycol	V	No	0.980	6.3200	0.0619
64-17-5	Ethanol	V	No	13.295	6.3200	0.8402
64742-82-1	Heavy Aliphatic Solvent	V	No	0.680	6.3200	0.0430
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.010	6.3200	0.0006
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	9.077	6.3200	0.5737
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.230	6.3200	0.0145
67-56-1	Methanol	V	Yes	0.000	6.3200	0.0000
67-63-0	2-propanol	V	No	9.970	6.3200	0.6301
67-64-1	Acetone	V	No	49.860	6.3200	3.1512
71-36-3	1-Butanol	V	No	6.320	6.3200	0.3994
763-69-9	Ethyl 3-Ethoxypropionate	V	No	3.000	6.3200	0.1896
78-83-1	2-methyl-1-propanol	V	No	8.770	6.3200	0.5543
78-93-3	Methy Ethyl Ketone	V	No	0.000	6.3200	0.0000
8052-41-3	Stoddard Solvent	V	No	0.300	6.3200	0.0190
95-63-6	1,2,4-Trimethylbenzene	V	No	0.360	6.3200	0.0228
98-56-6	p-Chlorobenzotrifluoride	V	No	25.000	6.3200	1.5800
98-82-8	Cumene	V	Yes	0.050	6.3200	0.0032

Table 9A																									
EPN/Source Grouping				Normal Operations (No Spray Equipment Cleanup) Maximum Speciated VOC and PM Off-Site Cumulative GLCs (ug/m ³)																					
Worst-Case Modeled Unit Impact (ug/m ³ /lb/hr)				EPN RTO						EPN 11		EPN Misc.SprayBooth													
				Stain Line Spray Booth, Open Conveyor, AND Oven	Clear Line Spray Booth, Open Conveyor, AND Oven	Stain Line Belt Cleaning	Clear Line Belt Cleaning	Stain and Clear Line Spray Booths AND Ovens		Paint Line Spray Booth, Open Conveyor, AND Oven		Paint Line Spray Booth AND Oven													
CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	GLCs (ug/m ³)	Emission Rate (LB/HR)	GLCs (ug/m ³)	Emission Rate (LB/HR)	GLCs (ug/m ³)	5/21/20 1-Hour ESL (ug/m ³)	Hourly Off-Site GLCs (ug/m ³)	Cumulative Fraction of Hourly ESL	Less than Hourly ESL? (Y/N)	5/21/20 Hourly ESL Basis (Health or Odor)	2018 Annual ESL (ug/m ³)	Annual Off-Site GLCs (ug/m ³)	Cumulative Fraction of Annual ESL	Less than Annual ESL? (Y/N)	5/21/20 Annual ESL Basis (Health or Odor)		
7732-18-5	Water	NE	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA		
104-15-4	4-Methylbenzenesulfonic Acid	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0001	0.0066	24	0.007	0.0003	Yes	Health	2.4	0.001	0.000	Yes	Health		
1047-16-1	Quinacridone	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health		
112945-52-5	Fumed Amorphous Silica	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0009	27	0.001	0.0000	Yes	Health	2	0.000	0.000	Yes	Health		
119681-36-6	Polyester	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0017	2	0.002	0.0009	Yes	NA	0.02	0.000	0.007	Yes	NA		
12713-03-0	Umbor	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012	Must Meet NAAQS	0.001	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health		
1309-37-1	iron oxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0041	Must Meet NAAQS	0.004	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health		
1312-59-5	Clorite	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0017	2	0.002	0.0009	Yes	NA	0.02	0.000	0.007	Yes	NA		
1317-61-9	Iron Oxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health		
1332-58-7	Kaolin	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0006	0.0004	0.0467	50	0.047	0.0009	Yes	Health	5	0.004	0.001	Yes	Health		
1333-86-4	Carbon Black	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0027	35	0.003	0.0001	Yes	Health	3.5	0.000	0.000	Yes	Health		
13463-67-7	Titanium Dioxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0019	0.0011	0.1458	50	0.148	0.0030	Yes	Health	5	0.012	0.002	Yes	Health		
14807-96-6	Talc	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0005	0.0003	0.0410	20	0.042	0.0021	Yes	Health	2	0.003	0.002	Yes	Health		
14808-60-7	Crystalline Silica, respirable powder	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	14	0.000	0.0000	Yes	Health	0.27	0.000	0.000	Yes	Health		
15467-06-8	Lithium Ricinoleate	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA		
16389-88-1	Magnesium Calcium Carbonate	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health		
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA		
25973-55-1	Benzotriazole Dipentylphenol	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	120	0.000	0.0000	Yes	Health	12	0.000	0.000	Yes	Health		
2786-76-7	C.I. Pigment Red 170	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health		
51274-00-1	Iron Oxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008	Must Meet NAAQS	0.001	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health		
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health		
61791-92-2	Defoamer	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	2	0.000	0.0002	Yes	NA	0.02	0.000	0.001	Yes	NA		
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	2	0.000	0.0001	Yes	NA	0.02	0.000	0.000	Yes	NA		
669-11-6	Azo Brown	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0011	2	0.001	0.0006	Yes	NA	0.02	0.000	0.004	Yes	NA		
67989-65-5	Polyester	P	No	0.0000	0.0001	0.0000	0.0000	0.0000	0.0013	0.0000	0.0000	0.0005	0.0619	2	0.063	0.0316	Yes	NA	0.02	0.005	0.253	Yes	NA		
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0004	0.0003	0.0341	Must Meet NAAQS	0.035	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.003	See NAAQS Analysis	Yes	Health		
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0001	0.0108	2	0.011	0.0055	Yes	NA	0.02	0.001	0.044	Yes	NA		
72797-02-5	Orange Dye	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA		
73003-33-5	C.I. Acid Red	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	2	0.000	0.0001	Yes	NA	0.02	0.000	0.001	Yes	NA		
7631-86-9	Amorphous Silica	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0048	27	0.005	0.0002	Yes	Health	2	0.000	0.000	Yes	Health		
7727-43-7	Barium Sulfate	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	50	0.000	0.0000	Yes	Health	5	0.000	0.000	Yes	Health		
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	50	0.000	0.0000	Yes	Health	5	0.000	0.000	Yes	Health		
8002-74-2	Paraffin Wax	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	1000	0.000	0.0000	Yes	Health	100	0.000	0.000	Yes	Health		
85711-46-2	Unsaturated Fatty Acids	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA		
857892-58-1	Polyoxyalkylene	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	Must Meet NAAQS	0.001	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health		

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Stain Line Spray Booth, Open Conveyor, AND Oven	Clear Line Spray Booth, Open Conveyor, AND Oven	Stain Line Belt Cleaning	Clear Line Belt Cleaning	Stain and Clear Line Spray Booths AND Ovens		Paint Line Spray Booth, Open Conveyor, AND Oven		Paint Line Spray Booth AND Oven		5/21/20 1-Hour ESL (ug/m³)	Hourly Off-Site GLCs (ug/m³)	Cumulative Fraction of Hourly ESL	Less than Hourly ESL? (Y/N)	5/21/20 Hourly ESL Basis (Health or Odor)	2018 Annual ESL (ug/m³)	Annual Off-Site GLCs (ug/m³)	Cumulative Fraction of Annual ESL	Less than Annual ESL? (Y/N)	5/21/20 Annual ESL Basis (Health or Odor)
				Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	GLCs (ug/m³)	Emission Rate (LB/HR)	GLCs (ug/m³)	Emission Rate (LB/HR)	GLCs (ug/m³)										
57-55-6	Propylene Glycol	V	No	0.0097	0.0000	0.0000	0.0000	0.0097	0.2005	0.0000	0.0000	0.0619	8.1632	1800	8.364	0.0046	Yes	Health	18	0.669	0.037	Yes	Health
64-17-5	Ethanol	V	No	0.0000	0.1117	0.0000	0.0957	0.2074	4.2976	21.8464	204.3513	0.8402	110.7445	18800	319.393	0.0170	Yes	Health	1880	25.551	0.014	Yes	Health
64742-82-1	Heavy Aliphatic Solvent	V	No	0.0000	0.0071	0.0000	0.0000	0.0071	0.1462	0.0000	0.0000	0.0430	5.6642	3500	5.810	0.0017	Yes	Health	350	0.465	0.001	Yes	Health
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.0000	0.0001	0.0000	0.0000	0.0001	0.0021	0.0000	0.0000	0.0006	0.0833	3500	0.085	0.0000	Yes	Health	350	0.007	0.000	Yes	Health
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	0.0000	0.0942	0.0000	0.0000	0.0942	1.9513	0.0573	0.5362	0.5737	75.6083	3500	78.096	0.0223	Yes	Health	350	6.248	0.018	Yes	Health
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.0000	0.0024	0.0000	0.0000	0.0024	0.0494	0.3779	3.5352	0.0145	1.9158	4400	5.501	0.0013	Yes	Health	54	0.440	0.008	Yes	Health
67-56-1	Methanol	V	Yes	0.0000	0.0000	0.0000	0.0057	0.0057	0.1190	0.0000	0.0000	0.0000	0.0000	3900	0.119	0.0000	Yes	Health	2100	0.010	0.000	Yes	Health
67-63-0	2-propanol	V	No	0.0985	0.0048	0.0000	0.0191	0.1224	2.5355	0.0000	0.0000	0.6301	83.0477	4920	85.583	0.0174	Yes	Health	492	6.847	0.014	Yes	Health
67-64-1	Acetone	V	No	0.4924	0.0000	0.1521	0.0000	0.6444	13.3529	0.0000	0.0000	3.1512	415.3218	7800	428.675	0.0550	Yes	Health	4800	34.294	0.007	Yes	Health
71-36-3	1-Butanol	V	No	0.0000	0.0656	0.0000	0.0000	0.0656	1.3587	0.0000	0.0000	0.3994	52.6441	610	54.003	0.0885	Yes	Health	61	4.320	0.071	Yes	Health
763-69-9	Ethyl 3-Ethoxypropionate	V	No	0.0000	0.0052	0.0000	0.0000	0.0052	0.1075	4.9296	46.1115	0.1896	24.9893	270	71.208	0.2637	Yes	Health	27	5.697	0.211	Yes	Health
78-83-1	2-methyl-1-propanol	V	No	0.0000	0.0910	0.0000	0.0000	0.0910	1.8854	8.2160	76.8525	0.5543	73.0520	1500	151.790	0.1012	Yes	Health	150	12.143	0.081	Yes	Health
78-93-3	Methy Ethyl Ketone	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	18000	0.000	0.0000	Yes	Health	2600	0.000	0.000	Yes	Health
8052-41-3	Stoddard Solvent	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4930	4.6111	0.0190	2.4989	3500	7.110	0.0020	Yes	Health	350	0.569	0.002	Yes	Health
95-63-6	1,2,4-Trimethylbenzene	V	No	0.0000	0.0037	0.0000	0.0000	0.0037	0.0774	0.4930	4.6111	0.0228	2.9987	4400	7.687	0.0017	Yes	Health	54	0.615	0.011	Yes	Health
98-56-6	p-Chlorobenzotrifluoride	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	41.0800	384.2623	1.5800	208.2440	1830	592.506	0.3238	Yes	Health	183	47.401	0.259	Yes	Health
98-82-8	Cumene	V	Yes	0.0000	0.0005	0.0000	0.0000	0.0005	0.0107	0.0000	0.0000	0.0032	0.4165	650	0.427	0.0007	Yes	Odor	250	0.034	0.000	Yes	Health

If a species does not have an ESL, no impacts analysis is required. See the Modeling and Effects Review and Analysis Guidance document which is located at:

<https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/mra.pdf>

Refer to review Step 0

Table 9B
Spray Equipment Cleanup Maximum Speciated VOC and PM Off-Site Cumulative GLCs (ug/m³)

EPN/Source Grouping

Worst-Case Modeled Unit Impact (ug/m³/lb/hr)

EPN RTO

20.72

EPN 11

9.35

				EPN RTO				EPN 11											
CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Stain Line Spray Booth - Equipment Cleaning	Clear Line Spray Booth - Equipment Cleaning	Stain and Clear Line Spray Booths - Equipment Cleaning		Paint Line Spray Booth - Equipment Cleaning		5/21/20 1-Hour ESL (ug/m ³)	Hourly Off-Site GLCs (ug/m ³)	Cumulative Fraction of Hourly ESL	Less than Hourly ESL? (Y/N)	5/21/20 Hourly ESL Basis (Health or Odor)	2018 Annual ESL (ug/m ³)	Annual Off-Site GLCs (ug/m ³)	Cumulative Fraction of Annual ESL	Less than Annual ESL? (Y/N)	5/21/20 Annual ESL Basis (Health or Odor)
				Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	GLCs (ug/m ³)	Emission Rate (LB/HR)	GLCs (ug/m ³)										
7732-18-5	Water	NE	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
104-15-4	4-Methylbenzenesulfonic Acid	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	24	0.000	0.0000	Yes	Health	2.4	0.000	0.000	Yes	Health
1047-16-1	Quinacridone	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
112945-52-5	Fumed Amorphous Silica	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	27	0.000	0.0000	Yes	Health	2	0.000	0.000	Yes	Health
119681-36-6	Polyester	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
12713-03-0	Umber	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
1309-37-1	Iron oxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
1312-59-5	Clorite	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
1317-61-9	Iron Oxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
1332-58-7	Kaolin	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	50	0.000	0.0000	Yes	Health	5	0.000	0.000	Yes	Health
1333-86-4	Carbon Black	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	35	0.000	0.0000	Yes	Health	3.5	0.000	0.000	Yes	Health
13463-67-7	Titanium Dioxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	50	0.000	0.0000	Yes	Health	5	0.000	0.000	Yes	Health
14807-96-6	Talc	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	20	0.000	0.0000	Yes	Health	2	0.000	0.000	Yes	Health
14808-60-7	Crystalline Silica, respirable powder	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	14	0.000	0.0000	Yes	Health	0.27	0.000	0.000	Yes	Health
15467-06-8	Lithium Ricinoleate	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
16389-88-1	Magnesium Calcium Carbonate	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
25973-55-1	Benzotriazole Dipentylphenol	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	120	0.000	0.0000	Yes	Health	12	0.000	0.000	Yes	Health
2786-76-7	C.I. Pigment Red 170	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
51274-00-1	Iron Oxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
61791-92-2	Defoamer	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	2	0.000	0.0002	Yes	NA	0.02	0.000	0.002	Yes	NA
669-11-6	Azo Brown	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
67989-65-5	Polyester	P	No	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	2	0.000	0.0002	Yes	NA	0.02	0.000	0.002	Yes	NA
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
72797-02-5	Orange Dye	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
73003-33-5	C.I. Acid Red	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
7631-86-9	Amorphous Silica	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	27	0.000	0.0000	Yes	Health	2	0.000	0.000	Yes	Health
7727-43-7	Barium Sulfate	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	50	0.000	0.0000	Yes	Health	5	0.000	0.000	Yes	Health
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	50	0.000	0.0000	Yes	Health	5	0.000	0.000	Yes	Health
8002-74-2	Paraffin Wax	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1000	0.000	0.0000	Yes	Health	100	0.000	0.000	Yes	Health
85711-46-2	Unsaturated Fatty Acids	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
857892-58-1	Polyoxyalkylene	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
9002-88-4	Polyethylene	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1000	0.000	0.0000	Yes	Health	100	0.000	0.000	Yes	Health
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1000	0.000	0.0000	Yes	Health	100	0.000	0.000	Yes	Health
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Additive (As rheological additive (flow agent))	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Defoamer	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Polysiloxane	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
100-41-4	Ethylbenzene	V	Yes	0.0000	0.0019	0.0019	0.0393	0.0000	0.0000	26000	0.039	0.0000	Yes	Health	570	0.003	0.000	Yes	Health
107-21-1	Ethylene Glycol	V	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	450	0.000	0.0000	Yes	Health	4.5	0.000	0.000	Yes	Health
107-98-2	1-Methoxy-2-propanol	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3700	0.000	0.0000	Yes	Health	370	0.000	0.000	Yes	Health

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Stain Line Spray Booth - Equipment Cleaning	Clear Line Spray Booth - Equipment Cleaning	Stain and Clear Line Spray Booths - Equipment Cleaning		Paint Line Spray Booth - Equipment Cleaning		5/21/20 1-Hour ESL (ug/m³)	Hourly Off-Site GLCs (ug/m³)	Cumulative Fraction of Hourly ESL	Less than Hourly ESL? (Y/N)	5/21/20 Hourly ESL Basis (Health or Odor)	2018 Annual ESL (ug/m³)	Annual Off-Site GLCs (ug/m³)	Cumulative Fraction of Annual ESL	Less than Annual ESL? (Y/N)	5/21/20 Annual ESL Basis (Health or Odor)
				Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	GLCs (ug/m³)	Emission Rate (LB/HR)	GLCs (ug/m³)										
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	820	0.000	0.0000	Yes	Health	82	0.000	0.000	Yes	Health
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
108-67-8	1,3,5-Trimethylbenzene	V	No	0.0000	0.0003	0.0003	0.0064	0.0000	0.0000	4400	0.006	0.0000	Yes	Health	54	0.001	0.000	Yes	Health
108-88-3	Toluene	V	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	4500	0.000	0.0000	Yes	Health	1200	0.000	0.000	Yes	Health
109-60-4	n-Propyl Acetate	V	No	0.0000	0.0020	0.0020	0.0408	0.0000	0.0000	8350	0.041	0.0000	Yes	Health	835	0.003	0.000	Yes	Health
110-43-0	Methyl n-Amyl Ketone	V	No	0.0000	0.0271	0.0271	0.5623	0.0000	0.0000	4500	0.562	0.0001	Yes	Health	840	0.045	0.000	Yes	Health
111-76-2	2-Butoxyethanol	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2900	0.000	0.0000	Yes	Health	3700	0.000	0.000	Yes	Health
123-86-4	n-butyl acetate	V	No	0.0000	0.0425	0.0425	0.8800	0.0000	0.0000	11000	0.880	0.0001	Yes	Health	1400	0.070	0.000	Yes	Health
1330-20-7	Xylene	V	Yes	0.0000	0.0104	0.0104	0.2161	0.0000	0.0000	2200	0.216	0.0001	Yes	Health	180	0.017	0.000	Yes	Health
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2200	0.000	0.0000	Yes	Health	220	0.000	0.000	Yes	Health
50-00-0	Formaldehyde	V	Yes	0.0000	0.0005	0.0005	0.0100	0.0000	0.0000	15	0.010	0.0007	Yes	Health	3.3	0.001	0.000	Yes	Health
526-73-8	1,2,3-Trimethylbenzene	V	No	0.0000	0.0001	0.0001	0.0021	0.0000	0.0000	4400	0.002	0.0000	Yes	Health	54	0.000	0.000	Yes	Health
540-88-5	t-Butyl Acetate	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	9500	0.000	0.0000	Yes	Health	950	0.000	0.000	Yes	Health
57-55-6	Propylene Glycol	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1800	0.000	0.0000	Yes	Health	18	0.000	0.000	Yes	Health
64-17-5	Ethanol	V	No	0.0000	0.0317	0.0317	0.6560	0.0000	0.0000	18800	0.656	0.0000	Yes	Health	1880	0.052	0.000	Yes	Health
64742-82-1	Heavy Aliphatic Solvent	V	No	0.0000	0.0023	0.0023	0.0486	0.0000	0.0000	3500	0.049	0.0000	Yes	Health	350	0.004	0.000	Yes	Health
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	3500	0.001	0.0000	Yes	Health	350	0.000	0.000	Yes	Health
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	0.0000	0.0313	0.0313	0.6482	0.0000	0.0000	3500	0.648	0.0002	Yes	Health	350	0.052	0.000	Yes	Health
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.0000	0.0008	0.0008	0.0165	0.0000	0.0000	4400	0.016	0.0000	Yes	Health	54	0.001	0.000	Yes	Health
67-56-1	Methanol	V	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3900	0.000	0.0000	Yes	Health	2100	0.000	0.000	Yes	Health
67-63-0	2-propanol	V	No	0.0000	0.0016	0.0016	0.0329	0.0000	0.0000	4920	0.033	0.0000	Yes	Health	492	0.003	0.000	Yes	Health
67-64-1	Acetone	V	No	0.1483	0.0000	0.1483	3.0723	26.3600	246.5714	7800	249.644	0.0320	Yes	Health	4800	19.971	0.004	Yes	Health
71-36-3	1-Butanol	V	No	0.0000	0.0218	0.0218	0.4521	0.0000	0.0000	610	0.452	0.0007	Yes	Health	61	0.036	0.001	Yes	Health
763-69-9	Ethyl 3-Ethoxypropionate	V	No	0.0000	0.0017	0.0017	0.0358	0.0000	0.0000	270	0.036	0.0001	Yes	Health	27	0.003	0.000	Yes	Health
78-83-1	2-methyl-1-propanol	V	No	0.0000	0.0303	0.0303	0.6274	0.0000	0.0000	1500	0.627	0.0004	Yes	Health	150	0.050	0.000	Yes	Health
78-93-3	Methy Ethyl Ketone	V	No	0.0000	0.0000	0.0000	0.0000	22.4700	210.1844	18000	210.184	0.0117	Yes	Health	2600	16.815	0.006	Yes	Health
8052-41-3	Stoddard Solvent	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3500	0.000	0.0000	Yes	Health	350	0.000	0.000	Yes	Health
95-63-6	1,2,4-Trimethylbenzene	V	No	0.0000	0.0012	0.0012	0.0258	0.0000	0.0000	4400	0.026	0.0000	Yes	Health	54	0.002	0.000	Yes	Health
98-56-6	p-Chlorobenzotrifluoride	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1830	0.000	0.0000	Yes	Health	183	0.000	0.000	Yes	Health
98-82-8	Cumene	V	Yes	0.0000	0.0002	0.0002	0.0036	0.0000	0.0000	650	0.004	0.0000	Yes	Odor	250	0.000	0.000	Yes	Health

If a species does not have an ESL, no impacts analysis is required. See the Modeling and Effects Review and Analysis Guidance document which is located at:

<https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/mera.pdf>

Refer to review Step 0

Table 10
Products of Combustion

Unit Name	Emission Point	Firing Rate (MMBTU/hr)	Fuel Type	Fuel HHV (BTU/SCF)	Operating Schedule (HR/YR)	Firing Rate Between (MMBTU/HR)	NOx Emission Factor (LB/MMSCF)	CO Emission Factor (LB/MMSCF)	TOC Emission Factor (LB/MMSCF)	PM Emission Factor (LB/MMSCF)	SO ₂ Emission Factor (LB/MMSCF)	Hourly NOx Emissions (LB/HR)	Hourly CO Emissions (LB/HR)	Hourly TOC Emissions (LB/HR)	Hourly PM Emissions (LB/HR)	Hourly SO ₂ Emissions (LB/HR)	Annual NOx Emissions (TPY)	Annual CO Emissions (TPY)	Annual TOC Emissions (TPY)	Annual PM Emissions (TPY)	Annual SO ₂ Emissions (TPY)	
Regenerative Thermal Oxidizer	RTO	6.000	NG	1020	8,760		100	84	11	7.6	0.6	0.59	0.49	0.06	0.04	0.00	2.58	2.16	0.28	0.20	0.02	
Make Up Air Heater	RTO	5.500	NG	1020	8760		100	84	11	7.6	0.6	0.54	0.45	0.06	0.04	0.00	2.36	1.98	0.26	0.18	0.01	
RTO Total	RTO	--	--	--	--	--	--	--	--	--	--	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	
Boiler	5	4.500	NG	1020	8760		100	84	11	7.6	0.6	0.44	0.37	0.05	0.03	0.00	1.93	1.62	0.21	0.15	0.01	
Space Heaters	8	0.960	NG	1020	8760		100	84	11	7.6	0.6	0.09	0.08	0.01	0.01	0.00	0.41	0.35	0.05	0.03	0.00	
16.960												Total	1.66	1.58	1.19	1.17	1.13	3.47	3.10	1.39	1.31	1.14

Emission Factors from AP-42 for Natural Gas, Section 1.4, 5th Edition, Supplement E

Table 13
Modeling Input Parameters

Short-Term Impacts Analysis and NAAQS Screening Analysis

Source	Source EPN	Source Type	Zone	X Coordinate (UTM meters)	Y Coordinate (UTM meters)	Emission Rate (lbs/hr)	Stack/ Release Height ³ (ft)	Stack Inside Diameter ¹ (ft)	Stack Flow Rate (cfm)	Stack Flow Rate (acfm)	Stack Exit Velocity ² (ft/s)	Stack Exit Temperature ("F)	Dispersion Coefficient Urban/ Rural Option	Building Height (ft)	Building Width (ft)	Building Length (ft)	L (ft)	Region of Building Influence (5L) (ft)	Area or Volume Length (ft)	Area or Volume Width (ft)	Area Axis (Degrees)	Minimum Distance from Property Line (ft)	Building Cavity Zone (3L) (ft)	Property Line Within Cavity Zone? (Yes/No)	Cavity Calculation Required? (Yes/No)
Regenerative Thermal Oxidizer	RTO	Point	14	540865.75	3252916.95	1.000	35.00	3.63	--	--	32.83	127.9	Rural	25	307	675.21	25	125.0	NA	NA	--	54.17	75	YES	YES
Paint Line - Spray Booth	EPN 11	Point	14	540841.88	3252903.01	1.000	47.00	2.10	--	13.542	65.16	150.0	Rural	25	307	675.21	25	125.0	NA	NA	--	130.00	75	NO	NO
Miscellaneous Spray Booth	EPN Misc.SprayBooth	Point	14	540846.04	3252859.48	1.000	31.00	2.00	--	6,077	32.24	ambient	Rural	25	307	675.21	25	125.0	NA	NA	--	78.46	75	NO	NO
Boiler	EPN 5	Pseudo Point	14	540852.35	3252861.44	1.000	27.75	0.0033	--	--	0.0033	219	Rural	25	307	675.21	25	125.0	NA	NA	--	82.02	75	NO	NO
Baghouse	EPN 7	Pseudo Point	14	540877.77	3253011.47	1.000	35.00	0.0033	--	--	0.0033	ambient	Rural	25	307	675.21	25	125.0	NA	NA	--	47.30	75	YES	YES
Wood Glue and Space Heater Fugitives	EPN 8	Volume	14	540855.12	3252866.64	1.000	12.50	--	--	--	--	--	Rural	25	307	675.21	25	125.0	162	162	--	67.70	75	YES	YES

Pseudo Point Sources

¹ Stack inside diameter revised to 0.001 meters per TCEQ guidance memo for Modeling Fugitive Emissions as Pseudo-Point Sources dated July 25, 1997.
² Stack exit velocity revised to 0.001 meters/sec per TCEQ guidance memo for Modeling Fugitive Emissions as Pseudo-Point Sources dated July 25, 1997.
³ Stack height for pseudo point sources may either be 1.0 meters or the actual release height for horizontal discharges and stacks with rain hats or gooseneck exhaust. Please contact TCEQ for additional guidance for other situations.

TCEQ memo on pseudo-point sources: <https://www.tceq.texas.gov/assets/public/permitting/air/memos/pseudopt.pdf>

Area Sources

³ Stack height for area sources is set to either one half of the over head door height or the structure. Please contact TCEQ for additional guidance for other situations.

Volume Sources

Volume source length and width are based on the EPA SCREEN3 Users Guide - EPA - 454/B-95-004, Table 1

SCREEN3 user guide: <https://www3.epa.gov/scram001/userg/screen/screen3d.pdf>

SUMMARY OF SUGGESTED PROCEDURES FOR ESTIMATING INITIAL LATERAL DIMENSIONS σ_{yo} AND INITIAL VERTICAL DIMENSIONS σ_{zo} FOR VOLUME AND LINE SOURCES	
Type of Source	Procedure for Obtaining Initial Dimension
(a) Initial Lateral Dimensions (σ_{yo})	
Single Volume Source	σ_{yo} = length of side divided by 4.3
Line Source Represented by Adjacent Volume Sources (see Figure 1-8(a))	σ_{yo} = length of side divided by 2.15
Line Source Represented by Separated Volume Sources (see Figure 1-8(b))	σ_{yo} = center to center distance divided by 2.15
(b) Initial Vertical Dimensions (σ_{zo})	
Surface-Based Source ($h_e \sim 0$)	σ_{zo} = vertical dimension of source divided by 2.15
Elevated Source ($h_e > 0$) on or Adjacent to a Building	σ_{zo} = building height divided by 2.15
Elevated Source ($h_e > 0$) not on or Adjacent to a Building	σ_{zo} = vertical dimension of source divided by 4.3

For volume sources, the base of the volume must be square.
For a building 150 ft x 100 ft the dimensions of a square with an equal area is (L2 + W2)*0.5 = 122.47 ft
 σ_{y0} = 122.47 ft + 4.30 = 28.48 ft
 σ_{z0} = 27 ft + 2.15 = 12.55 ft

Table 17
Emission Distributions for Conveyorized Painting Operations

Emission distributions are based on the following:

1. Conveyor Speed
2. Distance Traveled between Process/Transfer Points
3. Coating Type
4. AP-40 Figure 655 or Site Specific Flashoff Testing

Painting Operation	Coating Type	Flashoff Curve No. from Figure 655	Conveyor Speed (Ft/Min)	Distance Traveled (Ft)	Transfer No. 1			Transfer No. 2				Transfer No. 3
					Time between Start of Painting until Parts Exit the Booth (Min)	Total Solvent Loss from Figure 655 (%)	Loss between Start of Painting and Booth Exit (%)	Distance Traveled (Ft)	Time between Exiting Booth until Oven Entry (Min)	Total Solvent Loss from Figure 655 (%)	Solvent Loss between Booth Exit and Oven Entry (%)	Solvent Loss in Oven (%)
Stain	Stain	3	24	96	1.00	62.00	62.00	25.00	1.04	67.00	5.00	33.00
Clear	Clear	4	18	120	0.74	36.00	36.00	45.00	2.50	47.00	11.00	53.00
Paint	Primer	4	14.5	87	0.50	36.00	35.00	4.42	0.30	36.00	1.00	64.00

Transfer No. 1 represents the solvent loss between the start of coating application in the booth until the part exits the booth.

Transfer No. 2 represents the solvent loss on the conveyor between the booth and the oven.

Transfer No. 3 represents the solvent loss from the oven.

Table 18
Enclosure Capture Velocities

Emission Capture Criteria

Criteria Source	Face Velocity for Capture (ft/min)	Source
TCEQ	100	Capture velocity guidance
EPA Procedure T	200	Capture velocity for permanent total enclosures (referenced in 40 CFR 63 - MACT)
ACGIH Industrial Ventilation	100-200	Table 6-2, 28th edition

Process	Ventilation System Flow Rate (CFM)	Number of Enclosure Openings	Enclosure Opening Width (ft.)	Enclosure Opening Height (ft.)	Enclosure Open Area (sq. ft.)	Area of Other Openings (sq. ft.)	Total Flow Area (sq. ft.)	Face Velocity Across Openings (ft/min)	Subject to MACT (Yes/No)	VOC Emission Controls Required to Meet MACT	Applicable Capture Velocity (ft/min)
Roll up door		1	9.00	0.13	1.13	0	1.13	0			
Front Door		1	9.92	0.13	1.29	0	1.29	0			
Walk-in door to waste area		1	3.70	7.00	25.90	0	25.90	0			
Total NDO					28.31			202	No	No	100
Air Make up Heater (EPN 6)	-50,000										
Dust Collector Vents	5,000										
Makor (EPN 10)	13,500										
Miscellaneous Booth	7,500										
Cooling zone 4, vertical oven	4,709										
RTO (EPN RTO)	25,000										
Stain Line Oven		2	4.75	0.42	3.96	0	3.96	0	No	No	100
Clean Line Booth		2	6.83	0.67	9.11	0	9.11	0	No	No	100
Clear Line Oven		2	4.75	0.42	3.96	0	3.96	0	No	No	100
Paint Line Booth (total)		--	--	--	2.83	0	2.83	0	No	No	100
Paint Line Booth (opening at inlet)		1	6.17	0.29	1.80	--	--	--	--	--	--
Paint Line Booth (opening at outlet)		1	6.17	0.17	1.03	--	--	--	--	--	--
Paint Line Oven		--	--	--	3.52	0	3.52	0	No	No	100
Paint Line Oven (opening at inlet)		1	6.17	0.25	1.54	--	--	--	--	--	--
Paint Line Oven (opening at outlet)		1	4.75	0.42	1.98	--	--	--	--	--	--

09/12/20
16:23:59

*** SCREEN3 MODEL RUN ***
 *** VERSION DATED 13043 ***

EPN 5 - Boiler

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
 EMISSION RATE (G/S) = 0.126000
 STACK HEIGHT (M) = 8.4582
 STK INSIDE DIAM (M) = 0.0010
 STK EXIT VELOCITY (M/S) = 0.0010
 STK GAS EXIT TEMP (K) = 377.0000
 AMBIENT AIR TEMP (K) = 293.0000
 RECEPTOR HEIGHT (M) = 0.0000
 URBAN/RURAL OPTION = RURAL
 BUILDING HEIGHT (M) = 7.6200
 MIN HORIZ BLDG DIM (M) = 93.5736
 MAX HORIZ BLDG DIM (M) = 205.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BOUY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

 *** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
25.	725.5	4	1.0	1.0	320.0	8.46	2.81	5.18	SS
100.	391.2	6	1.0	1.0	10000.0	8.46	7.33	8.95	SS
200.	256.9	6	1.0	1.0	10000.0	8.46	10.85	10.22	SS
300.	189.2	6	1.0	1.0	10000.0	8.46	14.26	11.15	SS
400.	147.0	6	1.0	1.0	10000.0	8.46	17.60	12.18	SS
500.	118.6	6	1.0	1.0	10000.0	8.46	20.87	13.18	SS
600.	99.58	6	1.0	1.0	10000.0	8.46	24.10	13.88	SS
700.	84.54	6	1.0	1.0	10000.0	8.46	27.28	14.76	SS
800.	72.96	6	1.0	1.0	10000.0	8.46	30.43	15.60	SS
900.	63.81	6	1.0	1.0	10000.0	8.46	33.54	16.41	SS

SCREEN3 EPN 5 Boiler Pseudo Pt Full Met 091220

1000.	56.42	6	1.0	1.0	10000.0	8.46	36.62	17.20	SS
1100.	50.35	6	1.0	1.0	10000.0	8.46	39.68	17.97	SS
1200.	45.29	6	1.0	1.0	10000.0	8.46	42.70	18.73	SS
1300.	41.02	6	1.0	1.0	10000.0	8.46	45.71	19.46	SS
1400.	37.38	6	1.0	1.0	10000.0	8.46	48.70	20.18	SS
1500.	34.24	6	1.0	1.0	10000.0	8.46	51.66	20.88	SS
1600.	31.52	6	1.0	1.0	10000.0	8.46	54.61	21.58	SS
1700.	29.89	6	1.0	1.0	10000.0	8.46	57.54	21.60	SS
1800.	27.81	6	1.0	1.0	10000.0	8.46	60.45	22.18	SS
1900.	25.97	6	1.0	1.0	10000.0	8.46	63.35	22.75	SS
2000.	24.32	6	1.0	1.0	10000.0	8.46	66.24	23.31	SS
2100.	22.84	6	1.0	1.0	10000.0	8.46	69.10	23.86	SS
2200.	21.51	6	1.0	1.0	10000.0	8.46	71.96	24.40	SS
2300.	20.31	6	1.0	1.0	10000.0	8.46	74.80	24.93	SS
2400.	19.21	6	1.0	1.0	10000.0	8.46	77.63	25.45	SS
2500.	18.21	6	1.0	1.0	10000.0	8.46	80.45	25.96	SS
2600.	17.30	6	1.0	1.0	10000.0	8.46	83.26	26.46	SS
2700.	16.46	6	1.0	1.0	10000.0	8.46	86.05	26.95	SS
2800.	15.98	6	1.0	1.0	10000.0	8.46	88.84	26.89	SS
2900.	15.27	6	1.0	1.0	10000.0	8.46	91.61	27.32	SS
3000.	14.63	6	1.0	1.0	10000.0	8.46	94.38	27.73	SS
3500.	12.01	6	1.0	1.0	10000.0	8.46	108.07	29.68	SS
4000.	10.11	6	1.0	1.0	10000.0	8.46	121.55	31.48	SS
4500.	8.677	6	1.0	1.0	10000.0	8.46	134.85	33.18	SS
5000.	7.564	6	1.0	1.0	10000.0	8.46	147.99	34.78	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 25. M:
 25. 725.5 4 1.0 1.0 320.0 8.46 2.81 5.18 SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 * SUMMARY OF TERRAIN HEIGHTS ENTERED FOR *
 * SIMPLE ELEVATED TERRAIN PROCEDURE *

TERRAIN	DISTANCE RANGE (M)	
HT (M)	MINIMUM	MAXIMUM
-----	-----	-----
0.	25.	5000.

 *** REGULATORY (Default) ***
 PERFORMING CAVITY CALCULATIONS

SCREEN3 EPN 5 Boiler Pseudo Pt Full Met 091220
 WITH ORIGINAL SCREEN CAVITY MODEL
 (BRODE, 1988)

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3) = 0.000
 CRIT WS @10M (M/S) = 99.99
 CRIT WS @ HS (M/S) = 99.99
 DILUTION WS (M/S) = 99.99
 CAVITY HT (M) = 7.62
 CAVITY LENGTH (M) = 46.45
 ALONGWIND DIM (M) = 93.57

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3) = 0.000
 CRIT WS @10M (M/S) = 99.99
 CRIT WS @ HS (M/S) = 99.99
 DILUTION WS (M/S) = 99.99
 CAVITY HT (M) = 7.62
 CAVITY LENGTH (M) = 40.23
 ALONGWIND DIM (M) = 205.50

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

END OF CAVITY CALCULATIONS

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
-----	-----	-----	-----
SIMPLE TERRAIN	725.5	25.	0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **



Charlotte, June 11th 2020

Sales office: Charlotte
Attention: JW Coady

OFFER N0.CFG20-7345-P-01

between **Cefla North America**
herein referred to as the "Seller"

and

Nations Cabinetry LLC
4600 US 90 Access Road
San Antonio, TX - 78237
United States of America

herein referred to as the "Buyer"

Layout no. 20007345.1

This offer is exclusively subject to the pro-tempore effective *General Terms and Condition of Sale* of the Seller, which are herewith considered as known, accepted and referred.



PRELIMINARY TECHNICAL DATA

WORKPIECE DIMENSIONS

The line will obtain the best quantity-quality results, under any work conditions, if defective pieces are eliminated right from the start, for example:

♦	curved or twisted pieces		
♦	splintered pieces that would in any case not be reusable after coating		
•	maximum length	3500	mm
•	minimum length	305*	mm
•	maximum width	1300	mm
•	minimum width	19*	mm
•	maximum thickness	51	mm
•	minimum thickness	6	mm
•	max bow	10	mm
•	internal min-max temperature	15-35	° C
•	minimum external temperature	-5	° C
•	working speed	N/A	m/min
•	working height	900	mm

* Minimum distance between leading and trailing edge 305mm to ensure safe part transition

VOLTAGE

•	480	V
•	60	Hz

3 phases

CE rules

Present

Of machine

Electrical supply system: 480Y/277V

HEATING SUPPLY

<input type="checkbox"/>	Water	<input type="checkbox"/>	°C	<input type="checkbox"/>	Electricity	<input type="checkbox"/>	Mbar
<input type="checkbox"/>	Overheated Water	<input type="checkbox"/>	°C	<input type="checkbox"/>	Natural Gas	<input type="checkbox"/>	Mbar
<input type="checkbox"/>	Steam	<input type="checkbox"/>	bar	<input type="checkbox"/>	GPL	<input type="checkbox"/>	Mbar
<input type="checkbox"/>	Diathermic oil	<input type="checkbox"/>	°C	<input checked="" type="checkbox"/>	N/A		

COMPRESSED AIR SUPPLY

- pressure 6 bar max.

MACHINE COLOR

- RAL 7035

LINE SERVICE SIDE

•	RIGHT	<input checked="" type="checkbox"/>
•	LEFT	<input type="checkbox"/>
•	MIXED	<input type="checkbox"/>



WORKING CONDITIONS

PRODUCTION SECTOR

- BUILDINGS

MATERIAL

- Wood and wood-based products

TRADE PRODUCT

- Flat kitchen cabinet doors
- Raised kitchen cabinet doors

SHAPE

- Raised panel

TYPE OF STAINS/LACQUERS

- SOLVENT BASED
- SOLVENT BASED UV
- WATER BASED
- WATER BASED UV

FINISHING

- Clear
- Pigmented
- Stain

SPECIAL NOTES

The technical data of the line indicated on these pages supersede the information contained in the descriptions of individual machines, in case of different values.

PRICES

ITEM	DESCRIPTION	AMOUNT
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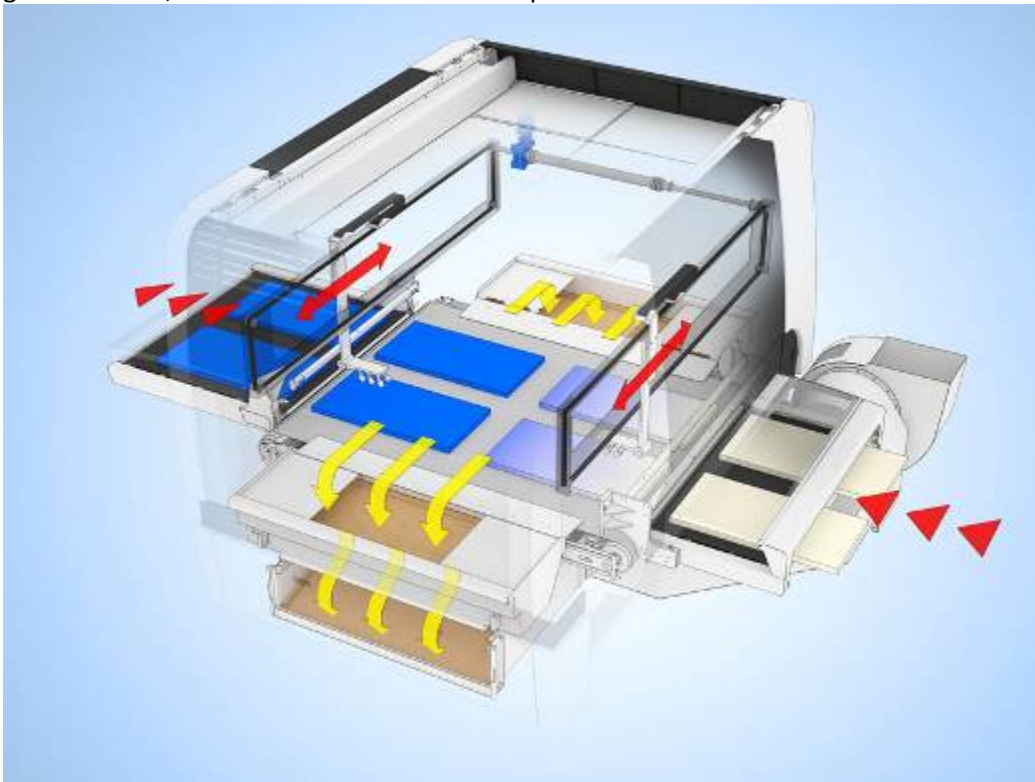
1 **EASY: RECIPROCATING SPRAYING MACHINE EASY**

EASY

2 arms spraying machine with dry filtering

Continuous spraying of any kind of raised panels. No overspray on the underside of the panels thanks to the belt conveyor width 1950 mm.

Machine made of solid welded structure. Full accessibility thanks to the wide use of glass surfaces, access doors and extractable parts.





Unique and patented PLENUM (air diffusion system). Exclusive pressurization flows study: major paint savings, better machine cleaning and major application quality



Electronic scanner for reading shape and position of workpieces: maximum efficiency to manage the spraying of the guns.

Unique management of tiltable element conveying with fine speed adjustment.

This prevents fouling of the lower part of the panels in case of acceleration/deceleration.

TECHNICAL FEATURES:

Machine total length	4867 mm
Machine total width	3690 mm
Machine structure height	2690 mm
Max. thickness of the workpieces	120 mm
Minimum workpieces length	280 mm
Installed electric power (complementary equipment: excluded)	15,2 kW
Compressed air consumption (pumps and guns: excluded)	50 NI/min
Maximum air mixed up with solvents exhausted outside	12000 mc/h
CFB Belt width	1950 mm
Scanner for pieces reading 135 diodes	
Forwarding speed, with adjustment by means of inverter	2-11 m/min
Drive motor power (flameproof execution)	1,1 kW
Handling by toothed belts with electronically controlled Brushless motor	
Guns handling system motor power	2,1 kW
Maximum number of oscillations for gun holding units	approx. 55 min
Maximum speed of gun holding units	140 m/min

Suction motor power
Suction fan flow rate

7,5 kW
12000 mc/h

Wide, powerful, and effective double filtration suction zone h flow-rate adjustment by means of inverter.

Tanks with net support for Columbus filters.

Exhaust fan flameproof ATEX cat. 2G

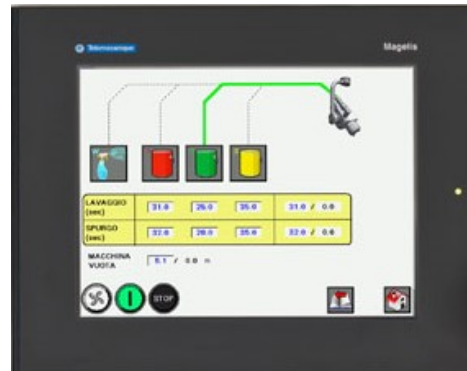


Electronic control cabinet, pressurized, placed at infeed of the machine from the service side with connecting wiring system to all the users, **UL version**.

The management of the spraying parameters is made by means of **PLC**, with:

- 12,1" colour "touch screen" display, equipped with Ethernet RJ45 and USB port: it enables the receipt file import/export and the alarms/diagnostic history on PC
- Working programs set up, the receipts file can be saved in compatible Excel format which can be visualized and modified from an external PC
- Import/export, by means of USB port, are possible by connecting a USB Pen Drive directly to operator panel
- Measurements of the lacquered surface, of the workpiece quantity and of the lacquer consumption. Possibility to export these data as per scheme.

- Software for colour exchange management for 3 colours and one washing from operator panel
- Pumps for colour exchange/washing (up to 4 pumps) not supplied;
- possibility to exchange data from and to centralized line control systems
- The panel is equipped with a Web Gate function to execute a remote control of the panel by means of a PC connected to the Ethernet port and of a Internet Explorer Browser.



Pressurization of electronic control cabinet, fed by network voltage 440/480V 60Hz

Conveyor speed, with adjustment by means of inverter 2-10 m/min
Driving motor power (flameproof) 1,1 kW

System for belt cleaning and lacquer recovery type HCD

Perfect belt cleaning, maximum quality of lacquer recovery thanks to the multi patented Cefla recovery system and to the CFB belt with sealed edge.
The maximum quality on the lower part of the panels is granted.
Motor of the cleaning system and inverter

1,50 kW

The cleaning system type “**HCD**” is composed by:

- a first roller, chromium plated and counter-rotating, which captures the lacquer from CFB belt and transfers it instantaneously into a tank without stressing it.
- a drying scraper made in plastic material
- a second counter-rotating roller for final clearing and relevant drying scraper
- tanks and parts made in stainless steel

System of easy accessibility thanks to the frontal extraction and easy management thanks to the extreme effective simplicity of planning
Colour and or product change in few seconds (with spare kit).



Pressurization unit with make up from the room fitted **inside** the machine.

Level of filtration M5.

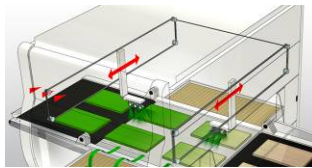
Execution with explosionproof motors ATEX cat. 2G.

Additional electric power

3 kW

Air to be made up in the room

12000 mc/h



Perfect homogeneity of application thanks to the powerful and sophisticated handling system of spray gun supporting units.

N. 2 counter-placed arms with fixed spray gun holders (4 guns each), height manual adjustment.

Spraying equipment and predisposition: Excluded

COLOR CHANGE: set of valves for colour/product automatic change in less time and less waste as possible. The valves and time control are made through a software page available on the operator interface.

N. 3 lacquer feeding circuits with recirculating element and lacquer filters, 1 washing circuit with solvent and 4th additional circuit without recirculation.

Stainless steel fittings



Belt conveyor element at infeed 880 mm.

Plexiglass cover over the conveyor positioned at infeed and outfeed..

ETHERNET card for connection to teleassistance or line control master (smarthink, , cMaster, cTracker, cViewer)

Lifting of the gun supporting arms by means of independent pneumatic motors.

Position detector of the gun supporting arm with encoder.



NOTE: THE LAYOUTS AND THE PHOTOGRAPHS INCLUDED IN THIS <TIPO_DOCUMENTO> ARE ABSOLUTELY APROXIMATE AND NOT BINDING FOR THE VENDOR.



PRICE

\$305,250.00

Total price of the above equipment,
F.O.B. Charlotte, NC (place of inventory)

Price quoted includes installation and training

Travel expenses are included

Lodging and boarding expenses are included.

Price quoted excludes all state/federal/provincial/local taxes

Price is in US dollars

Note: Above price includes Thirty (30) hours of instruction.

Additional instruction is available at normal service technicians' rates in effect at that time.

Offer Validity: 30 days



PRICE PAYMENT

- 30% down payment with the order
- 30% due prior to shipment from Cefla factory
- 35% due prior delivery
- 5% net upon completion of installation.

If for any reason shipment and/or installation are delayed by the Buyer, the payment(s) shall become due in full sixty (60) days after the Goods are available for shipment from Seller's factory. Terms of payment offered herewith, or any terms agreed upon, are subject to proper credit approval.

INSTALLATION

Installation as defined in the General Terms and Conditions of Sale means the assembly and preparation of the equipment to the "ready to run" state; it does not include any preparation of the site, floor, anchoring of equipment to floor, masonry work, running of electrical, pneumatic or dust extraction services to the site, or building alterations.

Customer is responsible for the off-loading and positioning by crane, forklift or other means, as well as supplying the necessary equipment and material to perform this task. At Customer's request and expense, a Cefla field service representative can be made available during the off-loading and positioning in order to act in an advisory capacity, but this is to be understood fully at Customer's own risk. Moving and modifying existing equipment in Customer's facility is not included in the installation.

Once the equipment is in the "ready to run" state and the necessary installation services have been provided, the Cefla field service representative will test run, adjust as necessary, demonstrate and instruct Customer's personnel who are selected to operate and maintain this equipment. The Cefla field service representative will also review the manuals supplied for this equipment.

Customer will make available two (2) mechanics and one (1) electrician, to assist as necessary, or the Customer may contract to have additional Cefla technicians, to assist in the assembly of the finishing system. In the event the Customer has not contracted for additional Cefla technicians and the Customer finds it necessary to use their aforementioned personnel for purposes other than full dedication to the installation of the finishing system, Cefla North America, Inc. will assess a daily or hourly labour charge for such time. Cefla technicians will not have any obligation to perform any services other than the installation of the equipment in accordance with the conditions stated above.



ITEMS NOT COVERED BY THIS PROPOSAL

- Electric and pneumatic connections to control boards.
- Automation equipment to introduce workpieces into Cefla system
- Mechanical or Electrical intergration of customer-supplied workpiece feeding automation into Cefla system
- Surge protected electrical services to the site with no more than $\pm 5\%$ variance in input voltage.
- Electrical trays, wire, conduit, supports, etc.
- Balanced dust extraction system and connecting ducts.
- Air inlet/outlet ducts and (open/close/weatherproof) roof penetrations (flow control valves provided).
- Heat source (boiler) and connections between heat source and points of use.
- Compressed air lines to connecting points at 6 kg/cm² or 90 psi.
- Application or material feed equipment (guns, pumps, tanks, hoses, fittings, regulators, etc.)
- Sprinkling system or other fire protection equipment required by insurance or local code.
- Air make-up system.
- Building alterations.
- Floor or masonry work.
- Moving of existing machinery or site preparation.
- Unloading of the trucks and storage of the equipment and parts in a properly protected area.
- PSR/PSI/CSA reports/inspections
- Equipment to assist in installation (i.e. forklifts, cranes, scissors lifts, etc.).
- Permits to install and operate (when required).
- Import duties and any Federal & Provincial sales taxes.

ADDITIONAL ASPECTS NOT COVERED BY THIS PROPOSAL

Unless specifically agreed upon in writing between the parties, Cefla North America, Inc. has no responsibility for staging, alignment or any other preparation of parts, panels or other materials fed into or otherwise introduced into the equipment covered by this proposal or for any unloading, stacking, routing, storing or any other disposition of parts, panels or other materials existing such equipment.

CEFLA NORTH AMERICA INC.

Area Manager: **Alan Henderson**
Email: AHenderson@ceflaamerica.com
Cell. +1 704 737-8070

By: *Andy Boon*

Andy Boon
Sales Engineer



TERMS AND CONDITIONS OF SALE

All sales and services provided by CEFLA North America, Inc. and/or its Affiliates, ("Seller") are subject to the following terms and conditions (the "Terms of Sale"):

NOTICE: ANY PURCHASE ORDER, ORDER ACKNOWLEDGEMENT, ORDER ACCEPTANCE, SALES AGREEMENT OR OTHER COMMERCIAL DOCUMENT, AND ALL SALES AND SERVICES BY SELLER, INCLUDING ANY SALES OR SERVICES RELATED TO MACHINES, PARTS OR OTHER GOODS (COLLECTIVELY THE "GOODS") IS EXPRESSLY CONDITIONAL ON THE TERMS CONTAINED IN THESE TERMS OF SALE AND IN SELLER'S FINAL WRITTEN SALES AGREEMENT, SIGNED BY SELLER MANAGEMENT (the "Sales Agreement"). NO OTHER TERMS SHALL APPLY. ADDITIONAL OR DIFFERENT TERMS PROPOSED BY CUSTOMER ("BUYER") WHETHER IN COMMERCIAL DOCUMENTS, CORRESPONDENCE, BUYER WEBSITE, ELECTRONIC FORMAT, OR OTHERWISE ARE OBJECTED TO AND WILL NOT BE BINDING UPON SELLER UNLESS SPECIFICALLY ACCEPTED IN WRITING BY SELLER.

1. Contract Formation.

No contract is formed or binding on Seller unless and until set forth in Seller's written Sales Agreement, signed by Buyer and signed by Seller Management. All understandings between the Parties shall be as set forth in Seller's Sales Agreement, provided that these Terms of Sale are incorporated into the Sales Agreement (the Sales Agreement and these Terms of Sale, being the "Contract"). Seller objects to any terms and conditions in any order or other document from Buyer which vary the terms hereof (for clarification, an "acknowledgement" or submission of an unsigned Sales Agreement in response to an order is not an acceptance). In any event, Buyer's failure to object to the terms in the Contract within ten (10) days after receipt constitutes Buyer's acceptance of all terms and conditions therein. Buyer may not cancel the Contract or delay delivery of Goods.

2. Delivery, Shipment, Title, Risk Of Loss And Claims.

Delivery of Goods shall be, and Buyer shall assume risk of loss of the Goods, F.O.B. at the port of entry (if imported) or Seller's domestic warehouse (if in Seller's inventory in the United States) unless other delivery terms are specified by Seller in its Sales Agreement. Seller may, at its option, ship all of the Goods at one time or in portions from time to time. Seller shall make reasonable efforts to ship Goods for delivery on or about the time stated or estimated on Seller's Sales Agreement, although time shall not be of the essence with regard to delivery of the Goods. Under no circumstances will Seller be responsible for or incur any liability arising out of any delays in delivery or failure to make delivery at an agreed or specified time. Unless otherwise set forth in Seller's Sales Agreement, Seller shall have absolute discretion as to mode and routing of shipments.

3. Price Adjustment.

The prices of Goods are based on the current price levels of Seller's supplies. In the event that, between the date of the order Sales Agreement and the date of delivery of the Goods, any supplier increases the price of materials or goods, then, unless otherwise specified in Seller's Sales Agreement, Buyer agrees that the amount of such increase shall be added to the price of the Goods. Further, should there be changes adverse to Seller in currency fluctuations with the country in which Goods are manufactured, import duties or transportation costs affecting the Goods or price between the date of Seller's Sales Agreement and the date of delivery of the Goods, Seller may adjust the price to be paid by Buyer for Goods and may add the amount by which currency rates, duties and transportation costs change.

4. Advance Payments.

Seller will start execution under the Contract only upon receipt of the advance sum agreed at the time of the order. No interest shall be payable on advance payments made by Buyer. Should Buyer cancel or breach the Contract, fail to perform, or delay delivery, Seller may, without limiting its rights and remedies under the Contract or under law, retain the advance



sum. Should Seller's damages exceed the advance sum, Buyer will have to pay the remaining amount of damages.

5. Default and Termination.

Buyer shall be in breach of the Contract if Buyer breaches or violates any term of the Contract or if Buyer ceases conducting business in the normal course, admits its insolvency, makes an assignment for the benefit of creditors or becomes the subject of any judicial or administrative proceedings in bankruptcy, receivership or reorganization. Without limiting Seller's rights and remedies under the Contract or under law, upon a breach by Buyer, Seller may cancel and terminate the Contract and any other contract or agreement with Buyer.

6. Force Majeure.

Seller shall have no liability for any non-performance or delay in performance caused by circumstances beyond Seller's control including acts of God, fire, flood, war, government action, accident, labor trouble or shortage, delays in obtaining (or the inability to obtain) labor, materials, equipment, services or transportation through usual sources at normal prices, or failure of Seller's suppliers to furnish parts or other goods required for the Goods.

7. Installation.

Installation of Goods by Seller is not included in the offered price, unless expressly set forth in Seller's Sales Agreement. If installation is included in the Sales Agreement, Seller shall make reasonable efforts to install the Goods on or about the time agreed to in writing by Seller, although time shall not be of the essence with regard to installation of the Goods. Under no circumstances will Seller be responsible for or incur any liability arising out of any delays in installation or failure to install at an agreed time.

8. Design Changes; materials and samples.

Seller reserves the right, from time to time, including on Goods already ordered, to make changes in the design, dimensions, specifications, or construction of the Goods, without prior notice to Buyer. Buyer represents and warrants that any and all material, samples or other property Buyer provides to Seller and any samples or templates

resulting therefrom shall not infringe any third party's rights, including intellectual property rights, and any specifications or other requirement requested by Buyer and agreed to by Seller in the Contract shall not infringe any third party's rights, including intellectual property rights.

9. Data Protection.

By placing an order, Buyer agrees and understands that Cefla may store, process and use data collected from Buyer's order form or phone/fax/email order for the purposes of processing the order. Cefla may also share such data globally within the Cefla Group of companies. All Cefla companies shall protect Buyer's information in accordance.

10. Proprietary Rights & Confidentiality

10.1 Buyer shall not use Cefla's name, logo, trademarks, trade names, trade dress, design, look and feel or other intellectual property or proprietary rights (together "Proprietary Rights") in any of its advertising, communications, publications or other work without the prior written permission of Cefla and then such use shall be in accordance with the instructions and guidelines issued by Cefla from time to time and any authority may be withdrawn or modified at any time. Neither Buyer, nor its agents, will register, or attempt to register or assert any right of ownership in any of Cefla's Proprietary Rights. Buyer must not remove, obfuscate, deface, cover or alter any Cefla mark or other mark from, or add any Cefla mark or other mark to, any materials provided by Cefla or to any Product or its packaging. Neither Buyer nor its agents will register or use any trade or service mark that may cause confusion with Cefla Proprietary Rights.

10.2 Cefla owns all rights in all designs, drawings, specifications, processes, equipment, and all other intellectual property and know-how related to the Products, and Buyer does not have any proprietary, intellectual property or similar rights in the Products, or in any newly developed products, or any patents, trade secrets, intellectual property or similar rights relating to the Products or any newly developed products. Buyer agrees to assign and hereby assigns to Cefla all rights, title and interest in any designs, drawings, specifications, processes and all other intellectual property and know-how, including, but not limited to, copyrights, patents, trademarks and trade secrets,



created or to be created arising out of or related to the Products, including any such items that may have been conceived, developed or produced by Buyer or jointly by Buyer with any third party (or with Cefla). Buyer agrees not to reverse engineer any Products.

10.3 All confidential or proprietary information ("Confidential Information") provided by Cefla to Buyer, whether written or oral, shall not be disclosed by Buyer to any person unless the disclosure is agreed to in writing by Cefla or the Confidential Information is otherwise generally available to the public.

10.4 Cefla retains ownership and control over all intellectual property including patents, trademarks, and copyrights applicable to or arising out of any transaction with Buyer, the Products, as well as the exclusive right to manufacture the Products. No license is granted or implied by these Terms, and Buyer shall not name or designate any Cefla product information or Products in any process patent application.

11. Software License

11.1 In this Agreement "Software" means any software including without limitation operating systems, bundled software, stand-alone software and downloadable software (whether included with a Product or provided separately).

11.2 Buyer shall be responsible for ensuring that any Software or Product solution ordered by Buyer is suitable for Buyer's requirements and is compatible with Buyer's existing systems (hardware and software) and practices.

11.3 Buyer acknowledges that Products often contain not only hardware but also Software, including but not limited to operating systems and applications. Such Software may be included in ROMs or other semiconductor chips embedded in hardware, or it may be contained separately on disks or on other media. Such Software is proprietary, is copyrighted, and may also contain valuable trade secrets and be protected by patents. Buyer, as an end user, may be licensed to use any software contained in such Products, subject to the terms of the license accompanying the Product, if any, and the applicable patent, trademark, copyright, and other intellectual property laws. Purchaser shall not separate any end-user license from a Software Product.

11.4 All Software is licensed to Buyer on the terms and conditions of the applicable license agreements accompanying the Software. In addition to any obligations or restrictions set forth in the license

agreement, Buyer shall not copy any Software except for back up or for archival purposes, and Buyer shall promptly affix to any such copy the same proprietary and copyright notices as were affixed to the original. Except to the extent permitted by law, Buyer shall not duplicate, disassemble, de-compile, reverse engineer, modify, create derivative works, or otherwise change a Software or its form. Buyer may use Software that are incorporated in or packaged with an hardware Product solely in connection with the authorized use of such hardware Product, and shall have no other rights with respect to the Software.

12. Taxes.

Buyer agrees to pay all property, sales, excise, use and other taxes ("Taxes") applicable to the sale, purchase, storage, erection, use or ownership of the Goods covered hereby regardless of whether such Taxes are invoiced by Seller, and Buyer shall reimburse Seller for any such Taxes paid by Seller.

13. Payment Terms.

All payments shall be made at Seller's office in Charlotte, North Carolina, and payment shall not be deemed to have been made until so received by Seller. Unless otherwise set forth in Seller's Sales Agreement, all Goods and services must be paid in full immediately upon delivery of the Goods (or completion of the services). Should Buyer fail to pay any amount due to Seller, and without limiting Seller's rights and remedies under the Contract or under law, Seller may suspend any and all business with Buyer, including under the Contract and any other contract, and may refrain from providing technical assistance and services to Buyer including telephone and on site support and sale of parts (regardless if otherwise due pursuant to a warranty), until any and all amounts owed are paid in full. Under no circumstance may Buyer set off any claim of any nature against payment for Goods or services. Any payment not made to Seller when due shall accrue interest at an annual rate equal to the lesser of twelve percent (12%) or the maximum rate allowed by law, computed for the actual period of such delinquency. Terms of payment offered or agreed upon are subject to Seller's determination to grant credit terms to Buyer, and Seller may change any credit terms and any payments terms if Seller determines, in its



discretion, prior to delivery of the Goods that such terms should be reduced or cancelled.

14. No Liability To Third Persons.

Buyer shall be liable, and Seller shall have no liability, for any reason for any demand, claim or action by any third party arising out of or relating to the Contract or the Goods or services, including the use or inability to use the Goods, any items produced using the Goods or the presence of Seller's employees on Buyer's premises. Third parties are deemed to include employees of Buyer and others (other than Seller).

15. Limited Warranty, Remedies, and Limitation Of Warranties.

Subject to the terms in these Terms of Sale, Seller warrants to Buyer that the Goods sold hereunder shall as of the date of delivery meet in all material respects Seller's published specifications for such Goods or the express warranty (if any) set forth in Seller's Sales Agreement, and with respect to services that Seller's services will be performed in a good and workmanlike manner. This warranty shall be effective with respect to mechanical components on the machines for a period of twelve (12) months or 2200 hours of operation (whichever comes first) or with respect to electrical components on the machines for a period of six (6) months, in any case from the date of installation or thirteen (13) months after delivery, whichever comes first. The 12 month/2200 hour or 6 month warranty is based on Buyer's business consisting of a single shift, eight hour per day operation. This warranty shall be effective with respect to services or parts for a period of twelve (12) months or six (6) months from the date of delivery or the completion of the service.

Buyer must deliver a warranty claim to Seller within thirty (30) days after the discovery of a potential warranty defect and, in any event, no later than thirty (30) days after the end of the limited warranty period, in writing and specifying the alleged warranty defect. Except for warranty claims timely made by Buyer hereunder, the limited warranty shall end and no longer be in effect thirty (30) days after the end of the warranty period. Once Seller determines that there is a covered warranty defect, Seller may, at its option, repair or replace any defect, or pay Buyer the reasonable costs thereof. Seller shall have no obligation to remedy any defect except upon delivery of the defective part or parts to Seller at Seller's office in

Charlotte, North Carolina, freight pre-paid. Seller will not be obligated to provide anything further than repair or replacement of parts or payment to Buyer of the reasonable costs thereof. This limited warranty shall not be deemed to have failed of its essential purpose so long as Seller is willing and able to repair, replace, or make payment in the manner described above, and shall be the exclusive remedy of Buyer for breach of Seller's warranty. SELLER DISCLAIMS ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT. Normal wear, tear and deterioration during use, including to such items as light bulbs, belts, and synthetic material, shall not constitute a defect. The limited warranty of Seller does not apply to damage, breakage or other problem caused in whole or in part by lack of operating skill, negligence, improper use of the Goods, use of the Goods exceeding standards recommended by Seller from time to time or common in the industry. The limited warranty of Seller shall be void if: (a) the Goods are repaired, disassembled to any extent or changed by any person other than a technician expressly authorized by Seller, (b) safety devices are altered, modified or disabled by Buyer, or c) the failure is attributable to software, tooling, accessories or ancillary equipment not sold by Seller. (Note that authorized dealers of Seller may sell such items with the knowledge of Seller, however, such items are not within the scope of Seller's warranty.) This limited warranty is non-transferable.

Seller's limited warranty does not apply to Goods that are used or exchanged. All used and exchanged Goods are sold "AS IS" and without warranty, unless and then only to the extent Seller specifies a limited warranty in Seller's Sales Agreement. Any limited warranty provided by Seller on used or exchanged Goods shall nevertheless be subject to the limitations, requirement and terms in these Terms of Sale.

Samples, descriptions, representations, and other information concerning Goods contained in Seller catalogs, advertisements, or other promotional materials or statements or representations made by Seller's employees, sales representatives or dealers are for general informational purposes only and are not binding upon Seller. No employee, sales representative



or dealer of Seller shall have any authority whatsoever to establish, expand or otherwise modify Seller's limited warranty or to make any warranties, representations or promises (unless contained in the Contract or signed by an authorized officer of Seller).

16. Safety.

Buyer shall install and operate the Goods in a safe manner, including by following all safety procedures recommended by Seller from time to time or common in the industry. Under no circumstances shall Buyer allow any safety device applicable to the Goods to be disabled, modified or altered.

17. Indemnification.

To the fullest extent permitted by applicable law. Buyer shall, at its expense, indemnify and defend Seller against, and hold Seller harmless from and against, any and all demands, claims, actions, liabilities, costs and expenses (including reasonable attorneys' fees, court costs and other charges) arising out of, connected with, or resulting from (i) the Goods, including the selection, possession, or use of the Products, (ii) any breach or violation by Buyer of any term of the Contract, including any of Buyer's representations, warranties or covenants, (iii) any third party demand, claim or action covered by Section 11; and (iv) Buyer's negligence. Additionally, Seller shall be entitled to recover from Buyer any and all costs or expenses (including reasonable attorneys' fees, court costs and other charges) incurred by Seller after Buyer's breach or default in enforcing Seller's rights against Buyer under the contract.

18. Compliance With Laws.

Unless otherwise set forth in the Seller's Sales Agreement, Buyer is responsible, and Seller is not liable to Buyer, to determine that the Goods and their installation and use conform to all applicable federal, state, provincial or local law, order regulation, or standard, and to obtain at Buyer's cost all inspections, permits and approvals.

19. Inspection; Claims and Acceptance.

Buyer shall inspect the Goods immediately on receipt and shall, within ten (10) days thereafter, give written notice to the Seller of any claim that the Goods do not conform to the terms of the Contract. The Goods shall be deemed to conform and Buyer shall be deemed to

have accepted the Goods upon the earlier of (a) ten (10) days after delivery (10 days after installation if installation is performed by Seller) or (b) any use of the Goods for production. Upon such acceptance, if payment has not already been made, Buyer shall immediately pay for the Goods as required by the Contract. Seller shall not be liable for any claim or damages arising out of or resulting from the installation of Goods by Buyer or use by Buyer of non-conforming, damaged or defective Goods.

20. Exclusion of Damages; Limitation Of Liability.

TO THE FULLEST EXTENT PERMITTED BY LAW, SELLER SHALL NOT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS), SPECIAL OR PUNITIVE DAMAGES ARISING OUT OF OR RELATING TO THE CONTRACT (INCLUDING SELLER'S BREACH), THE GOODS OR THE INSTALLATION, THE SERVICES OR THE USE OR INABILITY TO USE ANY OF THE GOODS, INCLUDING (1) LOSS OF USE, (2) LOSS OF PRODUCTION; (3) LOSS OF OPPORTUNITY; (4) LOSS OF MARKET VALUE; (5) LOSS OF INCOME, (6) PERSONAL OR BODILY INJURY OF ANY KIND, OR (7) DAMAGE TO PERSONAL PROPERTY, EVEN IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

NOTWITHSTANDING ANYTHING TO THE CONTRARY, THE MAXIMUM LIABILITY OF SELLER TO BUYER ARISING OUT OF OR RELATING TO THE CONTRACT (INCLUDING SELLER'S BREACH) OR THE GOODS OR SERVICES, WHETHER IN WARRANTY, CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE, SHALL NOT EXCEED THE AMOUNT PAID BY SELLER FOR THE GOODS AND/OR SERVICES AT ISSUE.

21. Statute Of Limitations.

No suit or action may be brought by Buyer, arising out of or relating to the Contract (including Seller's breach) or the Goods or services, and will be forever barred, unless it is commenced within the earlier of: (a) one (1) year after the claim or cause of action has accrued, or (b) the period prescribed by applicable statute of limitation or repose.



22. Governing Law Arbitration.

The Contract shall be deemed to have been made in the State of North Carolina. The Contract and any dispute, claim or controversy arising out of or relating to the Contract, or the breach thereof, shall be governed by North Carolina law, excluding its conflict of law principles.

If a dispute, claim or controversy arises out of or relates to the Contract, or the breach thereof, the parties agree first to try in good faith to settle the dispute by mediation administered by the American Arbitration Association under its Commercial Mediation Procedures before resorting to arbitration. In the event such mediation fails, the parties hereby agree submit any controversy or claim arising out of or relating to this Agreement, or the breach thereof, to arbitration pursuant to the Commercial Rules of the American Arbitration Association ("AAA"), as modified herein. There shall be a panel of three (3) arbitrators with one arbitrator appointed by each of Buyer and Seller. The third arbitrator ("the technical arbitrator") shall have technical knowledge derived from experience in the design, sale or operation of complex production machinery. The technical arbitrator may be appointed by the AAA if the parties are unable to agree on one, and the AAA may dispense with allowing parties to reject a technical arbitrator without cause. If payment is withheld by Buyer based upon an alleged setoff, the arbitrators shall, within thirty (30) days after appointment conduct a hearing and order payment of the setoff amount to Seller. Upon the initiation of an arbitration claim, Seller shall be allowed access to the Goods and other items at issue to allow its personnel and experts at any reasonable time to examine and test the Goods and other items at issue. The arbitrators shall strictly apply the terms of this Agreement and shall not be authorized to award any remedy, except as stated in this Agreement or expressly consented in writing during the arbitration by the party against whom the remedy is granted. All mediation and arbitration proceedings held pursuant to this arbitration provision shall be conducted in Charlotte, North Carolina and shall be confidential. Notwithstanding the foregoing in this Section 19 (i) either party has the right during any dispute, claim or controversy to seek, use and employ ancillary, provisional or preliminary rights and/or remedies, judicial or otherwise, for the purposes of realizing upon, preserving, protecting, foreclosing upon or proceeding for possession of any personal

CEFLA NORTH AMERICA, INC.

6125 Harris Technology Blvd.

Charlotte, NC 28269

Tel: (704) 598-0020 Fax: (704) 598-3950

property, and any such action shall not be deemed an election of remedies, and (ii) Seller shall have the right to implead, join or add Buyer as a third-party defendant in any legal action brought by a third party if such legal action, or the defenses or other rights, arises out of or in any manner related to Buyer's or Seller's obligations under the Contract. The Federal Arbitration Act (Title 9 of the United States Code) shall apply to the construction, interpretation, and enforcement of this arbitration provision.

23. Waiver; Assignment.

No failure of Seller to insist upon or compel compliance by Buyer with any of the terms, provisions or conditions in the Contract shall be construed as a waiver by Seller of its right to insist upon compliance therewith in the future. Buyer may not assign the Contract (including by operation of law) without the prior written consent of Seller. Any such attempt to assign shall be null and void.

24. Complete Agreement; Modification.

The provisions in the Seller's final Sales Agreement and these Terms of Sale (constituting the Contract) are intended as a complete and exclusive statement of the terms of the agreement between Seller and Buyer with respect to the subject matter thereof. The Contract may not be modified or amended, and no waiver by Seller of any claim or right hereunder shall be effective, except in a writing signed by an authorized officer of Seller.

25. Security Interest.

To secure the payment of the purchase price and any other amounts due to Seller from Buyer under the terms of the Contract, Buyer hereby grants to Seller (as Secured Party) a purchase money security interest in the Goods and all proceeds thereof. Buyer hereby gives Seller the authorization to sign and file one or more financing statements (UCC 1 Form) or continuations or amendments securing and perfecting the interest of Seller in the Goods and all proceeds thereof. Seller shall have all of the rights and remedies available to a secured party under the Uniform Commercial Code and other applicable laws.

26. Severability; Miscellaneous.

The Seller's Sales Agreement and any other agreements between Seller and Buyer may be executed in multiple counterparts and all of such counterparts together shall



constitute a single instrument. The word “including” shall not limit such term and shall mean “including without limitation”. If a provision of the Contract is determined to be unenforceable in any respect, the enforceability of the provision in any other respect and of the remaining provisions of this Contract will not be impaired. The Buyer and Seller agree that the drafting of the Contract and these Terms of Sale shall not be construed against either Buyer or Seller.

I have read and understood all terms and conditions of this proposal and I hereby accept to place an order subject to these Terms & Conditions causing my duly authorized agent and its seal to be affixed hereto as of the date first below written.

FOR APPROVAL:

Buyer Signature: _____

Print Name: _____

Title: _____

Date: _____



Equipment

Designation	Base type	Paint circulation	Aircap	Tip	Part number
AVX SPRAY GUN (L)	-	In the base	-	-	129690000
AVX SPRAY GUN (Omega)	-	In the gun	-	-	129691000
AVX (L) with side outputs base	Side input	In the base	-	-	129695000
AVX (L) with rear outputs base	Rear input	In the base	-	-	129695050
AVX (Omega) with side outputs base	Side input	In the gun	-	-	129695100
AVX (Omega) with rear outputs base	Rear input	In the gun	-	-	129695150
AVX (L) with side outputs Cefla base	Cefla	In the base	-	-	129695200

Accessories

Designation	Coating	Fan adjustment	Part number
AIRCAP VX24 - HVLP	non-corrosion coating	♦	132720020
AIRCAP VX14 - HVLP	-	♦	132670920
AIRCAP VX114 - HVLP	-	-	132670940
AIRCAP VX124 - HVLP	non-corrosion coating	-	132720055
AIRCAP VX124 - HVLP (MVX ring)	non-corrosion coating	-	132720065
AIRCAP VX54	Non-stick coating	-	132670030
(L) BASE WITH REAR FLUID CONNEC.			129690080
(Omega) BASE WITH SIDE FLUID CONNEC.			129691070
(Omega) BASE WITH REAR FLUID CONNEC.			129691080
(L) CEFLA BASE WITH SIDE FLUID CONNEC.			129690090
(L) BASE WITH SIDE FLUID CONNEC.			129690070

Spare part

Designation	Part number
PACKAGE OF SEALS FOR AVX	129690901
PACK OF 4 NEEDLE-CARTRIDGE ASSEMBLY	129690050

AVX

Automatic Airmix® Spray Gun

Airmix® / Automatic Guns



LIGHTWEIGHT AND VERSATILITY FOR EFFICIENT PRODUCTION

- High transfer efficiency (up to 86%)
- Excellent atomization quality
- Modular design and high reliability



AGRICULTURAL



CONSTRUCTION



CONSUMERS



INDUSTRIAL



TRANSPORTATION



WOOD

Markets



AVX

Automatic Airmix® Spray Gun

The automatic Airmix® AVX spray gun ensures high level performance with unsurpassed finish & excellent atomization quality. The base-mounted modular design allows for quick maintenace with minimum downtimes.

Leading spray technology since 1975, AIRMIX® technology was invented by SAMES KREMLIN to reduce paint consumption, reduce cost of ownership, increase productivity, improve working condition and preserve the environment. Continuously improved over the past 35 years, AIRMIX® is today the most efficient non-electrostatic spray technology providing up to 86% transfer efficiency.

As a result, most automatic machine manufacturers using medium fluid pressure atomization have adopted SAMES KREMLIN AIRMIX® automatic guns because they are reliable, deliver outstanding finish quality and their simple construction minimizes the cost of servicing and down time.

The AVX automatic spray gun, mounted on a base, has a compact and lightweight design and simple construction with limited number of parts. Built with premium materials, this automatic sprayer is very reliable and brings reduced cost of ownership. The circulation can be done in the gun for quicker and better flushing with a limited volume of solvent sprayed into the machine or spray booth or in the base to reduce pressure loss in circulation systems.



Technical data table

Designation	Value	Unit: metric (US)
Maximum Fluid Pressure	200 (2900)	bar (psi)
Recommended Fluid Pressure	20-200 (290-2900)	bar (psi)
Maximum Air Pressure	6 (87)	bar (psi)
Air Consumption	3 - 7.5 (1.77 - 4.41)	m3/h (cfm)
Transfer Efficiency	86	%
Maximum Fluid Temperature	50 (122)	°C (°F)
Stainless Steel, PTFE Wetted Parts	♦	
Aluminum Body	♦	
Fluid Inlet	F 1/4 NPS	
Pilot Air Inlet	F 1/8" NPS	
Atomizing Air Inlet	F 1/4" NPS	
Weight	452 (16)	g (oz)



Technologies



Airmix® spray technology



HVLP

Performance

- 1 Dual spring mounted outside fluid passage allows you to open air before atomizing fluid for better spray fan quality
- 2 VX24 (adjustable spray) or VX124 (fixed spray) and a wide offering of fine finish and Xtra™ fine finish spray tips
- 3 Optional fan air remote control
 - ♦ Extreme film buid accuracy and tolerance
 - ♦ Compatible with a wide range of products (solvent-based and water-based)

Productivity

- 4 Easy assembly and disassembly - (4 bolts) for easy servicing
 - ♦ Circulation in the base allows less pressure loss in circulation system
 - ♦ Circulation in the gun offers a quicker and better flushing with limited volume of solvent sprayed into the machine or spray booth

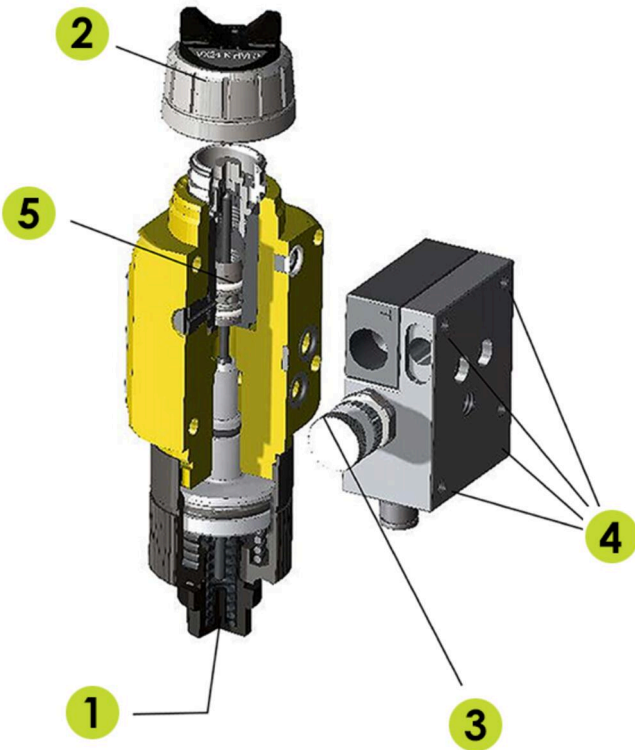
Sustainability

- 5 Wetted parts are stainless steel, treated stainless steel and rulon for better durability
 - ♦ Extented lifetime with most coatings thanks to the stainless steel design

2% according to EN 13966-1 norm



Description



[HOME](#) / [STANDARD XCITE SPRAY GUN TIP #12-154, 13" \(67 DEG\) SPRAY WIDTH - 134-512-154](#)

[< PREVIOUS](#)

[NEXT >](#)



STANDARD XCITE SPRAY GUN TIP #12-154, 13" (67 DEG) SPRAY WIDTH - 134-512-154

Selling Unit: Spray Gun Tip
Sku: KRE-134-512-154-AC

[Be the first to review this product](#)

- Tip for Kremlin Xcite - Aircoat, Airmix, Aircoat
- Standard tip for air pressure spray technique (Aircoat, Aircombi)
 - Maximum working pressure: 3600 PSI
 - Refer to specification chart below for product details

LOGIN TO ACCOUNT

QUANTITY:

[DESCRIPTION](#) [DETAILS](#) [REVIEWS](#) [TAGS](#)

ABOUT AIRMIX®

With the precision engineered Kremlin tip and aircap, atomization air is blended with the fluid at the location that produces a uniform build.

AIRMIX TIP SPECIFICATIONS

Airmix® Fluid Tips

Tip Number	Fluid Output				Diameter in Inches	Diameter in mm	Gun Filter		Pump Filter		Spray Angle and Maximum Fan Width at 10" (25cm)										
	500 psi 35 bar		1000 psi 70 bar								10°	18°	30°	40°	45°	50°	60°	67°	75°	82°	
											3.5"	5"	7"	9"	9.5"	10"	12"	13"	15"	18"	
	oz/ min	cm³/ min	oz/ min	cm³/ min							9 cm	13 cm	18 cm	23 cm	24 cm	25 cm	31 cm	33 cm	38 cm	46 cm	
02	1.2	40	3.4	100	0.005	0.127	140 (4)		200 (2)	02-03	02-05										
03	3.4	100	5.1	150	0.007	0.178				03-03	03-05	03-07									
04	5.1	150	6.8	200	0.009	0.229				04-03	04-05	04-07	04-09	04-10	04-11	04-13					
06	6.8	200	11.2	330	0.011	0.279				06-03	06-05	06-07	06-09	06-10	06-11	06-13	06-15				
09	10.1	300	15.2	450	0.013	0.330	85 (6)		85 (6)	09-03	09-05	09-07	09-09	09-10	09-11	09-13	09-15				
12	11.2	350	20.3	600	0.015	0.381				12-03	12-05	12-07	12-09	12-10	12-11	12-13	12-15	12-17			
14	13.5	400	24.4	720	0.016	0.406				14-03	14-05	14-07	14-09	14-10	14-11	14-13	14-15	14-17			
18	15.2	450	28.7	850	0.018	0.457					18-05	18-07	18-09	18-10	18-11	18-13	18-15	18-17			
20	16.9	500	35.8	1060	0.020	0.508	60 (12)		60 (12)			20-07	20-09	20-10	20-11	20-13	20-15	20-17	20-19		
25	22.0	650	45.0	1330	0.022	0.559						25-07	25-09	25-10	25-11	25-13	25-15	25-17	25-19		
30	25.4	750	54.1	1600	0.024	0.610						30-07	30-09	30-10	30-11	30-13	30-15	30-17	30-19		
40	33.3	985	66.6	1970	0.027	0.686							40-09	40-10	40-11	40-13	40-15	40-17	40-19		
45	38.9	1150	77.8	2300	0.029	0.737								45-10	45-11	45-13	45-15	45-17	45-19		
60	43.3	1281	86.6	2561	0.031	0.787								60-10	60-11	60-13	60-15	60-17	60-19		

Standard tips
- To order a tip, replace the crosses in 134-510-104 with the corresponding number from the chart above. (Example: 134-506-094 for a 06-09 tip) When ordering a 100 tip, use 134-100-104 (Example: 134-100-134).

Xtra tips
- To order a tip, replace the crosses in 134-510-102 with the corresponding number from the chart above. (Example: 134-506-092 for a 06-09 tip) Ideally used for waterborne materials.

Special Order tips
- These tips require a minimum of 25 tips per order and these tips cannot be ordered in the Xtra tip style.

Optimum Fan Adjustment
- These tips allow for adjustment when used with a VX

XCite™ SPRAY GUNS WITH SWIVEL FITTING

Description	Aircap	Tip	Maximum Fluid Pressure	Seat	Part Number
XCite™ 120	VX 24 K HVLP	Please specify (see table)	1740 psi (120 bar)	Stainless Steel	668-720-
XCite™ 200	VX 24 K HVLP	Please specify (see table)	2900 psi (200 bar)	Carbide	668-720-



EHS Services and Solutions
7000 North MoPac Expressway
Suite 200
Austin, TX 78731
800.790.6236
bsigroup.com

July 1, 2020

Mr. Samuel Short
Air Permits Division (MC-163)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711

**Re: Nations Cabinetry LLC – US 90 Facility
4600 US Highway 90 (US90)
San Antonio, TX 78237
Bexar County
CN 605051838
RN 100542828**

NSR Air Permit No. 43104 – Amendment and Renewal

Dear Mr. Short:

On behalf of Nations Cabinetry LLC (Nations) and pursuant to the requirements established in Title 30 of the Texas Administrative Code (30 TAC) § 116.315, BSI EHS Services and Solutions (BSI) is submitting an amendment/renewal request for New Source Review (NSR) Permit No. 43104.

This application includes Form PI-1/NSR application workbook in association with a simultaneous renewal and amendment. Please note that as part of the amendment, Nations is seeking to make various updates to the permit representations as noted in the attached Summary of Changes.

Please note that the Electronic Modeling Evaluation Workbook (EMEW) attached to this application includes modeling parameters and background monitor. The impacts and National Ambient Air Quality Standards (NAAQS) review are included in the coating emissions calculations section/workbook attached to this application.

Additionally, BSI has contacted several libraries in San Antonio to inquire about placing a copy of the application on file for public viewing during the public notice comment period. At this time, in response to the COVID-19 pandemic, libraries in the area are currently closed to the public. Nations will need to explore alternative options with the Texas Commission on Environmental Quality (TCEQ) in order to make a copy of the application available during to the public during the public notice comment period.

Should you have any questions concerning this request, please contact me at 512.717.9410, or via email at natalia.rojas@bsigroup.com.

Regards,

Natalia Rojas

Natalia Rojas, EIT
Consulting Specialist

Reviewed by:

Lindsey Renfro

Lindsey Renfro
Principal Consultant, Manager

Attachments

cc: Mr. Oscar Rodriguez, Sr. Human Resources Manager, Nations – San Antonio, TX
Texas Commission on Environmental Quality, Region 13 – San Antonio, TX

Attachments

Form APD-APS

Form APD-EXP

Core Data

Form PI-1 General Application

- General
- Renewals
- Technical
- Unit Types – Emission Rates
- Stack Parameters
- Public Notice
- Federal Applicability
- Fees
- Impacts
- BACT
- Monitoring

Summary of Changes

Process Description

Process Flow Diagram

Area Map

Plot Plan 1

Plot Plan 2

Building Layout

State and Federal Regulatory Review

Emissions Calculations

- Table 1A – Stain Line Coating Properties
- Table 1B – Clear Line Coating Properties
- Table 1C – Paint Line Coating Properties
- Table 1D – Cleanup Solvent Properties
- Table 2A – Stain Line Coatings Speciation [Submitted Under CONFIDENTIAL Cover]
- Table 2B – Clear Line Coatings Speciation [Submitted Under CONFIDENTIAL Cover]
- Table 2C – Paint Line Coatings Speciation [Submitted Under CONFIDENTIAL Cover]

- Table 3A – Stain Line Coating Speciation – Thinner [Submitted Under CONFIDENTIAL Cover]
- Table 3B – Clear Line Coating Speciation – Thinner [Submitted Under CONFIDENTIAL Cover]
- Table 3C – Paint Line Coating Speciation – Thinner [Submitted Under CONFIDENTIAL Cover]
- Table 3D – Cleanup Solvent Speciation [Submitted Under CONFIDENTIAL Cover]
- Table 4A – Stain Line Coatings As-Mixed and Thinned Speciation
- Table 4B – Clear Line Coatings As-Mixed and Thinned Speciation
- Table 4C – Paint Line Coatings As-Mixed and Thinned Speciation
- Table 5A – Short-Term and Annual VOC, Exempt Solvent, and PM Emissions Coating Line with Open Conveyor – Stain Line Operations – EPNs RTO and 10
- Table 5A – Short-Term and Annual VOC, Exempt Solvent, and PM Emissions Coating Line with Open Conveyor – Stain Line Operations – EPNs RTO and 10
- Table 5B – Short-Term and Annual VOC, Exempt Solvent, and PM Emissions Coating Line with Open Conveyor – Clear Line Operations – EPNs RTO and 10
- Table 5C – Short-Term and Annual VOC, Exempt Solvent, and PM Emissions Coating Line with Open Conveyor – Paint Line Operations – EPNs 10 and 11
- Table 5D – Short-Term and Annual VOC, Exempt Solvent, and PM Emissions Coating Booth – EPN Misc.SprayBooth (PBR Registration No. 74161)
- Table 6 – Short-Term and Annual VOC, Exempt Solvent, and PM Emissions Application Equipment Cleanup
- Table 7 – Short-Term and Annual VOC, Exempt Solvent and PM Emissions Coating Operations - Total Emissions by EPN
- TABLE 8A – Short-Term VOC, Exempt Solvent, and PM Species Emission Rates – Stain Line with an Open Conveyor - EPNs RTO and 10
- TABLE 8B – Short-Term VOC, Exempt Solvent, and PM Species Emission Rates – Clear Line with an Open Conveyor - EPNs RTO and 10
- TABLE 8C – Short-Term VOC, Exempt Solvent, and PM Species Emission Rates – Paint Line with an Open Conveyor - EPNs 10 and 11
- TABLE 8D – Short-Term VOC, Exempt Solvent, and PM Species Emission Rates – Coating Booth – EPN Misc.SprayBooth (PBR Registration No. 74161)
- Table 9A – Normal Operations (No Spray Equipment Cleanup) Maximum Speciated VOC and PM Off-Site Cumulative GLCs (ug/m3)
- Table 9B – Spray Equipment Cleanup Maximum Speciated VOC and PM Off-Site Cumulative GLCs (ug/m3)
- Table 10 – Products of Combustion
- Table 11 – EPN 7 - Baghouse Emissions Calculations
- Table 12 – EPN 8 - Wood Shop Glue Emissions Calculations
- Table 13 – EPN 9 - Natural Gas Valve, Connection, and Flange Fugitives
- Table 14 – Modeling Input Parameters
- Table 15 – Unit Impact Multipliers Using SCREEN3
- Table 16 – NAAQS SIL Analysis and Impacts Analysis
- Table 17 – Background NAAQS Monitor Values
- Table 18 – Emission Distributions for Conveyorized Painting Operations

- Table 19 – Enclosure Capture Velocities
- EPA Air Pollution Engineer Manager AP-40 Second Edition Figure 655 (May 1973)

Emissions Calculation Notes and Methodology

Modeling Methodology and Summary

Electronic Modeling Evaluation Workbook (EMEW) for SCREEN3

- General
- Model Options
- Building Downwash
- Area Source Parameters
- Volume Source Calculations
- Volume Source Parameters
- Modeling Scenarios
- Monitor Calculation Summary
- Background Justification

SCREEN 3 Modeling Runs

- EPN RTO
- EPN 5 – Boiler
- EPN 7 – Baghouse
- EPN 6 – Make Up Air Heater
- EPN 8 – Space Heater
- EPN 10 – Spray Room Finish Department Fugitives
- EPN 11 – Paint Line
- EPN Mis.SprayBooth

TCEQ Table 6 – Boilers and Heaters

- EPN 5 – 4.5 MMBTU Boiler
- EPN 6 – 5.5 MMBTU Air Makeup Unit
- EPN 8 – 30-0.032MMBTU Comforter Heaters

Table 11 – Fabric Filters

- EPN 7 – Baghouse

NSR Permit No. 43104, issued on July 1, 2010

Equipment Specifications

- Stiles – Cefla Group Spray System (Stain Line)
- Stiles – Cefla Group Spray System (Clear Line)
- Stiles – Makor Spray System (Paint Line)
- Kremlin - A25 F Flowmax Automatic Airspray Spray Gun (Stain Line)
- Graco – AAP Tip Chart (Clear Line)
- Kremlin – Finishing Solutions For Flat-Line & Linear Machines (Paint Line)
- Kremlin – Airmix Tip Chart (Paint Line)

- Air Filtration Co., Inc. – PA15-45X132-13 (Stain and Paint Lines)
- Air Filtration Co., Inc. – PP020-020-030 (Stain Line)
- Com-Pleat Filter – PAF-2020 (Stain and Paint Lines)
- Kleen Air – KA Series Pleat (RTO filter house)
- Regenerative Thermal Oxidizer Unit Macro Specification (Unite AES-12412)
- Baghouse – Pneumafil Reverse Air Filter
- Teledyne Laars Mighty Therm Hydronic Boilers
- Applied Air Technical Guide DFC Direct Fired Gas Heating System (Refer to Unit Model 230)

Entech Engineering Inc. – RTO Initial Compliance Test Report (December 8, 2006)

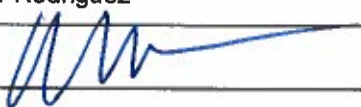
Safety Data Sheets [AVAILABLE UPON REQUEST]

- Stain Line
 - Natural Hybrid Stain
 - Charcoal Hybrid Stain
 - Chestnut Hybrid Stain
 - Cinnamon Hybrid Stain
 - Brandy Hybrid Stain
 - Mocha Hybrid Stain
 - New UV Hybrid Espresso
 - Smoke Hybrid Stain
 - Toffee Hybrid Stain
 - Dusk Hybrid Stain
 - Wheat Hybrid Stain
 - Pecan Hybrid Stain
 - Hybrid Belt Cleaner
 - Acetone
- Clear Line
 - Sher-wood Water White Conversion Varnish (30 Sheen)
 - Sher-wood Kemvar Catalyst
 - Celfa 50/50 Blend
 - Chem Tech 30
- Paint Line
 - Sher-wood White Varnish
 - Sher-wood Kemvar Catalyst
 - R6K18 Reducer
 - Methyl Amyl Ketone
 - Gen II Universal Primer
 - Acetone
 - Methyl Ethyl Ketone
- Glue
 - Multibond 2000
 - 3M Hi-Strength 94 ET
 - 3M Hi-Strength Spray Adhesive 90

Texas Commission on Environmental Quality
Form APD-APS Air Permitting Surcharge Payment

I. Contact Information	
Company or Other Legal Customer Name: Nations Cabinetry, LLC	
Customer Reference Number (CN): 605051838	
Regulated Entity Number (RN): 100542828	
Company Official or Technical Contact Information: (<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Mrs. <input type="checkbox"/> Ms. <input type="checkbox"/> Other: _____)	
Name: Oscar Rodriguez	
Title: Sr. HR Manager	
Mailing Address: 4600 W US Highway 90	
City: San Antonio	
State: TX	
ZIP Code: 78237	
Telephone Number: (210)307-9133	
E-mail Address: o.rodriguez@nationscabinetry.com	
II. Project Information	
Facility Name: Highway 90 West Plant	
Permit Number: 43104	
Project Number: New	
III. Surcharge Payment	
Project Type: New Source Review (NSR)	
Fee Amount: \$ 10,000	
Check, Money Order, Transaction Number, and/or ePay Voucher Number: <i>(below)</i>	
20461	
Paid Online:	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Company Name on Check: Nation's Cabinetry, LCC	

Form APD-EXP Expedited Permitting Request

I. Contact Information	
Company or Other Legal Customer Name: Nations Cabinetry LLC	
Customer Reference Number (CN): 605051838	
Regulated Entity Number (RN): 100542828	
Company Official or Technical Contact Name: Oscar Rodriguez	
Phone Number: (210)307-9133	
Email: o.rodriguez@nationscabinetry.com	
II. Project Information	
Facility Type: Nations Cabinetry US Hwy 90, San Antonio	
Permit Number: 43104	
Project Number: TBD	
III. Economic Justification	
The purpose of the application associated with this request to expedite will benefit the economy of this state or an area of this state.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
IV. Delinquent Fees and Penalties	
Applications will not be expedited if any delinquent fees and/or penalties are owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ. For more information regarding Delinquent Fees and Penalties, go to the TCEQ Web site at: www.tceq.texas.gov/agency/delin/index.html .	
V. Signature	
The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. As the applicant, I commit to fulfilling all expectations of the expedited permitting program and application requirements promptly. Failure to meet any expectation or requirement may cause my application to be removed from the expedited permitting program and possibly voided at the discretion of the TCEQ Executive Director. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.	
Name: Oscar Rodriguez	
Signature: 	
Date: 06/25/2020	

Reset Form



TCEQ Use Only

TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission <i>(If other is checked please describe in space provided.)</i>		
<input type="checkbox"/> New Permit, Registration or Authorization <i>(Core Data Form should be submitted with the program application.)</i>		
<input checked="" type="checkbox"/> Renewal <i>(Core Data Form should be submitted with the renewal form)</i>		<input type="checkbox"/> Other
2. Customer Reference Number <i>(if issued)</i>		3. Regulated Entity Reference Number <i>(if issued)</i>
CN 605051838		RN 100542828

[Follow this link to search for CN or RN numbers in Central Registry**](#)

SECTION II: Customer Information

4. General Customer Information		5. Effective Date for Customer Information Updates (mm/dd/yyyy)		08/13/2019	
<input type="checkbox"/> New Customer		<input checked="" type="checkbox"/> Update to Customer Information		<input type="checkbox"/> Change in Regulated Entity Ownership	
<input type="checkbox"/> Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)					
<i>The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).</i>					
6. Customer Legal Name <i>(If an individual, print last name first: eg: Doe, John)</i>				<i>If new Customer, enter previous Customer below:</i>	
NATION'S CABINETRY LLC					
7. TX SOS/CPA Filing Number		8. TX State Tax ID (11 digits)		9. Federal Tax ID (9 digits)	
0802199345		32057031323		10. DUNS Number <i>(if applicable)</i>	
11. Type of Customer:		<input checked="" type="checkbox"/> Corporation		<input type="checkbox"/> Individual	
Government: <input checked="" type="checkbox"/> City <input type="checkbox"/> County <input type="checkbox"/> Federal <input type="checkbox"/> State <input type="checkbox"/> Other		<input type="checkbox"/> Sole Proprietorship		Partnership: <input type="checkbox"/> General <input type="checkbox"/> Limited	
12. Number of Employees		<input type="checkbox"/> 0-20 <input type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input checked="" type="checkbox"/> 501 and higher		13. Independently Owned and Operated?	
				<input type="checkbox"/> Yes <input type="checkbox"/> No	
14. Customer Role (Proposed or Actual) – as it relates to the Regulated Entity listed on this form. Please check one of the following:					
<input type="checkbox"/> Owner		<input type="checkbox"/> Operator		<input checked="" type="checkbox"/> Owner & Operator	
<input type="checkbox"/> Occupational Licensee		<input type="checkbox"/> Responsible Party		<input type="checkbox"/> Voluntary Cleanup Applicant <input type="checkbox"/> Other:	
15. Mailing Address:		4600 W US HIGHWAY 90			
City		SAN ANTONIO		State TX	
ZIP		78237		ZIP + 4	
16. Country Mailing Information <i>(if outside USA)</i>				17. E-Mail Address <i>(if applicable)</i>	
				O.RODRIGUEZ@NATIONSCABINETRY.COM	
18. Telephone Number		19. Extension or Code		20. Fax Number <i>(if applicable)</i>	
(210) 684-1611				() -	

SECTION III: Regulated Entity Information

21. General Regulated Entity Information <i>(If 'New Regulated Entity' is selected below this form should be accompanied by a permit application)</i>	
<input type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input checked="" type="checkbox"/> Update to Regulated Entity Information	
<i>The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC.)</i>	
22. Regulated Entity Name <i>(Enter name of the site where the regulated action is taking place.)</i>	
NATION'S CABINETRY US90	

23. Street Address of the Regulated Entity: (No PO Boxes)	4600 W US HIGHWAY 90							
	City	SAN ANTONIO	State	TX	ZIP	78237	ZIP + 4	
24. County	BEXAR							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:								
26. Nearest City						State	Nearest ZIP Code	
27. Latitude (N) In Decimal:	29.405286			28. Longitude (W) In Decimal:	-98.57438			
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds			
29	24	19.0296	-98	34	27.768			
29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)		31. Primary NAICS Code (5 or 6 digits)		32. Secondary NAICS Code (5 or 6 digits)			
2434								
33. What is the Primary Business of this entity? (Do not repeat the SIC or NAICS description.)								
34. Mailing Address:	4600 W US HIGHWAY 90							
	City	SAN ANTONIO	State	TX	ZIP	78237	ZIP + 4	
35. E-Mail Address:								
36. Telephone Number		37. Extension or Code		38. Fax Number (if applicable)				
(210) 684-1611				() -				

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

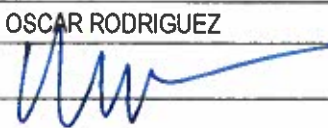
<input type="checkbox"/> Dam Safety	<input type="checkbox"/> Districts	<input type="checkbox"/> Edwards Aquifer	<input type="checkbox"/> Emissions Inventory Air	<input type="checkbox"/> Industrial Hazardous Waste
<input type="checkbox"/> Municipal Solid Waste	<input type="checkbox"/> New Source Review Air	<input type="checkbox"/> OSSF	<input type="checkbox"/> Petroleum Storage Tank	<input type="checkbox"/> PWS
<input type="checkbox"/> Sludge	<input type="checkbox"/> Storm Water	<input type="checkbox"/> Title V Air	<input type="checkbox"/> Tires	<input type="checkbox"/> Used Oil
<input type="checkbox"/> Voluntary Cleanup	<input type="checkbox"/> Waste Water	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input type="checkbox"/> Other:

SECTION IV: Preparer Information

40. Name:	OSCAR RODRIGUEZ	41. Title:	SR. HR DIRECTOR
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(210) 684-1611		() -	O.RODRIGUEZ@NATIONSCABINETRY.COM

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	NATION'S CABINETRY LLC	Job Title:	SR. HR DIRECTOR
Name(In Print):	OSCAR RODRIGUEZ	Phone:	(210) 684-1611
Signature:		Date:	06/26/2020

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: _____
 Permit #: _____
 Company: _____

I. Applicant Information	
<p style="color: red; margin: 0;">I acknowledge that I am submitting an authorized TCEQ application workbook and any necessary attachments. Except for inputting the requested data and adjusting row height and column width, I have not changed the TCEQ application workbook in any way, including but not limited to changing formulas, formatting, content, or protections.</p>	<p>I agree</p>
<p>A. Company Information</p>	
<p>Company or Legal Name:</p>	<p>Nations Cabinetry LLC</p>
<p>Permits are issued to either the facility owner or operator, commonly referred to as the applicant or permit holder. List the legal name of the company, corporation, partnership, or person who is applying for the permit. We will verify the legal name with the Texas Secretary of State at (512) 463-5555 or at:</p>	
<p>https://www.sos.state.tx.us</p>	
<p>Texas Secretary of State Charter/Registration Number (if given):</p>	<p>32057031323</p>
<p>B. Company Official Contact Information: must not be a consultant</p>	
<p>Prefix (Mr., Ms., Dr., etc.):</p>	<p>Mr.</p>
<p>First Name:</p>	<p>Oscar</p>
<p>Last Name:</p>	<p>Rodriguez</p>
<p>Title:</p>	<p>Senior HR Director</p>
<p>Mailing Address:</p>	<p>4600 W US Highway 90</p>
<p>Address Line 2:</p>	<p></p>
<p>City:</p>	<p>San Antonio</p>
<p>State:</p>	<p>Texas</p>
<p>ZIP Code:</p>	<p>78237</p>
<p>Telephone Number:</p>	<p>(210)684-1611</p>
<p>Fax Number:</p>	<p></p>
<p>Email Address:</p>	<p>o.rodriquez@nationscabinetry.com</p>
<p>C. Technical Contact Information: This person must have the authority to make binding agreements and representations on behalf of the applicant and may be a consultant. Additional technical contact(s) can be provided in a cover letter.</p>	
<p>Prefix (Mr., Ms., Dr., etc.):</p>	<p>Mr.</p>
<p>First Name:</p>	<p>Oscar</p>
<p>Last Name:</p>	<p>Rodriguez</p>
<p>Title:</p>	<p>Senior HR Director</p>
<p>Company or Legal Name:</p>	<p>Nations's Cabinetry</p>
<p>Mailing Address:</p>	<p>4600 W US Highway 90</p>
<p>Address Line 2:</p>	<p></p>
<p>City:</p>	<p>San Antonio</p>
<p>State:</p>	<p>Texas</p>
<p>ZIP Code:</p>	<p>78237</p>
<p>Telephone Number:</p>	<p>(210)684-1611</p>
<p>Fax Number:</p>	<p></p>
<p>Email Address:</p>	<p>o.rodriquez@nationscabinetry.com</p>
<p>D. Assigned Numbers</p>	
<p>The CN and RN below are assigned when a Core Data Form is initially submitted to the Central Registry. The RN is also assigned if the agency has conducted an investigation or if the agency has issued an enforcement action. If these numbers have not yet been assigned, leave these questions blank and include a Core Data Form with your application submittal. See Section VI.B. below for additional information.</p>	
<p>Enter the CN. The CN is a unique number given to each business, governmental body, association, individual, or other entity that owns, operates, is responsible for, or is affiliated with a regulated entity.</p>	<p>605051838</p>

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: _____
 Permit #: _____
 Company: _____

Enter the RN. The RN is a unique agency assigned number given to each person, organization, place, or thing that is of environmental interest to us and where regulated activities will occur. The RN replaces existing air account numbers. The RN for portable units is assigned to the unit itself, and that same RN should be used when applying for authorization at a different location.	100542828
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II. Delinquent Fees and Penalties

Does the applicant have unpaid delinquent fees and/or penalties owed to the TCEQ? This form will not be processed until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ are paid in accordance with the Delinquent Fee and Penalty Protocol. For more information regarding Delinquent Fees and Penalties, go to the TCEQ Web site at: https://www.tceq.texas.gov/agency/financial/fees/delin	No
--	----

III. Permit Information

A. Permit and Action Type (multiple may be selected, leave no blanks)

Additional information regarding the different NSR authorizations can be found at:

<https://www.tceq.texas.gov/permitting/air/guidance/authorize.html>

Select from the drop-down the type of action being requested for each permit type. **If that permit type does not apply, you MUST select "Not applicable".**

Provide all assigned permit numbers relevant for the project. Leave blank if the permit number has not yet been assigned.

Permit Type	Action Type Requested (do not leave blank)	Permit Number (if assigned)
Minor NSR (can be a Title V major source): <i>Not applicable, Initial, Amendment, Renewal, Renewal Certification, Renewal/Amendment, Relocation/Alteration, Change of Location, Alteration, Extension to Start of Construction</i>	Renewal/Amendment	43104
Special Permit: <i>Not applicable, Amendment, Renewal, Renewal Certification, Renewal/Amendment, Alteration, Extension to Start of Construction</i>	Not applicable	
De Minimis: <i>Not applicable, Initial</i>	Not applicable	
Flexible: <i>Not applicable, Initial, Amendment, Renewal, Renewal Certification, Renewal/Amendment, Alteration, Extension to Start of Construction</i>	Not applicable	
PSD: <i>Not applicable, Initial, Major Modification</i>	Not applicable	
Nonattainment: <i>Not applicable, Initial, Major Modification</i>	Not applicable	
HAP Major Source [FCAA § 112(g)]: <i>Not applicable, Initial, Major Modification</i>	Not applicable	
PAL: <i>Not applicable, Initial, Amendment, Renewal, Renewal/Amendment, Alteration</i>	Not applicable	
GHG PSD: <i>Not applicable, Initial, Major Modification, Voluntary Update</i>	Not applicable	

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: _____
 Permit #: _____
 Company: _____

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B. MSS Activities

How are/will MSS activities for sources associated with this project be authorized?	Combination (list below)
List the permit number, registration number, and/or PBR number.	NSR Permit No. 43104, PBR Registration No. 74161, 30 TAC 106.263 and other various PBRs

C. Consolidating NSR Permits

Will this permit be consolidated into another NSR permit with this action?	No
Will NSR permits be consolidated into this permit with this action?	No

D. Incorporation of Standard Permits, Standard Exemptions, and/or Permits By Rule (PBR)

To ensure protectiveness, previously issued authorizations (standard permits, standard exemptions, or PBRs) including those for MSS, are incorporated into a permit either by consolidation or by reference. At the time of renewal and/or amendment, consolidation (in some cases) may be voluntary and referencing is mandatory. More guidance regarding incorporation can be found in 30 TAC § 116.116(d)(2), 30 TAC § 116.615(3) and in this memo:

https://www.tceq.texas.gov/assets/public/permitting/air/memos/pbr_spc06.pdf

Are there any standard permits, standard exemptions, or PBRs to be incorporated by reference?	No
Are there any PBR, standard exemptions, or standard permits associated to be incorporated by consolidation? Note: Emission calculations, a BACT analysis, and an impacts analysis must be attached to this application at the time of submittal for any authorization to be incorporated by consolidation.	No

E. Associated Federal Operating Permits

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: _____
 Permit #: _____
 Company: _____

Is this facility located at a site required to obtain a site operating permit (SOP) or general operating permit (GOP) ?	No

IV. Facility Location and General Information

A. Location	
County: Enter the county where the facility is physically located.	Bexar
TCEQ Region	Region 13
County attainment status as of Sept. 23, 2019	Marginal Ozone nonattainment
Street Address:	4600 US Highway 90 West
City: If the address is not located in a city, then enter the city or town closest to the facility, even if it is not in the same county as the facility.	San Antonio
ZIP Code: Include the ZIP Code of the physical facility site, not the ZIP Code of the applicant's mailing address.	78237
Site Location Description: If there is no street address, provide written driving directions to the site. Identify the location by distance and direction from well-known landmarks such as major highway intersections.	
Use USGS maps, county maps prepared by the Texas Department of Transportation, or an online software application such as Google Earth to find the latitude and longitude.	
Latitude (in degrees, minutes, and nearest second (DDD:MM:SS)) for the street address or the destination point of the driving directions. Latitude is the angular distance of a location north of the equator and will always be between 25 and 37 degrees north (N) in Texas.	29°24'20"N
Longitude (in degrees, minutes, and nearest second (DDD:MM:SS)) for the street address or the destination point of the driving directions. Longitude is the angular distance of a location west of the prime meridian and will always be between 93 and 107 degrees west (W) in Texas.	98°34'45"W
Is this a project for a lead smelter, concrete crushing facility, and/or a hazardous waste management facility?	No

B. General Information	
Site Name:	Nation's Cabinetry - Hwy 90
Area Name: Must indicate the general type of operation, process, equipment or facility. Include numerical designations, if appropriate. Examples are Sulfuric Acid Plant and No. 5 Steam Boiler. Vague names such as Chemical Plant are not acceptable.	Saw dust operations, Paint coating operations
Are there any schools located within 3,000 feet of the site boundary?	Yes

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: _____
 Permit #: _____
 Company: _____

C. Portable Facility

Permanent or portable facility?	Permanent

D. Industry Type

Principal Company Product/Business:	Wood Kitchen Cabinets
A list of SIC codes can be found at: https://www.naics.com/sic-codes-industry-drilldown/	
Principal SIC code:	2434
NAICS codes and conversions between NAICS and SIC Codes are available at: https://www.census.gov/eos/www/naics/	
Principal NAICS code:	337110

E. State Senator and Representative for this site

This information can be found at (note, the website is not compatible to Internet Explorer): https://wrm.capitol.texas.gov/	
State Senator:	Sen. Jose Menendez
District:	26
State Representative:	Rep. Ina Minjarez
District:	124

V. Project Information

A. Description

Provide a brief description of the project that is requested. (Limited to 500 characters).	This application is proposing to renew and amend NSR amendment 43104. The amendment will cover the addition of a coating line (Paint Line) as well as other items. An extended summary of changes is included within the application package.
--	---

B. Project Timing

Authorization must be obtained for many projects before beginning construction. Construction is broadly interpreted as anything other than site clearance or site preparation. Enter the date as "Month Date, Year" (e.g. July 4, 1776).

Projected Start of Construction:	
Projected Start of Operation:	

C. Enforcement Projects

Is this application in response to, or related to, an agency investigation, notice of violation, or enforcement action?	No

D. Operating Schedule

Will sources in this project be authorized to operate 8760 hours per year?	Yes

VI. Application Materials

All representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued. (30 TAC § 116.116)

A. Confidential Application Materials

Is confidential information submitted with this application?	Yes
If yes, is each confidential page marked "CONFIDENTIAL" in large red letters?	Yes

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: _____
 Permit #: _____
 Company: _____

THSC §382.041 requires us not to disclose any information related to manufacturing processes that is marked Confidential. Mark any information related to secret or proprietary processes or methods of manufacture Confidential if you do not want this information in the public file. All confidential information should be separated from the application and submitted as a separate file. Additional information regarding confidential information can be found at:

<https://www.tceq.texas.gov/permitting/air/confidential.html>

B. Is the Core Data Form (Form 10400) attached?	Yes
https://www.tceq.texas.gov/assets/public/permitting/centralregistry/10400.docx	
C. Is a current area map attached?	Yes
Is the area map a current map with a true north arrow, an accurate scale, the entire plant property, the location of the property relative to prominent geographical features including, but not limited to, highways, roads, streams, and significant landmarks such as buildings, residences, schools, parks, hospitals, day care centers, and churches?	Yes
Does the map show a 3,000-foot radius from the property boundary?	Yes
D. Is a plot plan attached?	Yes
Does your plot plan clearly show a north arrow, an accurate scale, all property lines, all emission points, buildings, tanks, process vessels, other process equipment, and two bench mark locations?	Yes
Does your plot plan identify all emission points on the affected property, including all emission points authorized by other air authorizations, construction permits, PBRs, special permits, and standard permits?	Yes
Did you include a table of emission points indicating the authorization type and authorization identifier, such as a permit number, registration number, or rule citation under which each emission point is currently authorized?	Yes
E. Is a process flow diagram attached?	Yes
Is the process flow diagram sufficiently descriptive so the permit reviewer can determine the raw materials to be used in the process; all major processing steps and major equipment items; individual emission points associated with each process step; the location and identification of all emission abatement devices; and the location and identification of all waste streams (including wastewater streams that may have associated air emissions)?	Yes
F. Is a process description attached?	Yes
Does the process description emphasize where the emissions are generated, why the emissions must be generated, what air pollution controls are used (including process design features that minimize emissions), and where the emissions enter the atmosphere?	Yes
Does the process description also explain how the facility or facilities will be operating when the maximum possible emissions are produced?	Yes
G. Are detailed calculations attached? Calculations must be provided for each source with new or changing emission rates. For example, a new source, changing emission factors, decreasing emissions, consolidated sources, etc. You do not need to submit calculations for sources which are not changing emission rates with this project. Please note: the preferred format is an electronic workbook (such as Excel) with all formulas viewable for review. It can be emailed with the submittal of this application workbook.	Yes
Are emission rates and associated calculations for planned MSS facilities and related activities attached?	Yes
H. Is a material balance (Table 2, Form 10155) attached?	N/A

Texas Commission on Environmental Quality
Form PI-1 General Application
General

Date: _____
 Permit #: _____
 Company: _____

I. Is a list of MSS activities attached?	Yes
Are the MSS activities listed and discussed separately, each complete with the authorization mechanism or emission rates, frequency, duration, and supporting information if authorized by this permit?	Yes
J. Is a discussion of state regulatory requirements attached, addressing 30 TAC Chapters 101, 111, 112, 113, 115, and 117?	Yes
For all applicable chapters, does the discussion include how the facility will comply with the requirements of the chapter?	Yes
For all not applicable chapters, does the discussion include why the chapter is not applicable?	Yes
K. Are all other required tables, calculations, and descriptions attached?	Yes

VII. Signature	
<p>The owner or operator of the facility must apply for authority to construct. The appropriate company official (owner, plant manager, president, vice president, or environmental director) must sign all copies of the application. The applicant's consultant cannot sign the application. Important Note: Signatures must be original in ink, not reproduced by photocopy, fax, or other means, and must be received before any permit is issued.</p>	
<p>The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7; the Texas Health and Safety Code, Chapter 382; the Texas Clean Air Act (TCAA); the air quality rules of the Texas Commission on Environmental Quality; or any local governmental ordinance or resolution enacted pursuant to the TCAA. I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.</p>	
Name:	Oscar Rodriguez
Signature:	
<i>Original signature is required.</i>	
Date:	

Texas Commission on Environmental Quality
Form PI-1 General Application
Renewals

Date: _____
 Permit #: _____
 Company: _____

I. Type of Permit Renewal and Associated Actions

A. Current Operations	
Do all dockside vessel emissions associated with the facility comply with all rules and regulations of the commission and with the intent of the TCAA, including protection of the health and property of the public and minimization of emissions to the extent possible, consistent with good air pollution practices? (30 TAC § 116.311(a)(1))	N/A
Is the facility being operated in accordance with all requirements and conditions of the existing permit, including representations in the application for permit to construct and subsequent amendments, and any previously granted renewal, unless otherwise authorized for a qualified facility?	Yes
Are there any permit actions pending before the TCEQ?	No
Have any qualified facility changes under 30 TAC § 116.116(e) occurred since originally issued or last renewed?	No
Have emission factors changed since the last permitting action?	No

B. Changes Made Since Last Amendment or Renewal	
Have any of the following changes been made to or proposed for the facilities covered by this permit since it was last amended or renewed and are not currently authorized by a PBR, standard permit, or other authorization? <i>Select "Yes"</i>	
Construction of a new emission source?	Yes
The emission of new chemical species or a change in character of emissions?	Yes
An increase in emission rates on a short term or annual basis? (This includes increases of a criteria pollutant as well as increases of a chemical species.)	Yes
A change in the method of emission control if the emission control is a source itself, such as a thermal oxidizer or flare?	No
Are new pollutants being added in the renewal process, not currently listed in the permit?	No
If "yes" to any question in Section B above is selected, a concurrent permit amendment is required before the permit can be renewed.	

II. Federal Regulatory Questions

Indicate if any of the following requirements apply to the proposed facility. Note that some federal regulations apply to minor sources. Enter all applicable Subparts.	
A. Title 40 CFR Part 60	
Do NSPS subpart(s) apply to a facility in this application?	No
B. Title 40 CFR Part 61	

Date: _____
Permit #: _____
Company: _____

Do NESHAP subpart(s) apply to a facility in this application?	No

Do MACT subpart(s) apply to a facility in this application?	No

Texas Commission on Environmental Quality
Form PI-1 General Application
Renewals

Date: _____
Permit #: _____
Company: _____

Date: _____
Permit #: _____
Company: _____

I. Additional Questions for Specific NSR Minor Permit Actions					

Date: _____
Permit #: _____
Company: _____

E. Concrete Batch Plants	
Is this a project for a concrete batch plant?	No

Date: _____
Permit #: _____
Company: _____

[illegible]

Texas Commission on Environmental Quality
Form PI-1 General Application
Technical

Date: _____
Permit #: _____
Company: _____

Texas Commission on Environmental Quality
Form PI-1 General Application
Technical

Date: _____
Permit #: _____
Company: _____

Texas Commission on Environmental Quality
Form PI-1 General Application
Technical

Date: _____
 Permit #: _____
 Company: _____

IX. Emissions Review

A. Impacts Analysis

Any change that results in an increase in off-property concentrations of air contaminants requires an air quality impacts demonstration. Information regarding the air quality impacts demonstration must be provided with the application and show compliance with all state and federal requirements. Detailed requirements for the information necessary to make the demonstration are listed on the Impacts sheet of this workbook.

Does this project require an impacts analysis?	Yes
--	-----

B. Disaster Review

If the proposed facility will handle sufficient quantities of certain chemicals which, if released accidentally, would cause off-property impacts that could be immediately dangerous to life and health, a disaster review analysis may be required as part of the application. Contact the appropriate NSR permitting section for assistance at (512) 239-1250. Additional Guidance can be found at:

<https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/disrev-factsheet.pdf>

Does this application involve any air contaminants for which a disaster review is required?	No
---	----

C. Air Pollutant Watch List

Certain areas of the state have concentrations of specific pollutants that are of concern. The TCEQ has designated these portions of the state as watch list areas. Location of a facility in a watch list area could result in additional restrictions on emissions of the affected air pollutant(s) or additional permit requirements. The location of the areas and pollutants of interest can be found at:

<https://www.tceq.texas.gov/toxicology/apwl/apwl.html>

Is the proposed facility located in a watch list area?	No
--	----

D. Mass Emissions Cap and Trade

Is this facility located at a site within the Houston/Galveston nonattainment area (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties)?	No
--	----

Texas Commission on Environmental Quality
Form PI-1 General Application
Unit Types - Emission Rates

Date: _____
 Permit #: _____
 Company: _____

Permit primary industry (must be selected for workbook to function) Coatings

Action Requested (only 1 action per FIN)	Include these emissions in annual (tpy) summary?	Facility ID Number (FIN)	Emission Point Number (EPN)	Source Name	Pollutant	Current Short-Term (lb/hr)	Current Long-Term (tpy)	Consolidated Current Short-Term (lb/hr)	Consolidated Current Long-Term (tpy)	Proposed Short-Term (lb/hr)	Proposed Long-Term (tpy)	Short-Term Difference (lb/hr)	Long-Term Difference (tpy)	Unit Type (Used for reviewing BACT and Monitoring Requirements)
New/Modified	Yes	RTO	RTO	Regenerative Thermal Oxidizers - Process	VOC	8.46				1.34	1.17	-7.12	1.17	Control: Oxidizer (Thermal)
					Exempt Solvents	--				1.23	0.58	1.23	0.58	
					PM					<0.01	<0.01	0.01	0.01	
					PM10					<0.01	<0.01	0.01	0.01	
					PM2.5					<0.01	<0.01	0.01	0.01	
New/Modified	Yes	RTO	RTO	Regenerative Thermal Oxidizers - Combustion	VOC	0.03	0.02			0.06	0.28	0.03	0.26	Control: Oxidizer (Thermal)
					NOx	0.59	0.21			0.59	2.58	0	2.37	
					CO	0.5	0.18			0.49	2.16	-0.01	1.98	
					SO2	<0.01	0.02			<0.01	0.02	0	0	
					PM	0.05	0.02			0.04	0.2	-0.01	0.18	
					PM10	0.05	0.02			0.04	0.2	-0.01	0.18	
					PM2.5					0.04	0.2	0.04	0.2	
Remove	Yes	Stain,Seal,Seal3,Seal4	1,2,3,4	Stain Booth with Dryer and Topcoat/Sealer Booth with Dryers Vented Uncontrolled	VOC	167						-167	0	
					Exempt Solvents							0	0	
					PM	0.65						-0.65	0	
					PM10	0.65						-0.65	0	
Remove	Yes	Stain,Seal,Seal3,Seal4	RTO,1,2,3,4	Booth and Dryers Controlled and Uncontrolled	VOC		40					0	-40	
					Exempt Solvents							0	0	
					PM		2.85					0	-2.85	
					PM10		2.85					0	-2.85	
New/Modified	Yes	Boil	5	Boiler	VOC	0.02	0.09			0.05	0.21	0.03	0.12	Boiler: Liquid and Gas Fuel, ≤ 40 MMBtu/hr
					PM	0.03	0.11			0.03	0.15	0	0.04	
					PM10	0.03	0.11			0.03	0.15	0	0.04	
					PM2.5					0.03	0.15	0.03	0.15	
					NOx	0.34	1.5			0.44	1.93	0.1	0.43	
					CO	0.29	1.27			0.37	1.62	0.08	0.35	
					SO2	<0.01	0.01			<0.01	0.01	0	0	
New/Modified	Yes	Heat	6	Makeup Air Heater	VOC	0.03	0.13			0.06	0.26	0.03	0.13	Heater
					PM	0.04	0.18			0.04	0.18	0	0	
					PM10	0.04	0.18			0.04	0.18	0	0	
					PM2.5					0.04	0.18	0.04	0.18	
					NOx	0.54	2.37			0.54	2.36	0	-0.01	
					CO	0.45	1.99			0.45	1.98	0	-0.01	
					SO2	<0.01	0.01			<0.01	0.01	0	0	
New/Modified	Yes	Shop	7	Baghouse	PM	0.69	3.03			0.69	3.03	0	0	Control: Baghouse, Cartridge Filter System, Bin Vent Filter
					PM10	0.69	3.03			0.37	1.6	-0.32	-1.43	
					PM2.5					0.2	0.89	0.2	0.89	
New/Modified	Yes	Shop	8	Wood Shop Glue and Space Heater Fugitives	VOC	3.64	1.82			0.03	0.07	-3.61	-1.75	Heater
					VOC	0.01	0.02			0.01	0.05	0	0.03	
					PM	0.01	0.03			0.01	0.03	0	0	
					PM10	0.01	0.03			0.01	0.03	0	0	
					PM2.5					0.01	0.03	0.01	0.03	
					NOx	0.09	0.41			0.09	0.41	0	0	
					CO	0.04	0.18			0.08	0.35	0.04	0.17	
					SO2	<0.01	<0.01			<0.01	<0.01	0	0	
Renew only	Yes	Fug	9	Valve, Connection, and	VOC	0.02	0.06			0.02	0.06	0	0	Other
New/Modified	Yes	Paint	10	Spray Room Finish Department Fugitives	VOC					13.88	17.3	13.88	17.3	Painting/Surface Coating (Enclosed)
					Exempt Solvents					5.91	5.86	5.91	5.86	
New/Modified	Yes	Shop	11	Spray Room Finish Department Fugitives	VOC					92.06	28.18	92.06	28.18	Painting/Surface Coating (Enclosed)
					Exempt Solvents					26.36	10.25	26.36	10.25	
					PM					<0.01	<0.01	0.01	0.01	

Date: _____
Permit #: _____
Company: _____

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Date: _____
Permit #: _____
Company: _____

[illegible]

Texas Commission on Environmental Quality
Form PI-1 General Application
Public Notice

Date: _____
 Permit #: _____
 Company: _____

I. Public Notice Applicability

A. Application Type

Is this an application for a renewal?	Yes
Is this an application for a minor permit amendment?	Yes
Is there any change in character of emissions in this application (a new criteria pollutant or a new VOC or PM species)?	Yes
Is there a new air contaminant in this application?	Yes

B. Project Increases and Public Notice Thresholds (for Initial and Amendment Projects)

For public notice applicability, the agency does not include consolidation or incorporation of any previously authorized facility or activity (PBR, standard permits, etc.), changes to permitted allowable emission rates when exclusively due to changes to standardized emission factors, or reductions in emissions which are not enforceable through the amended permit. Thus, the total emissions increase would be the sum of emissions increases under the amended permit and the emissions decreases under the amended permit for each air contaminant.

The table below will generate emission increases based on the values represented on the "Unit Types - Emission Rates" sheet. Use the "yes" and "no" options in column B of the "Unit Types - Emission Rates" worksheet to indicate if a unit's proposed change of emissions should be included in these totals.

Notes:

1. Emissions of PM, PM10, and/or PM2.5 may have been previously quantified and authorized as PM, PM10, and/or PM2.5. These emissions will be speciated based on current guidance and policy to demonstrate compliance with current standards and public notice requirements may change during the permit review.

2. All renewals require public notice.

This row is optional. If you do not think the table below accurately represents public notice applicability increases for your project, provide discussion here (1000 characters).	
--	--

Do the facilities handle, load, unload, dry, manufacture, or process grain, seed, legumes, or vegetable fibers (agricultural facilities)?	No
---	----

Texas Commission on Environmental Quality
Form PI-1 General Application
Public Notice

Date: _____
 Permit #: _____
 Company: _____

Pollutant	Current Long-Term (tpy)	Consolidated Emissions (tpy)	Proposed Long-Term (tpy)	Project Change in Allowable (tpy)	PN Threshold	Notice required?
VOC	42.14	0.00	47.58	5.44	5	Yes
PM	6.22	0.00	3.61	-2.61	5	No
PM ₁₀	6.22	0.00	2.18	-4.04	5	No
PM _{2.5}	0.00	0.00	1.47	1.47	5	No
NO _x	4.49	0.00	7.28	2.79	5	No
CO	3.62	0.00	6.11	2.49	50	No
SO ₂	0.05	0.00	0.05	0.00	10	No
Pb	0.00	0.00	0.00	0.00	0.6	No
Exempt Solvents	0	0	16.69	16.69	5	Yes

* Notice is required for PM, PM10, and PM2.5 if one of these pollutants is above the threshold.

** Notice of a GHG action is determined by action type. Initial and major modification always require notice. Voluntary updates require a consolidated notice if there is a change to BACT. Project emission increases of CO2e (CO2 equivalent) are not relevant for determining public notice of GHG permit actions.

C. Is public notice required for this project as represented in this workbook? If no, proceed to Section III Small Business Classification. Note: public notice applicability for this project may change throughout the technical review.	Yes
D. Are any HAPs to be authorized/re-authorized with this project? The category "HAPs" must be specifically listed in the public notice if the project authorizes (reauthorizes for renewals) any HAP pollutants.	Yes

II. Public Notice Information

Complete this section if public notice is required (determined in the above section) or if you are not sure if public notice is required.

A. Contact Information

Enter the contact information for the **person responsible for publishing**. This is a designated representative who is responsible for ensuring public notice is properly published in the appropriate newspaper and signs are posted at the facility site. This person will be contacted directly when the TCEQ is ready to authorize public notice for the application.

Prefix (Mr., Ms., Dr., etc.):	Mr.
First Name:	Oscar
Last Name:	Rodriguez
Title:	Senior HR Director
Company Name:	Nations Cabinetry

Texas Commission on Environmental Quality
Form PI-1 General Application
Public Notice

Date: _____
 Permit #: _____
 Company: _____

Mailing Address:	4600 W US Highway 90
Address Line 2:	
City:	San Antonio
State:	Texas
ZIP Code:	78237
Telephone Number:	(210)684-1611
Fax Number:	
Email Address:	o.rodriquez@nationscabinetry.com

Enter the contact information for the **Technical Contact**. This is the designated representative who will be listed in the public notice as a contact for additional information.

Prefix (Mr., Ms., Dr., etc.):	Mr.
First Name:	Oscar
Last Name:	Rodriguez
Title:	Senior HR Director
Company Name:	Nations Cabinetry
Mailing Address:	4600 W US Highway 90
Address Line 2:	
City:	San Antonio
State:	Texas
ZIP Code:	78237
Telephone Number:	(210)684-1611
Fax Number:	
Email Address:	o.rodriquez@nationscabinetry.com

B. Public place

Place a copy of the full application (including all of this workbook and all attachments) at a public place in the county where the facilities are or will be located. You must state where in the county the application will be available for public review and comment. The location must be a public place and described in the notice. A public place is a location which is owned and operated by public funds (such as libraries, county courthouses, city halls) and cannot be a commercial enterprise. You are required to pre-arrange this availability with the public place indicated below. The application must remain available from the first day of publication through the designated comment period.

If this is an application for a PSD, nonattainment, or FCAA §112(g) permit, the public place must have internet access available for the public as required in 30 TAC § 39.411(f)(3).

If the application is submitted to the agency with information marked as Confidential, you are required to indicate which specific portions of the application are not being made available to the public. These portions of the application must be accompanied with the following statement: ***Any request for portions of this application that are marked as confidential must be submitted in writing, pursuant to the Public Information Act, to the TCEQ Public Information Coordinator, MC 197, P.O. Box 13087, Austin, Texas 78711-3087.***

Name of Public Place:	
Physical Address:	
Address Line 2:	
City:	
ZIP Code:	
County:	
Has the public place granted authorization to place the application for public viewing and copying?	

Date: _____
Permit #: _____
Company: _____

In some cases, public notice in an alternate language is required. If an elementary or middle school nearest to the facility is in a school district required by the Texas Education Code to have a bilingual program, a bilingual notice will be required. If there is no bilingual program required in the school nearest the facility, but children who would normally attend those schools are eligible to attend bilingual programs elsewhere in the school district, the bilingual notice will also be required. If it is determined that alternate language notice is required, you are responsible for ensuring that the publication in the alternate language is complete and accurate in that language.

Is a bilingual program required by the Texas Education Code in the School District?	Yes
Are the children who attend either the elementary school or the middle school closest to your facility eligible to be enrolled in a bilingual program provided by the district?	Yes
If yes to either question above, list which language(s) are required by the bilingual program?	Spanish

[illegible]

Texas Commission on Environmental Quality
Form PI-1 General Application
Public Notice

Date: _____
Permit #: _____
Company: _____

III. Small Business Classification

Complete this section to determine small business classification. If a small business requests a permit, agency rules (30 TAC § 39.603(f)(1)(A)) allow for alternative public notification requirements if all of the following criteria are met. If these requirements are met, public notice does not have to include publication of the prominent (12 square inch) newspaper notice.

Does the company (including parent companies and subsidiary companies) have fewer than 100 employees or less than \$6 million in annual gross receipts?	No
Small business classification:	No

Texas Commission on Environmental Quality
Form PI-1 General Application
Federal Applicability

Date: _____
 Permit #: _____
 Company: _____

I. County Classification	
Does the project require retrospective review?	No
County (completed for you from your response on the General sheet)	Bexar
This project will be located in an area that is in marginal nonattainment for ozone as of Sept. 23, 2019. Select from the drop-down list to the right if you would like the project to be reviewed under a different classification.	Ozone - Marginal
Determination:	This project will be located in a county with a Marginal Ozone nonattainment classification, and the project will be reviewed under a Marginal Ozone nonattainment classification. Complete the nonattainment section below and provide an analysis with the application.

II. PSD and GHG PSD Applicability Summary			
Is netting required for the PSD analysis for this project?			No
Pollutant	Project Increase	Threshold	PSD Review Required?
CO	2.49	250	No
NO _x	2.79	250	No
PM	-2.61		No
PM ₁₀	-4.04		No
PM _{2.5}	1.47	250	No
SO ₂			
Pb			
H ₂ S			
TRS			
Reduced sulfur compounds (including H ₂ S)			
H ₂ SO ₄			
Fluoride (excluding HF)			
CO ₂ e			

III. Nonattainment Applicability Summary			
Is netting required for the nonattainment analysis for this project?			No
Pollutant	Project Increase	Threshold	NA Review Required?

Texas Commission on Environmental Quality
Form PI-1 General Application
Federal Applicability

Date: _____
Permit #: _____
Company: _____

Ozone (as VOC)	5.44	40	No
Ozone (as NO _x)	2.79	40	No

IV. Offset Summary (for Nonattainment Permits)			
Pollutant	Offset Ratio	Offset Quantity Required (tpy)	Where is the offset coming from?

Texas Commission on Environmental Quality
Form PI-1 General Application
Fees

Date: _____
 Permit #: _____
 Company: _____

I. General Information - Non-Renewal	
Is this project for new facilities controlled and operated directly by the federal government? (30 TAC § 116.141(b)(1) and 30 TAC § 116.163(a))	No
A fee of \$75,000 shall be required if no estimate of capital project cost is included with the permit application. (30 TAC § 116.141(d)) Select "yes" here to use this option. Then skip sections II and III.	No
Select Application Type	Minor Application

II. Direct Costs - Non-Renewal	
Type of Cost	Amount
Process and control equipment not previously owned by the applicant and not currently authorized under this chapter.	\$479,779.00
Auxiliary equipment, including exhaust hoods, ducting, fans, pumps, piping, conveyors, stacks, storage tanks, waste disposal facilities, and air pollution control equipment specifically needed to meet permit and regulation requirements.	\$49,804.00
Freight charges.	\$3,546.00
Site preparation, including demolition, construction of fences, outdoor lighting, road, and parking areas.	\$0.00
Installation, including foundations, erection of supporting structures, enclosures or weather protection, insulation and painting, utilities and connections, process integration, and process control equipment.	\$0.00
Auxiliary buildings, including materials storage, employee facilities, and changes to existing structures.	\$0.00
Ambient air monitoring network.	\$0.00
Sub-Total:	\$533,129.00

III. Indirect Costs - Non-Renewal	
Type of Cost	Amount
Final engineering design and supervision, and administrative overhead.	\$0.00
Construction expense, including construction liaison, securing local building permits, insurance, temporary construction facilities, and construction clean-up.	\$0.00
Contractor's fee and overhead.	\$0.00
Sub-Total:	\$0.00

IV. Calculations - Non-Renewal
<p>For GHG permits: A single PSD fee (calculated on the capital cost of the project per 30 TAC § 116.163) will be required for all of the associated permitting actions for a GHG PSD project. Other NSR permit fees related to the project that have already been remitted to the TCEQ can be subtracted when determining the appropriate fee to submit with the GHG PSD application. Identify these other fees in the GHG PSD permit application.</p>

Texas Commission on Environmental Quality
Form PI-1 General Application
Fees

Date: _____
 Permit #: _____
 Company: _____

In signing the "General" sheet with this fee worksheet attached, I certify that the total estimated capital cost of the project as defined in 30 TAC §116.141 is equal to or less than the above figure. I further state that I have read and understand Texas Water Code § 7.179, which defines Criminal Offenses for certain violations, including intentionally or knowingly making, or causing to be made, false material statements or representations.

Estimated Capital Cost	Minor Application Fee	
Less than \$300,000	\$900 (minimum fee)	
\$300,000 - \$7,500,000	N/A	
\$300,000 - \$25,000,000	0.30% of capital cost	
Greater than \$7,500,000	N/A	
Greater than \$25,000,000	\$75,000 (maximum fee)	

Your estimated capital cost:	\$533,129.00	x 0.30% =
Permit Application Fee:		\$1,599.39

V. Renewal Fee	
The fee for renewal is based on the total annual allowable emissions from the permitted facility to be renewed. If this project includes an amendment, the amendment permit fee will be calculated separately.	
Enter the total allowable emissions (tons per year). The total emissions must include those represented in any PBR or standard permits to be incorporated by consolidation into this permit.	75
Permit fee due	\$ 2,693.00

VI. Total Fees	
Note: fees can be paid together with one payment or as two separate payments.	
Non-Renewal Fee	\$1,599.39
Renewal Fee	\$ 2,693.00
Total	\$4,292.39

VII. Payment Information	
A. Payment One (required)	
Was the fee paid online?	Yes
Enter the fee amount:	\$ 4,292.39
Enter the check, money order, ePay Voucher, or other transaction number:	20460
Enter the Company name as it appears on the check:	Nations Cabinetry, LLC
B. Payment Two (if paying renewal and non-renewal fees separately)	
Was the fee paid online?	
Enter the fee amount:	
Enter the check, money order, ePay Voucher, or other transaction number:	

Texas Commission on Environmental Quality
Form PI-1 General Application
Fees

Date: _____
Permit #: _____
Company: _____

Enter the Company name as it appears on the check:	
C. Total Paid	\$4,292.39

VIII. Professional Engineer Seal Requirement	
Is the estimated capital cost of the project above \$2 million?	No
Is the application required to be submitted under the seal of a Texas licensed P.E.? Note: an electronic PE seal is acceptable.	No

Texas Commission on Environmental Quality
Form PI-1 General Application
Impacts

Date: _____
 Permit #: _____
 Company: _____

Pollutant	Does this pollutant require PSD review?	How will you demonstrate that this project meets all applicable requirements?	Notes	Additional Notes (optional)
VOC	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	Speciated
Exempt Solvents	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	Speciated
PM	No	Not applicable	This pollutant is not a part of this project or does not require an impacts analysis.	
PM10	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
PM2.5	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
NOx	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
CO	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	
SO2	No	Modeling: screen or refined	Attach a completed "Electronic Modeling Evaluation Workbook" (EMEW).	

Texas Commission on Environmental Quality
Form PI-1 General Application
Impacts

Date: _____
Permit #: _____
Company: _____

Pollutant	Does this pollutant require PSD review?	How will you demonstrate that this project meets all applicable requirements?	Notes	Additional Notes (optional)

Date: _____
Permit #: _____
Company: _____

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Date: _____
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Texas Commission on Environmental Quality
Form PI-1 General Application
Monitoring

Date: _____
Permit #: _____
Company: _____

Monitoring

This sheet provides the minimum acceptable requirements to demonstrate compliance through monitoring for each pollutant proposed to be emitted from each FIN. This sheet also includes measuring techniques for sources of significant emissions in the project.

Instructions:

1. The unit types listed under Unit Type (column B) include all new, modified, consolidated, and/or renewed sources as indicated on the "Unit Types - Emission Rates" sheet. Each new, modified, consolidated, and/or renewed source must address how compliance will be demonstrated.
2. The pollutants listed in Pollutant (column C) include the pollutants indicated on the "Unit Types - Emission Rates" sheet.

Monitoring (30 TAC § 116.111(a)(2)(G))

3. The minimum acceptable monitoring is automatically populated for each unit type and pollutant.
 - Additional monitoring may be required, particularly for Title V sources, and will be included in the NSR and/or Title V permits.
4. Fully expand the Minimum Monitoring Requirements (column D) by increasing the row heights so all text is visible. (Place the cursor on the bottom of the number line to the far left of the screen, click and drag downward until all text is visible.)
5. Review the monitoring and confirm that you will meet all representations listed on the sheet and any additional attachments by entering or selecting "Yes" in Confirm (column E).
6. Add additional notes as necessary in Additional Notes for Monitoring (column F), limited to 500 characters or fewer. Examples include the following:
 - Proposed monitoring for pollutants or units that list "See additional notes:";
 - Details requested in the populated data;
 - Alternative monitoring you are proposing; and
 - Any additional information relevant to the minimization of emissions.
7. Cap EPNs do not need monitoring (leave those rows blank).

Measurement of Emissions (30 TAC § 116.111(a)(2)(B))

- Note: this section will be greyed out if this project does not require PSD or nonattainment review, as represented on the General sheet.
7. For each pollutant with a project increase **greater** than the PSD significant emission rate, select the proposed measurement technique using the dropdown (column G).
 8. For each pollutant with a project increase **less** than the PSD significant emission rate: leave blank.
 9. If selecting "other", provide details in Additional Notes for Measuring (column H).
 10. You may also use the Additional Notes for Measuring (column H) to provide more details on a selection.

[Click here to return to Cover Sheet.](#)

Important Note: The permit holder shall maintain a copy of the permit along with records containing the information and data sufficient to demonstrate compliance with the permit, including production records and operating hours. All required records must be maintained in a file at the plant site. If, however, the facility normally operates unattended, records shall be maintained at the nearest staffed location within Texas specified in the application. The site must make the records available at the request of personnel from the commission or any air pollution control program having jurisdiction in a timely manner. The applicant must comply with any additional recordkeeping requirements specified in special conditions in the permit. All records must be retained in the file for at least two years following the date that the information or data is obtained. Some permits are required to maintain records for five years. [30 TAC § 116.115(b)(2)(E)]

FIN	Unit Type	Pollutant	Minimum Monitoring Requirements	Confirm	Additional Notes for Monitoring	Proposed Measurement Technique (only complete for pollutants with a project increase above the PSD threshold)	Additional Notes for Measuring:
RTO	Control: Oxidizer (Thermal)	VOC	Continuous temperature monitoring of the TO combustion chamber. Four data points collected per hour (3-hour average). Recordkeeping of material usage. Material usage data used to calculate emissions.	Yes			
		Exempt Solvents	Continuous temperature monitoring of the TO combustion chamber. Four data points collected per hour (3-hour average). Recordkeeping of material usage. Material usage data used to calculate emissions.	Yes			
		PM	The emission monitoring techniques for PM10 and PM2.5 will follow the technique for PM. Recordkeeping of natural gas and coating usage on. Data used to calculate emissions. Quarterly Visible emission check/opacity measurements.	Yes			
Boil	Boller: Liquid and Gas Fuel, ≤ 40 MMBtu/hr	VOC	Fuel usage monitoring and recordkeeping	Yes			
		PM	The emission monitoring techniques for PM10 and PM2.5 will follow the technique for PM. Quarterly visible emission observations/opacity measurements and record keeping Fuel usage monitoring and recordkeeping	Yes			
		NOx	Fuel usage monitoring and recordkeeping	Yes			
		CO	Fuel usage monitoring and recordkeeping	Yes			
		SO2	Fuel usage monitoring and recordkeeping	Yes			
Heat	Heater	VOC	Fuel usage monitoring on a monthly basis and recordkeeping	Yes			
		PM	The emission monitoring techniques for PM10 and PM2.5 will follow the technique for PM. Fuel usage monitoring on a monthly basis and recordkeeping Quarterly visible emission observations/opacity measurements and record keeping	Yes			
		NOx	Fuel usage monitoring on a monthly basis and recordkeeping	Yes			
		CO	Fuel usage monitoring on a monthly basis and recordkeeping	Yes			
		SO2	Fuel usage monitoring on a monthly basis and recordkeeping	Yes			

Date: _____
Permit #: _____
Company: _____

Version 4.0

Nations Cabinetry, LLC – US 90, San Antonio
NSR Permit No. 43104: Summary of Changes

Please find below a summary of changes for this permit renewal/amendment application.

1. Addition of Paint Line and associated emissions (addition of Emission Point Number [EPN] 11 and update to EPN 10)
2. Addition of fugitive emissions associated with open conveyor in Stain and Clear Line connecting spray booth to oven (EPN 11)
3. Update to emissions calculations and coatings list/superpaint/superthinner
4. Update to EPN names
 - a. EPN RTO from Stain Booth with Dryer and Topcoat/Sealer Booth with Dryers vented through a 6.0 MMBtu/hr Thermal Oxidizer to Regenerative Thermal Oxidizer
 - b. EPN 5 from 3.5 MMBtu/Hr Boiler to Boiler
 - c. EPN 6 from 5.5 MMBtu/Hr Makeup Air Heater to Makeup Air Heater
 - d. EPN 7 – Wood Shop and Coating Preparation vented through a Baghouse to Baghouse
5. Addition of PM_{2.5} representations to existing EPNs
 - a. EPN RTO
 - b. EPN 5 Boiler
 - c. EPN 6 Makeup Air Heater
 - d. EPN 7 Baghouse
 - e. EPN 8 Wood Shop Glue and Space Heater Fugitives
6. Removal of EPNs 1, 2, 3 and 4 (bypass stacks)
7. Update to process details in the represented process description and process flow diagram
8. Update to overall operating schedule to 4,080 hour per year (equivalent to two-8 hour shifts per day [16 hours per day], 5 days per week, 51 weeks per year)
9. Addition of EPN 10 Spray Room Finishing Department Fugitives; fugitives from existing paint lines (non-enclosed conveyors between spray booths and ovens) plus addition of fugitives from non-enclosed conveyor in new Paint Line
10. Update to boiler burner rating from 3.5 MMBtu/hr to 4.5 MMBtu/hr
11. Update representations and emissions for wood glue; decrease in short-term and annual emissions.
12. Update single HAP and aggregated HAP annual emissions to <10 tpy and <25 tpy, respectively
13. Update to air dispersion modeling and unit impact multipliers
14. Update operating hours of space heaters EPN 8 to 8760 hour per year
15. Update emissions factors use to calculate Particulate Matter (PM) emissions for EPN 7 Baghouse
16. Based on the coating calculations, the facility will not emit more than 5 tons of Hazardous Air Pollutants (HAPs) and no more than 12.5 tons of combined HAPS in 12-months; therefore, the facility is not subject to the 40 Code of Federal Regulations (CFR) Part 63 Subpart JJ – *National Emission Standards for Wood Furniture Manufacturing Operations*.

Additionally, the applicant requests to update the material flexibility condition to the most current version available.

Nations Cabinetry, LLC– US 90, San Antonio

Process Description

Nations Cabinetry, LLC (Nations) located at 4600 U.S. Highway 90 West, San Antonio, Bexar County, TX, 78237, manufactures wood cabinets for commercial & residential use. Production processes include milling, sanding, coating/finishing, and final assembly.

Facility Hours Operations

The facility has 2 operating shifts. Each shift is 8 hours per day (hr/day), 5 days a week (day/wk), and 51 weeks per year (wk/yr), or 4,080 hours per year (hr/yr).

Raw Material Receipt

Particleboard and plywood are received at the facility in material reception located within the Lumber and Raw Material Storage area (refer to Building Layout). These materials are unloaded from trucks and initially stored in the Raw Wood Material Storage and/or Raw Frame Materials Storage Area which is part of the Lumber and Raw Material Storage Area.

Coatings (stains, varnishes, clear coats, paints, thinners, catalyst, etc.), in a variety of container sizes, are received in material reception and then moved to the Raw Coating and Solvent Storage area within the Spray Room Finish Department (refer to Building Layout). Product is moved to respective coating areas as needed for mixing and application.

Glue and other items are received in the materials reception area and moved to their respective storage areas through the facility.

Cutting and Initial Cabinet Assembly

As needed, particleboard and/or plywood are transferred from storage to the cutting department located within the Cutting and Initial Cabinet Assembly area (refer to Building layout) where material is cut to size.

The cutting department is comprised of a collection of manually operated and automated saw/cutting machines.

The cutting and sawing of particleboard and plywood generates sawdust/Particulate Matter (PM). Sawdust generated from the cutting process is removed at the machines through ductwork routed to a baghouse (Emission Point Number [EPN] 7 - Baghouse) via vacuum suction. The baghouse deposits collected material into a sealed dumpster. The collected sawdust is recycled by a third-party subcontractor.

EPN	Source Name	Max Air Flow (scfm)	Outlet Grain Loading (gr/dscf)	Operating Schedule (hr/yr)
7	Baghouse	67,200	0.0012	8,760

The baghouse employees a reversed air bag cleaning method.

When bag filters (filters) are removed for replacement, spent filters are handled in a manner to minimize PM emissions. Spent bags are placed in sealable bags other sealable containers prior to removal from the site.

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Unusable wood scraps collected at each machine/workstation are placed in a separate dumpster for either recycling or disposal.

After the initial cutting process, wood pieces are transferred to either the Assembly Department or the Door and Drawer Department, located in the Cutting and Initial Cabinet Assembly area, where they are assembled, glued, if necessary, and sanded using orbital sanders. The sawdust generated by the sanding operations is extracted by vacuum and collected by the baghouse (EPN7).

After sanding, doors are sent to a UV light station to remove glue residues. Subsequently, the doors are sent to a lock boring station to make the holes needed install the door hinges. PM emissions generated by the sanding and boring stations are extracted by vacuum and collected by the baghouse (EPN7).

Saw dust that is not collected by the baghouse is swept up regularly and collected in containers for disposal or swept into ‘floor sweeps’ which are routed to the baghouse (EPN 7).

Painting Operations

Doors and drawers are sent to the Spray Room Finish Department (Spray Room). The Spray Room includes three automated coating lines which are referred to as the Stain Line, Clear Line, and Paint Line. The Spray Room also includes an open face paint booth for miscellaneous touchups (EPN Misc.SprayBooth; authorized under Permit By Rule [PBR] Registration Number 74161).

Stain Line

Cabinet pieces that require stain are placed flat on a conveyor belt. The pieces first pass under a dust extractor, equipped with vacuum suction routed to the baghouse (EPN 7), to remove residual particulates from the surface.

The pieces then enter the automated Stain Line Spray Booth (Cefla Model RotoStain ROT 10+10) where stain is applied via 10 high efficiency **non-electrostatic airless spray guns** (Kremlin, Model A25 F Flowmax). The coating transfer efficiency for this automated booth is assumed to be 80% (25% overspray) [spraying relatively flat surfaces]. This booth operates with a sensor. If there are not product/cabinet pieces in the booth or in the path of the spray guns, coatings are not sprayed. Stain is pumped from 55-gallon containers located next to the booth to the spray application system. There is no mixing or thinning of stains. Stains are applied as received by the manufacturer.

The Stain Line Spray Booth is equipped with high efficiency dry filters, which collect residual particulate emissions during stain application. Three different filters are used in this booth (Com-Pleat Filter PAF-2020, Air Filtration Co. Fiber Glass Filter PA15-45X132-13, and Air Filtration Co. Paint Pockets PP020-020-030. The paint pockets have a filter efficiency of 99.83%.

As the cabinet pieces exit the automated spray booth, the conveyor belt transports the cabinet pieces to a progressive oven system (Stain Line Oven) where the coating is dried and cured.

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The cabinet pieces that are transported on the conveyor to the oven are not dry; therefore, emissions from the conveyor belt are considered a source of flash emissions (EPN 10 – Spray Room Finish Department Fugitives). Fugitive emissions evacuate the Spray Room on the south side of the building through a 10' x 12' rollup door that leads to the Final Assembly, QA/QC, and Warehouse where other 10' x 12' rollup doors remain open during operations.

The conveyor speed of the Stain Line is set to approximately 24 feet per minute (ft/min). The total Stain Line conveyor is approximately 96 ft from start to finish. The length of conveyor that is not 'enclosed' between the exit point of Stain Line Spray Booth and the entry point of the Stain Line Oven is approximately 25 ft. Therefore, the exposure time between the Stain Line Spray Booth and the Stain Line Oven is approximately 1.04 minutes.

The progressive oven system (Models FEV EU2/8, FEV UR2/6, and TT 16350/SCR) utilizes hot-air heat exchange to aid in the drying/curing of the coating. The heat used in the progressive oven system is supplied by a natural gas-fired water heater/boiler (Teledyne Laars, Model HH4500IN18KCACXX) with a maximum heat input rating of 4.5 million British thermal units per hour (MMBtu/hr) [EPN 5]. The boiler is used to heat water which is circulated through an insulated distribution/pipe system to the oven. Heat from the water is transferred to ambient and/or recirculated air using a heat exchanger. A recirculation valve system is used to control the heat flow, and a blower with a damper are used to maintain the air flow to produce the desired oven zone temperature.

EPN	Source Name	Fuel	Rating (MMBtu/hr)	Operating Schedule (hr/yr)
5	Boiler	NG	4.5	8,760

Emissions from the Stain Line Spray Booth and Oven are collected through a common vent line which is routed to a natural gas Regenerative Thermal Oxidizer (RTO) [EPN RTO – Regenerative Thermal Oxidizer] manufactured by Anguil Environmental Systems, Inc. The RTO has a destruction rate efficiency (DRE) of 99.1% (see attached test report). The RTO is also equipped with a Twin City blower Size 365, Model BCS, and with a 150 horsepower (hp) motor.

Additionally, the RTO utilizes a natural gas fired burner with a maximum heat input rating of 6.0 MMBtu/hr. Emissions from the combustion of natural gas in the RTO are vented from the RTO stack (EPN RTO).

EPN	Source Name	Fuel	Blower Rating (CFM)	Motor Rating (hp)	Combustion Chamber Set Point (deg F)	DRE	Burner Rating (MMBtu/hr)	Operating Schedule (hr/yr)
RTO	Regenerative Thermal Oxidizer	NG	25,000	150	1,500	99.1%	6.0	4,080

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*The operating schedule is not reflective of actual business hours for the facility. The RTO is used when coating operations are occurring. “Coating” Operating Schedule is based on two shifts: 8 hours/day, 5 days/week and 51 weeks/year for a total of 4,080 hours/year.

Note that the RTO was initially tested in 2006; however, the chamber temperature was not monitored during the testing event; therefore, Nations is committed to retesting the RTO upon request of the Texas Commission on Environmental Quality (TCEQ).

Collection efficiency to the RTO at the Stain Line Spray Booth and Oven is 100% as demonstrated in the emissions calculations section of this application.

As pieces exit the Stain Line Oven they are collected and taken back to the front of the Stain Line, turned over and placed flat on the conveyor belt to pass through the Stain Line a second time to coat the opposite side. After both sides are coated, the pieces are then transferred either to the Clear Line or to assembly, depending on product specifications.

During scheduled or planned RTO maintenance activities, the Stain Line, and other coating lines routed to the RTO, will not operate.

However, during upset conditions of the RTO, emissions from the Stain Line Spray Booth and Oven will bypass the RTO line through a common vent to atmosphere (EPN 1 – Stain Line RTO Bypass). Should this occur, Nations will take the necessary steps to shut down the Stain Line and other affected coatings lines until the RTO can be brought back online. During these upset events, emissions reporting requirements will be assessed and processed as applicable. Since this EPN is not intended to be used during normal operations it has not been represented in this application other than in this process description and on the plot plan.

The following are the proposed coating rates for the Stain Line operations.

Equipment	Coating ID	Hourly Usage Rate (gal/hr)	Annual Usage Rate (gal/yr)
Stain Line Booth	Natural Hybrid Stain	30	40,000
	Charcoal Hybrid Stain		
	Chestnut Hybrid Stain		
	Cinnamon Hybrid Stain		
	Brandy Hybrid Stain		
	Mocha Hybrid Stain		
	New UV Hybrid Espresso		
	Smoke Hybrid Stain		
	Toffee Hybrid Stain		
	Dusk Hybrid Stain		
	Wheat Hybrid Stain		
	Pecan Hybrid Stain		

Clear Line

Cabinet pieces that are stained in the Stain Line which require sealer are treated through the Clear Line system.

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Cabinet pieces are placed top side up/flat on a conveyor belt. The pieces first pass through a panel brushing machine (Model VS/33-ACT-F) which is connected to a dust extractor, equipped with vacuum suction routed to the baghouse (EPN 7), to remove residual particulates from the surface. The panel brushing machine uses brushes and an anti-static ionization bar to assist with dust removal.

As pieces leave the panel brushing machine, the conveyor belt transports the cabinet pieces to the automated Clear Line Spray Booth (Cefla Model EcoSprayer SGM16) where clearcoat/sealer is applied via 8 high efficiency non-electrostatic airless spray guns (Graco, Model 288046/288044 G40). The coating transfer efficiency for this automated booth is assumed to be 80% (20% overspray) [spraying relatively flat surfaces]. This booth operates with a sensor. If there are not product/cabinet pieces in the booth or in the path of the spray guns, coatings are not sprayed. Clearcoat/sealer is mixed in a mixing drum located next to the Clear Line Spray Booth.

Prior to use, coating and catalyst are mixed at a ratio of approximately 1 to 0.03, respectively. The mixing drum is covered and with the assistance of a mechanical agitator, the clearcoat/sealer and catalyst are mixed in the prescribed ratio. The mixing process takes approximately 20 to 30 minutes. After mixing is completed, the coating is then pumped to the Clear Line Spray Booth.

The Clear Line Spray Booth is equipped with a water scrubber filtration system to remove coating overspray. The assumed 'filter efficiency' applied for this system is 99%. The collected overspray by the water scrubber is transferred to a skimmer that uses a mineral coagulant to filter solids from water. Filtered water is recycled and reused in the water scrubber to remove overspray.

As the cabinet pieces exit the automated spray booth, the conveyor belt transports the cabinet pieces to a progressive oven system (Clear Line Oven) where the coating is dried and cured.

The cabinet pieces that are transported on the conveyor to the oven are not dry; therefore, emissions from the conveyor belt are considered a source of flash emissions (EPN 10).

The conveyor speed of the Clear Line is set to approximately 18 ft/min. The total Clear Line conveyor is approximately 120 ft from start to finish. The length of conveyor that is not 'enclosed' between the exit point of Clear Line Spray Booth and the entry point of the Clear Line Oven is approximately 45 ft. Therefore, the exposure time between the Clear Line Spray Booth and the Clear Line Oven is approximately 2.5 minutes.

The progressive Clear Line Oven (Models FV4/3500/133/122/AER) has four zones/chambers where parts are progressively heated and dried and then cooled. The first, second and third zones/chambers utilize hot-air heat exchange to aid in the drying/curing of the coating. The heat used in the Clear Line Oven is supplied by the natural gas-fired boiler [EPN 5]. The fourth chamber is the cooling chamber.

Emissions from the Clear Line Spray Booth and Oven Chambers 1, 2 and 3 are collected and routed to the RTO (EPN RTO). Pieces are considered to be dry as they leave the third oven zone/chamber into the fourth zone/chamber (cooling zone/chamber). The fourth chamber is

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vented to atmosphere for heat release purposes only. No emissions are expected or estimated for this stack exhaust.

Collection efficiency to the RTO at the Clear Line Spray Booth and Oven is 100% as demonstrated in the emissions calculations section of this application.

Dried cabinet pieces are conveyed out of the oven where they are picked up for light manual hand sanding. Hand sanding blocks are used for this process. Sanded pieces are placed again flat on a conveyor belt that passes through the panel brushing machine and then for a second coating on the same side that was previously sprayed.

As pieces exit the Clear Line Oven for the second time, they are collected and taken back to the beginning of the Clear Line, turned over, and placed flat on the conveyor belt to pass through the Clear Line two times to coat the opposite side. The coating process on the opposite side is the same as previously noted. After both sides are coated twice, the pieces are then transferred to assembly.

During scheduled or planned RTO maintenance activities, the Clear Line, and other coating lines routed to the RTO, will not operate.

However, during upset conditions of the RTO, emissions from the Clear Line Spray Booth and Oven will bypass the RTO. Emissions from the Clear Line Spray Booth will exhaust to atmosphere directly from the booth through a stack (EPN 2 – Clear Line Spray Booth RTO Bypass). Emissions from the Clear Line Oven zones/chambers 1 and 2 will vent through a common stack to atmosphere (EPN 3 – Clear Line Flash-off Oven Chambers 1 and 2 RTO Bypass) and zone/chamber 3 will vent directly to atmosphere through a separate stack (EPN 4 – Clear Line Flash-off Oven Chamber 3 RTO Bypass).

Should these upset conditions occur, Nations will take the necessary steps to shut down the Clear Line and other affected coatings lines until the RTO can be brought back online. During these upset events, emissions reporting requirements will be assessed and processed as applicable. Since this EPN is not intended to be used during normal operations it has not been represented in this application other than in this process description and on the plot plan.

The following are the proposed coating rates for the Stain Line operations.

Equipment	Coating ID	Hourly Usage Rate (gal/hr)	Annual Usage Rate (gal/yr)
Clear Line Spray Booth	Topcoat Clear Conversion Varnish 30 Sheen	30	55,000
	Sher-wood Kemvar Catalyst		

Paint Line

Cabinet pieces which require primer and topcoat are processed through the Paint Line. It should be noted that the Paint Line operates independently from the Stain and Clear Lines. Pieces that are coated in the Paint Line are not coated in the Stain and Clear Lines and pieces that are coating in the Stain and Clear Lines are not coated in the Paint Line.

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Cabinet pieces are placed flat on a conveyor belt. The pieces first pass under a dust extractor, equipped with vacuum suction routed to a baghouse (EPN 7), to remove residual particulates from the surface.

The pieces then enter the automated Paint Line Spray Booth (Makor K-TWO Hybrid) where primer is applied. The booth contains two chambers. Each chamber consists of one oscillating arm. Each arm is equipped with four high efficiency non-electrostatic airless guns (Model Kremlin AVX), of which two guns are operated on each arm. The coating transfer efficiency for this automated booth is assumed to be 80% (20% overspray) [spraying relatively flat surfaces]. This booth operates with a sensor. If there are not product/cabinet pieces in the booth or in the path of the spray guns, coatings are not sprayed. Coating is pumped from 55-gallon containers located next to the booth to the spray application system.

Primer is pumped from 55-gallon containers located next to the booth to the spray application system. There is no mixing or thinning of the primer. Primer is applied as received by the manufacturer. However, prior to applying topcoat, the coating, catalyst, and reducer are mixed in a designated work area next to the Paint Line Spray Booth. During the hotter months of the year methyl amyl ketone (MAK) is added to assist with flow. Coating, catalyst, reducer, and MAK are mixed at a ratio of approximately 1:0.15:0.06:0.01, respectively. Thorough mixing is accomplished with the aid of an air agitator and then transfer to the booth coating drum(s) where it is then pumped into the coating application system.

The Paint Line Booth is equipped with high efficiency dry filters, which collect residual particulate emissions during coating application. Two different filters are using in this booth (Com-Pleat Filter PAF-2020 and Air Filtration Co. Fiber Glass Filter PA15-45X132-13). The fiber glass filters have a filter efficiency of at least 99.03%.

As the cabinet pieces exit the automated spray booth, the conveyor belt transports the cabinet pieces to a multilevel oven system (Paint Line Oven) where the coating is dried and cured.

The cabinet pieces that are transported on the conveyor to the oven are not dry; therefore, emissions from the conveyor belt are consider a source of flash emissions (EPN 10).

The conveyor speed of the Paint Line is set to approximately 14.5 feet per minute (ft/min). The total Paint Line conveyor is approximately 85 ft from start to finish. The length of conveyor that is not ‘enclosed’ between the exit point of Paint Line Booth and the entry point of the Paint Line Oven is approximately 4.42 ft. Therefore, the exposure time between the Paint Line Booth and the Paint Line Oven is approximately 0.30 minutes.

The Paint Line Oven system (Models Makor Model MLJLTILEVEL 5500/6) utilizes hot-air heat exchange to aid in the drying/curing of the coating. The heat used in the Paint Line Oven is supplied by the natural gas-fired boiler [EPN 5]. As pieces exit the multilevel oven, they enter an enclosed infrared (IR) curing oven. As pieces exit the IR curing oven, they are considered dried and cured.

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Emissions from the Paint Line Spray Booth and Oven system are collected through a common vent line and routed to the atmosphere (EPN 11 – Paint Line).

Collection efficiency to the comment stack at the Paint Line Spray Booth and Oven is 100% as demonstrated in the emissions calculations section of this application.

Pieces that are coated with primer are lightly hand sanded and transferred back to the beginning of the Paint Line where primer is being applied to the opposite side. Hand sanding blocks are used for the sanding process. The primer coating and drying process on the opposite side of the cabinet piece is the same as previously noted.

After cabinet pieces have been coated with primer on both sides, the pieces are then coated with topcoat on both sides. The top coating and drying process is the same on both sides as previously noted with the exception of the hand sanding step.

Cabinet pieces from the Paint Line that have been coated, dried, and cured are then transferred to the product assembly area.

The following are the proposed coating rates for the Paint Line operations.

Equipment	Product	Coating ID	Hourly Usage Rate (gal/hr)	Annual Usage Rate (gal/yr)
Paint Line Booth	Primer	Gen II Universal Primer, White	20	22,000
	Topcoat	Sher-wood White Varnish		
		Sher-wood Kemvar Catalyst		
		Reducer R6K18		
		MAK		

Miscellaneous Spray Booth

As previously noted, the Spray Room is equipped with a Miscellaneous Spray Booth (EPN Misc.SprayBooth) used to for touchup of cabinet pieces that were first coated in one of the coating lines (Stain, Clear, or Paint). The Miscellaneous Spray Booth is also used to paint cabinet pieces that require a special color, based on client requests.

Emissions from the Miscellaneous Spray Booth are routed directly to atmosphere and are authorized by PBR No. 74161, issued on November 24, 2004.

Final Cabinet Assembly

Once cabinet pieces are coated based on product specifications, they are transported from the Spray Room Finish Department to the Final Assembly, QA/QC, and Warehouse.

Pieces that require decorative glazing are transported to the Hand Glazing Area within the Final Assembly, QA/QC, and Warehouse (refer to Building Layout). Glazing is applied manually using hand applicators (approximate size applicators hold 6-12-ounce). It is estimated that no more than 6 ounces (0.05 gallons) of glazed is applied in an hour. Emission from hand glazing are consider a source of fugitive emissions (EPN HG-FUG). Emissions from hand glazing are

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authorized by 30 TAC 106.433 without registration as emissions are less than 0.25 pounds per hour (lb/hr).

Assembled cabinets are sent to Quality Assurance and Quality Control (QA/QC) to ensure cabinets meets product specifications. Defective cabinets or pieces are sent back to production for repair. Cabinets that passes the QA/QC process are then conveyed to the shipment department where the cabinets are wrapped and load into trailers for delivery.

Equipment Clean Up

Stain Line

The Stain Line Spray Booth is equipped with a cleaning system to clean overspray on the spray booth conveyor belt. The cleaning system consists of a longitudinally removable cleaning trolley, wiping blade, and waste collection container. This cleaning system is located under the spray booth at the exit side of the booth and operates simultaneously with the spray booth (if the booth is in operation, the cleaning trolley/wiping blade is in operation). Approximately 35 gallons per shift (70 gal/day) of stain cleaning solvent (Hybrid Belt Cleaner) is pumped to the trolley to clean the conveyor belt. Spent cleaner collected in the waste collection container is transferred throughout the day to the waste collection area and transferred in to closed containers where it awaits disposal. It is assumed that 95% of spent stain cleaning solvent is collected for waste disposal. Emissions from this cleaning systems are assumed to be fugitive in nature (EPN 10).

At the end of the second shift each operational day, approximately 5 gallons of acetone (5 gal/day) is flushed through the Stain Line Spray Booth coating application system. The acetone is sprayed out of the spray guns onto Stain Line Spray Booth conveyor belt in order to clean out the coating application system and to clean excess overspray on the belt. The spray booth cleaning system (cleaning trolley, wiping blade, etc.) is in operation during this cleanup period. Excess acetone that is not evaporated in the booth or collected in the cleaning system waste collection container is manually wiped down. Spent wipes are disposed of in closed containers. Ventilation in the Stain Line Spray Booth to the RTO remains on during this cleanup process.

Additionally, at the beginning of the first shift of each week, typically on Monday, the Stain Line coating application system is flushed with 5 gallons of acetone (10 gal/day on Monday) prior to operational startup. The cleanup and collection process are the same as previously noted for end of shift cleanup.

EPN	Source Description	Product ID	Hourly Usage (gal/hr)	Annual Usage (gal/yr)
10	Stain Line Overspray/Belt Cleaning	Hybrid Belt Cleaner	4.5	17,850
RTO	Stain Line Spray Equipment Cleanup	Acetone	5	1,530

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Clear Line

The Clear Line Spray Booth is equipped with a cleaning system to clean overspray on the spray booth conveyor belt. The cleaning system consists of a longitudinally removable cleaning trolley, wiping blade, and waste collection container. This cleaning system is located under the spray booth at the exit side of the booth and operates simultaneously with the spray booth (if the booth is in operation, the cleaning trolley/wiping blade is in operation). Approximately 48 gallons per shift (96 gal/day) of clearcoat cleaning solvent (50/50 Blend) is pumped to the trolley to clean the conveyor belt. Spent cleaner collected in the waste collection container is transferred throughout the day to the waste collection area and transferred into closed containers where it awaits disposal. It is assumed that 95% of spent stain cleaning solvent is collected for waste disposal. Emissions from this cleaning systems are assumed to be fugitive in nature (EPN 10).

At the end of the second shift each operational day, approximately 5 gallons of virgin Topcoat Clear Conversion Varnish 30 Sheen [‘Virgin’ Varnish] (5 gal/day) is flushed through the Clear Line Spray Booth coating application system. The ‘Virgin’ Varnish is sprayed out of the spray guns onto Clear Line Spray Booth conveyor belt in order to clean out the coating application system and to clean excess overspray on the belt. The spray booth cleaning system (cleaning trolley, wiping blade, etc.) is in operation during this cleanup period. Excess Virgin’ Varnish that is not evaporated in the booth or collected in the cleaning system waste collection container is manually wiped down. Spent wipes are disposed of in closed containers. Ventilation in the Stain Line Spray Booth to the RTO remains on during this cleanup process.

EPN	Source Description	Product ID	Hourly Usage (gal/hr)	Annual Usage (gal/yr)
10	Clear Line Overspray/Belt Cleaning	50/50 Blend	6	24,480
RTO	Clear Line Spray Equipment Cleanup	‘Virgin’ Topcoat Clear Conversion Varnish 30 Sheen (no catalyst)	5	1,275

Paint Line

The Paint Booth is equipped with a paper collection system (paper unrolling and rewinding roll). The unrolling system is placed at the entrance of the booth and the rewinding device at the exit of the booth to maintain constant tension of the paper. The paper unrolling/rewinding roll is in used during coating applications of product and during coating application system cleanup. Overspray from the coatings application and cleanup solvent is collected on the paper belt.

At the end of the second shift each operational day, approximately 4 gallons of acetone (8 gal/day) is flushed through the Paint Line Spray Booth coating application system. The acetone is sprayed out of the spray guns onto Paint Line Spray Booth ‘paper’ conveyor belt in order to clean out the coating application system. Spent paper is removed from the system and collected in for waste disposal. Ventilation in the Paint Line Spray Booth remains on during this cleanup process (EPN 11).

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Additionally, at the beginning of the first shift of each week, typically on Monday, the Paint Line coating application system is flushed with 3 gallons of Methyl Ethyl Ketone (MEK) prior to operational startup. The cleanup and collection process are the same as previously noted for end of shift cleanup.

EPN	Source Description	Product ID	Hourly Usage (gal/hr)	Annual Usage (gal/yr)
11	Paint Line Spray Equipment Cleanup	Acetone	4	1,020
		MEK	3	765

Makeup Air Heater

A makeup air heater (EPN 6 – Makeup Air Heater) is used to provide 50,000 (cfm) of gas-heated warm air inside the Spray Room Finish Department to maintain a positive pressure in the room. The makeup air unit is a 5.5 MMBtu/hr natural gas-fired heater.

Miscellaneous Processes

The facility uses 30 x 32,000 Btu/hr natural gas fired space heaters (EPN 8 – Wood Glue and Space Heater Fugitives) to heat the facility as needed. Combustion emissions from these heaters are vented as fugitives throughout the facility.

EPN	Source Description	Rating per Heater (BTU/hr)	Operating Hours (hr/yr)
8	30 Natural Gas heaters	32,000	8,760

Wood glue is used throughout the assembly process. Utilization of wood glue is a source of fugitive emissions (EPN 8).

EPN	Source Description	Product ID	Average Hourly Usage (lb/hr)	Annual Usage (gal/yr)
8	Wood Glue	Multibond 2000	2.45	1,100
		3M Hi-Strength 94 ET	0.07	35
		3M Hi-Strength Spray Adhesive 90	0.03	20

Emissions from natural-gas piping are considered fugitive emissions (EPN 9 – Valve, Connection, and Flange Fugitives). The following is the estimated component count associated with this natural-gas piping.

EPN	Source Name	Equipment	Number of Components
9	Valve, Connection, and Flange Fugitives	Valves	4
		Relief valves	2
		Flanges connection	12

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Supporting Activities

A BBQ Pit is stored and periodically utilized at the site for company business. No significant emissions are expected to be associated with the use of the BBQ pit. BBQ pits are authorized, without registration, by 30 TAC §106.244 – *Ovens, Barbecue Pits, and Cookers*.

Hand-held and manually operated machines may be utilized on site to conduct equipment maintenance, building repairs, etc. No significant emissions are expected to be associated with these activities which are authorized, without registration, by 30 TAC §106.265 – *Hand-held and Manually Operated Machines*.

Welding associated with maintenance activities can be conducted at various locations on property, as needed. The associated emissions from this activity are expected to be insignificant and are authorized, without registration, under 30 TAC 106.227 - *Soldering, Brazing, and Welding*.

Maintenance, Startup and Shutdown (MSS) Emissions

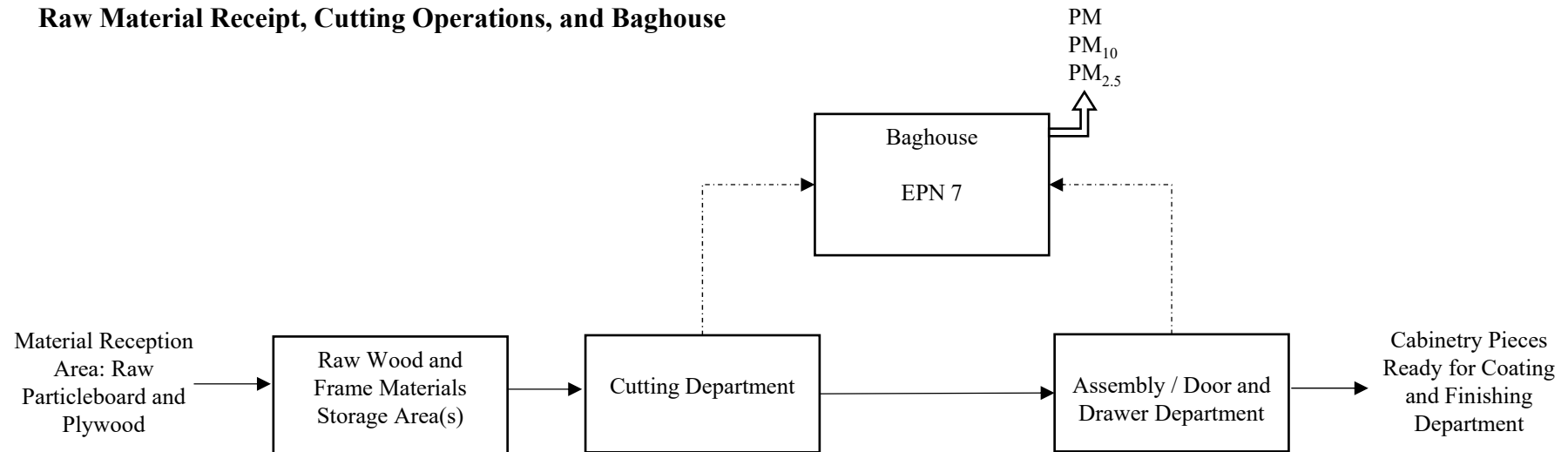
In addition to the activities detailed in other sections of this process description, Nations performs the following routine Maintenance, Start-up, and Shutdown (MSS) activities at the site which may result in the release of emissions:

Activity	Frequency	Description	Authorization Mechanism
Misc. Maintenance - Calibration	Daily, Monthly, Annually	Calibration of miscellaneous equipment	30 TAC §106.263(c)(1)
Misc. Maintenance - Lubrication	Daily, Monthly, Annually	Lubrication of miscellaneous equipment	30 TAC §106.263(c)(1)
Filter Cleaning/Replacement	Daily, Monthly, Annually	Cleaning and/or replacement of filters	30 TAC §106.263(c)(1)
Routine maintenance, startup, and shutdown	Daily, Monthly, Annually	Scheduled start-up or shutdown of process equipment	30 TAC §106.263(c)(3)
Surface Preparation of Structures and Fixed Equipment	Annually	Surface preparation (including abrasive blasting) of buildings, structures, and fixed equipment	30 TAC §106.263(c)(3)(A)
Surface Coating of Structures and Fixed Equipment	Annually	Painting of buildings, structures, and fixed equipment	30 TAC §106.263(c)(3)(A)
Office Equipment	Daily	Everyday office equipment use	30 TAC §116.119(a)(1)

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Process Flow Diagram

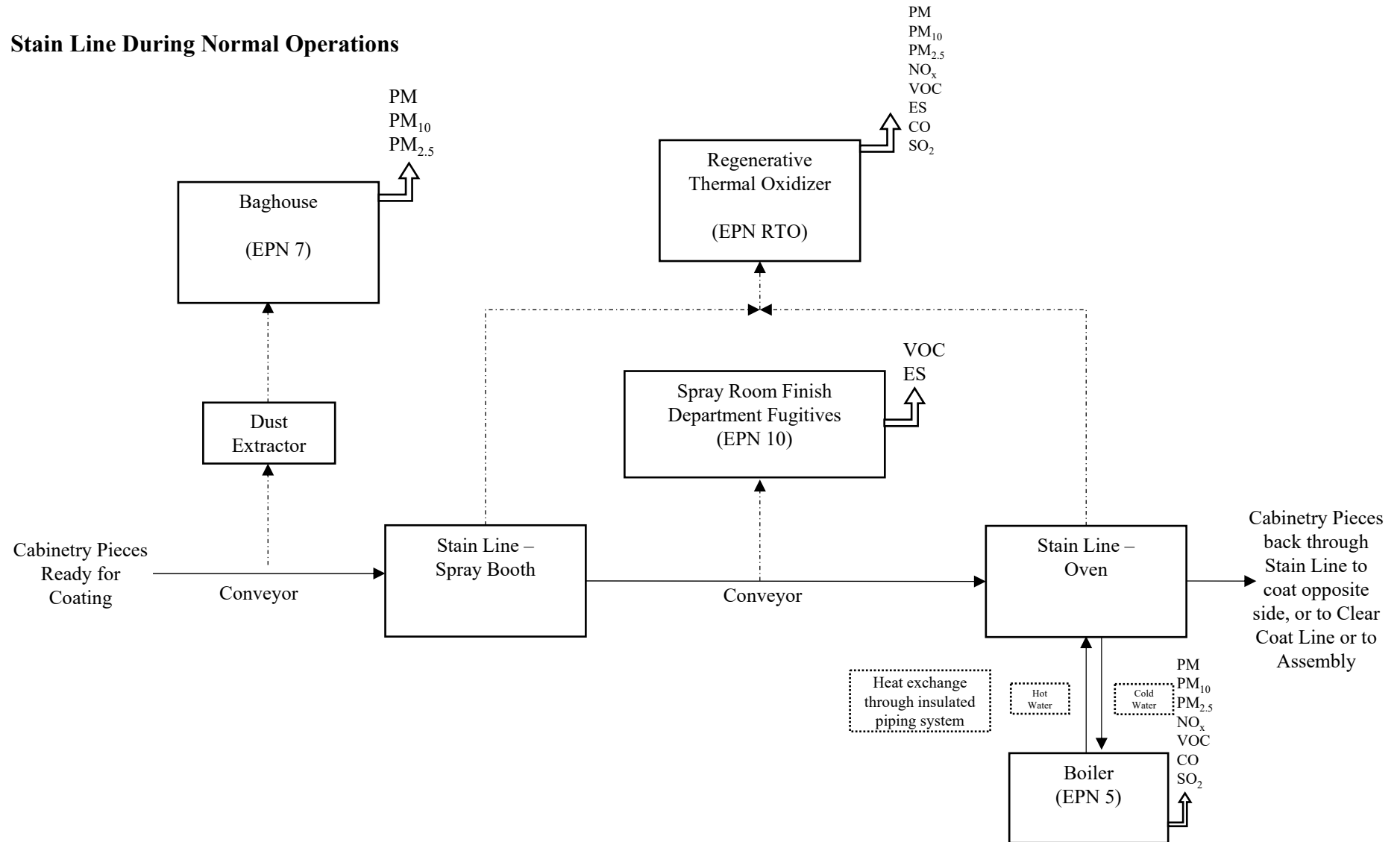
Raw Material Receipt, Cutting Operations, and Baghouse



- Key**
- : Emissions to Atmosphere
 - : Emission to Control/Exhaust Point
 - : Process Flow
 - CO = Carbon Monoxide
 - EPN = Emission Point Number
 - ES = Exempt Solvents
 - NO_x = Nitrogen Oxides
 - PBR = Permit By Rule
 - PM = Particulate Matter
 - PM₁₀ = Particulate Matter less than 10 microns in diameter
 - PM_{2.5} = Particulate Matter less than 2.5 microns in diameter
 - SO₂ = Sulfuric Dioxide
 - VOC = Volatile Organic Compounds

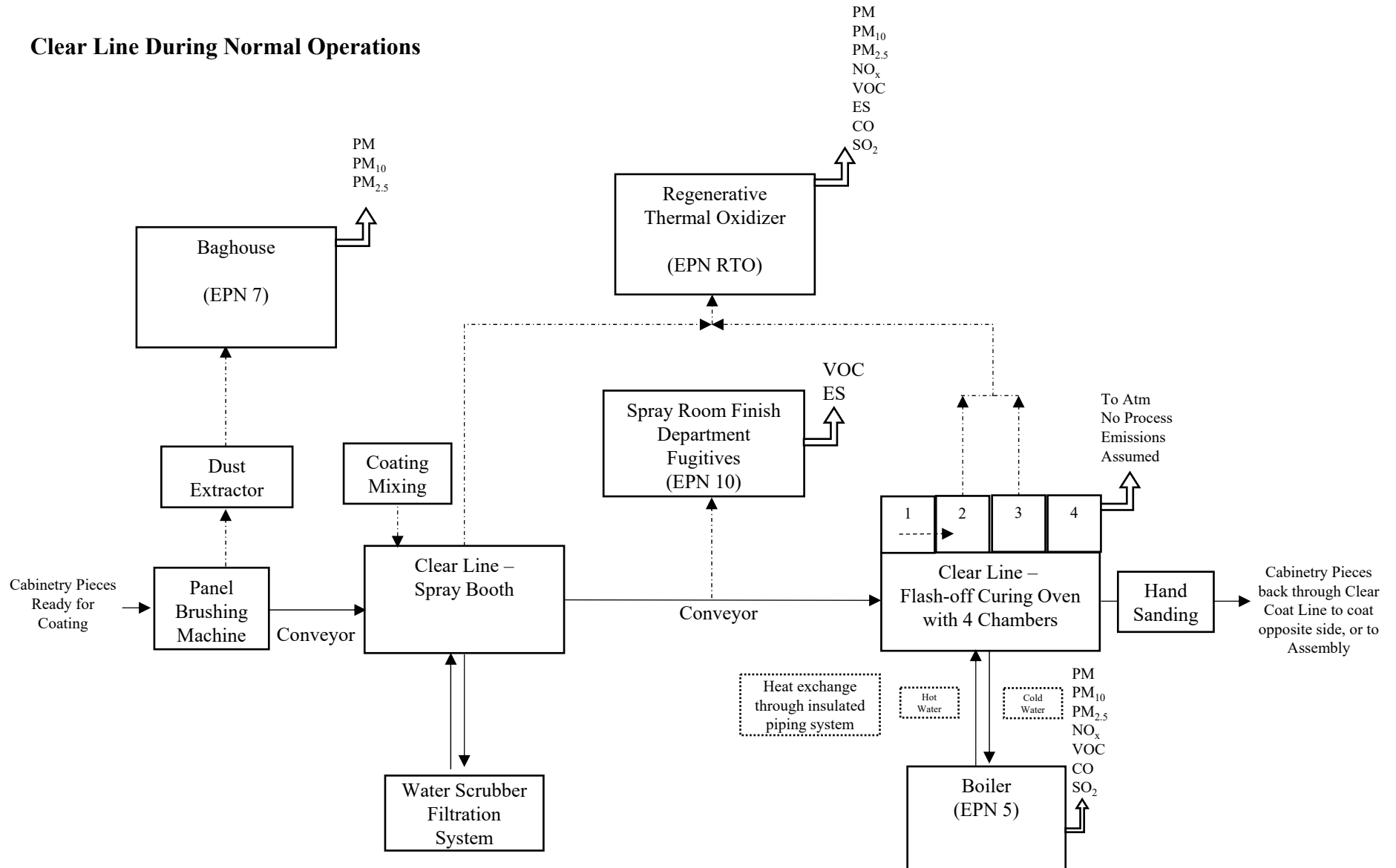
**Nations Cabinetry, LLC– US 90, San Antonio
Process Flow Diagram**

Stain Line During Normal Operations



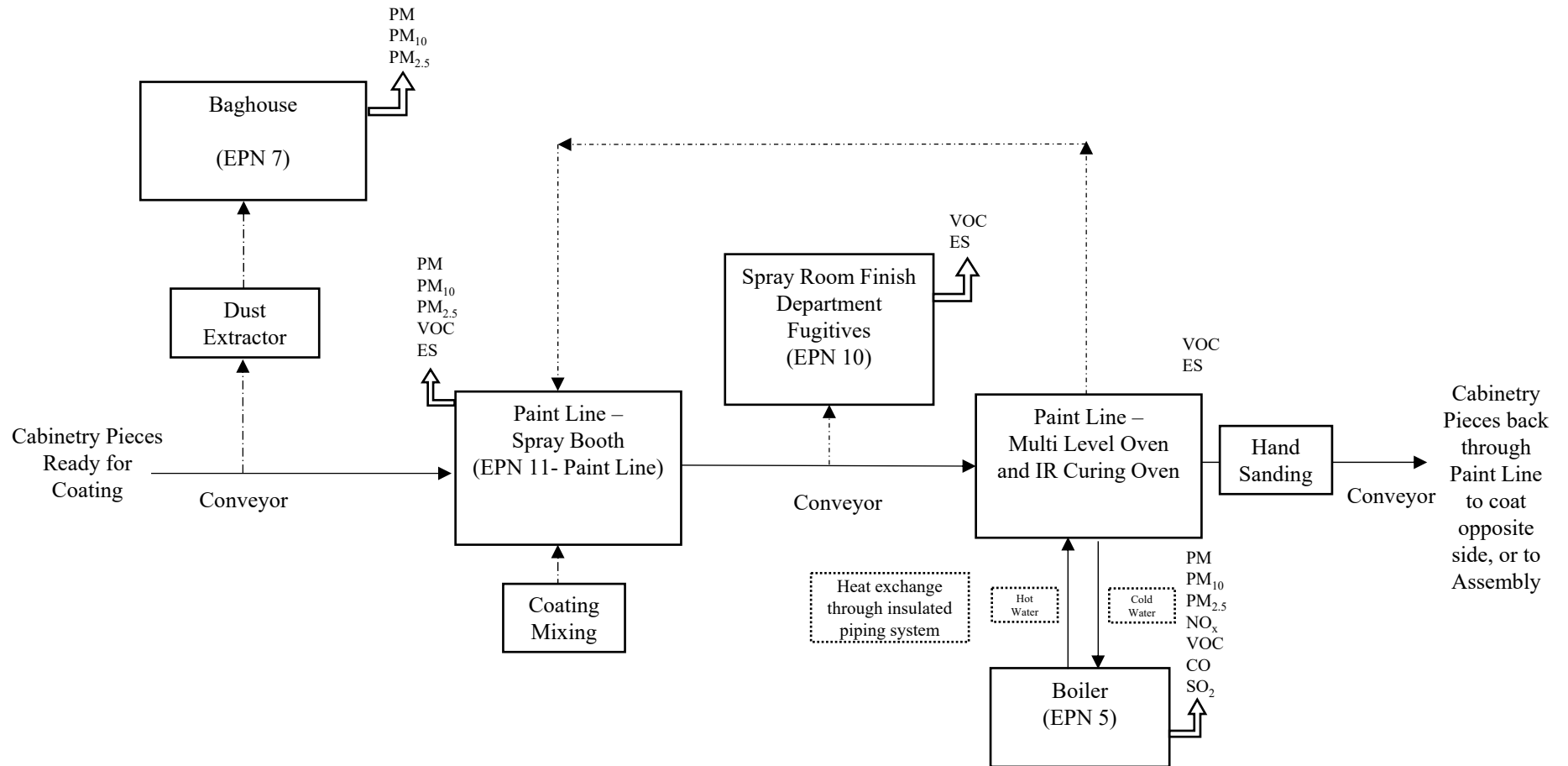
Nations Cabinetry, LLC– US 90, San Antonio
Process Flow Diagram

Clear Line During Normal Operations



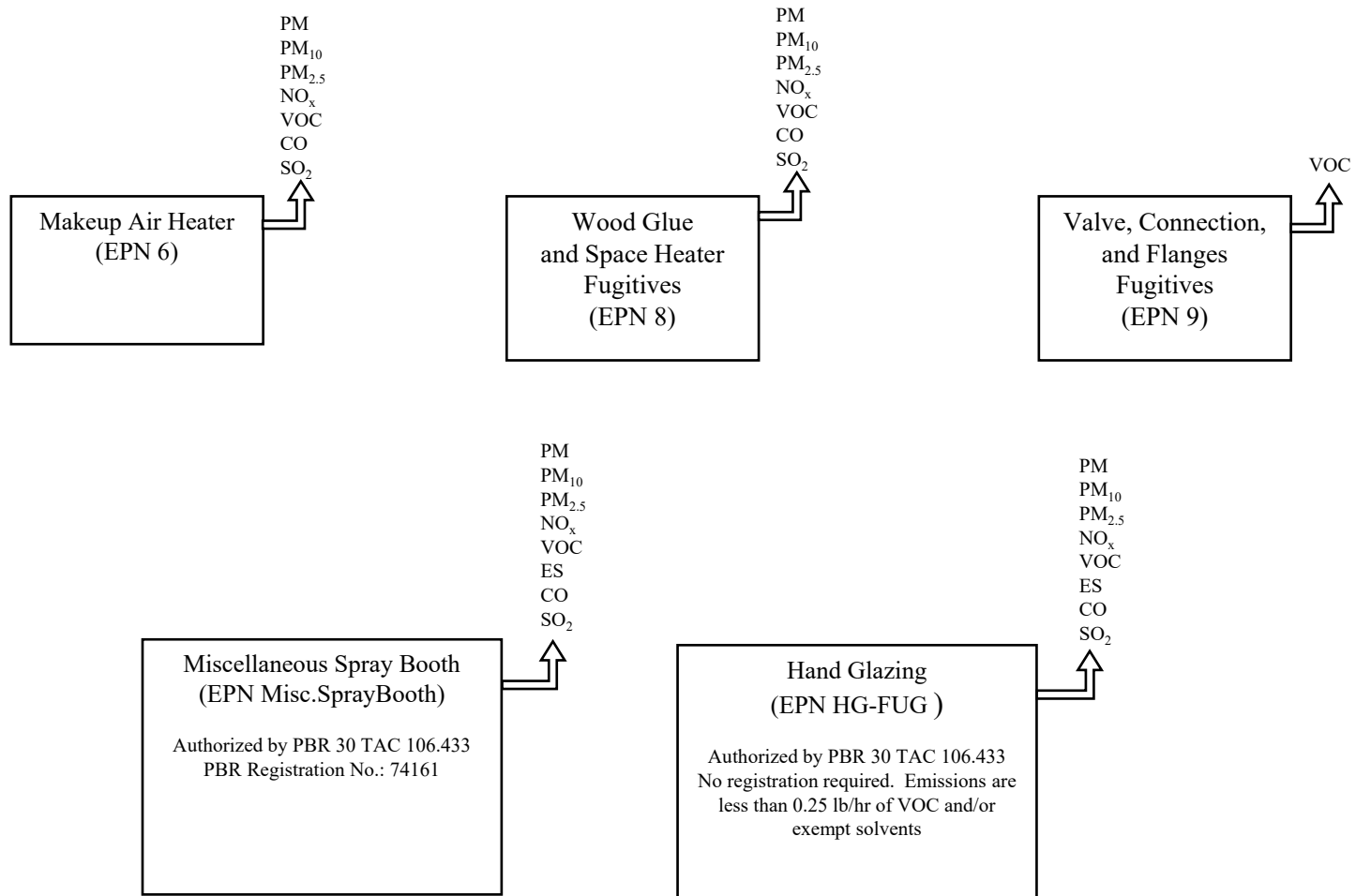
**Nations Cabinetry, LLC – US 90, San Antonio
Process Flow Diagram**

Paint Line During Normal Operations



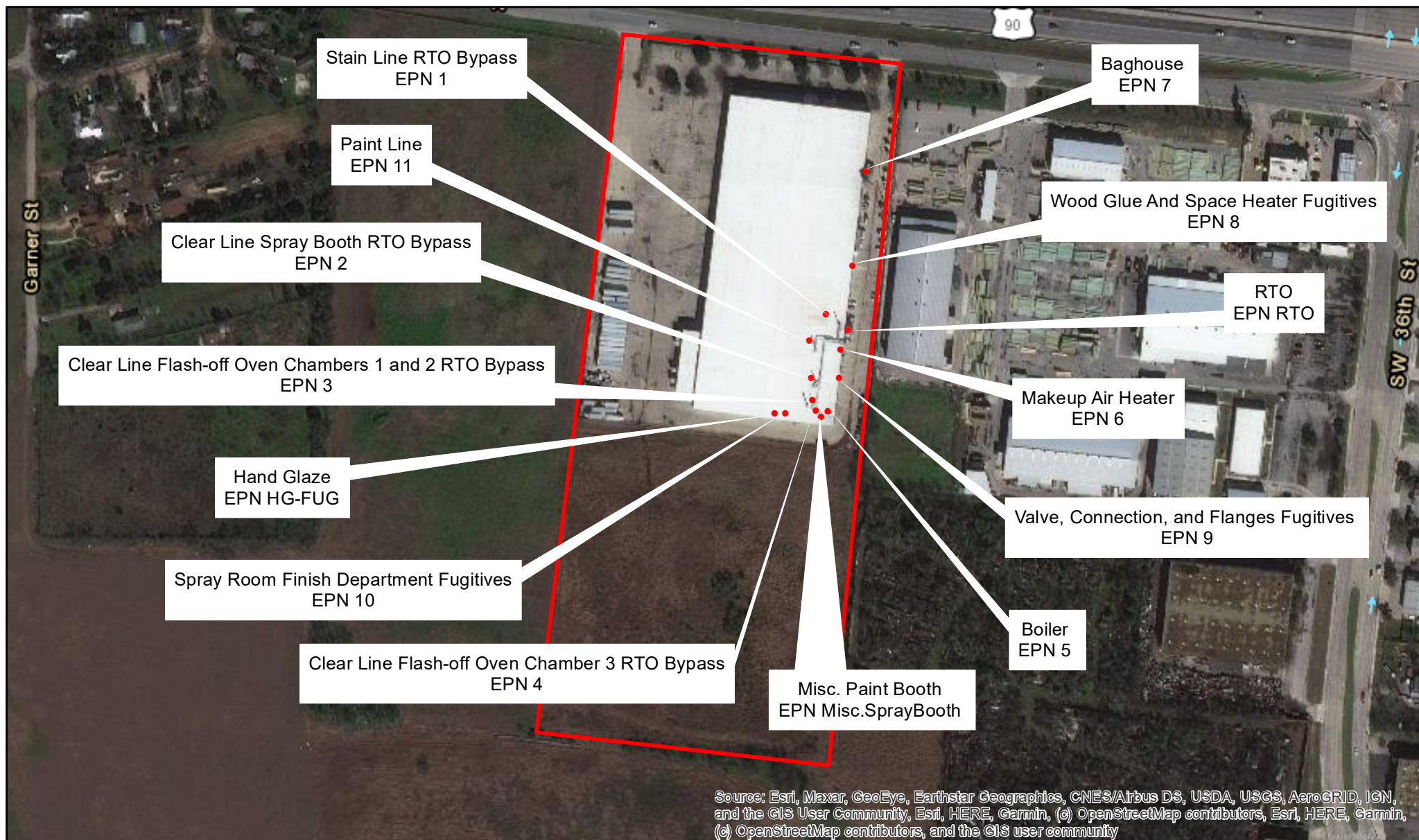
Nation's Cabinetry, LLC– US 90, San Antonio
Process Flow Diagram

Miscellaneous Operations





<div><div>Legend</div><div><div><div></div><div>Approx. Equip. Loc</div></div><div><div></div><div>Benchmark Locations</div></div><div><div></div><div>Property Line</div></div></div></div>	<div><div>Source: ESRI World Imagery</div><div>Datum: WGS 1984</div></div>		<div><div>N</div><div></div></div>	<div><div>Map Details</div><div>Plot Plan 1</div><div>Nations Cabinetry</div><div>4600 US 90 Access Rd. San Antonio, TX 78237</div></div>	
	<div><div>bsi.</div><div>7000 North MoPac Expressway, Suite 200</div><div>Austin, Texas 78746</div></div>		<div><div>Location:</div><div>29.40555°</div><div>-98.579444°</div></div>		<div><div>1 inch = 500 feet</div></div>
					<div><div>Date:</div><div>July 2020</div></div>



Legend

• Approx. Equip. Loc

□ Property Line

Source: ESRI World Imagery

Datum: WGS 1984



Map Details

Plot Plan 2

Nations Cabinetry

4600 US 90 Access Rd. San Antonio, TX 78237

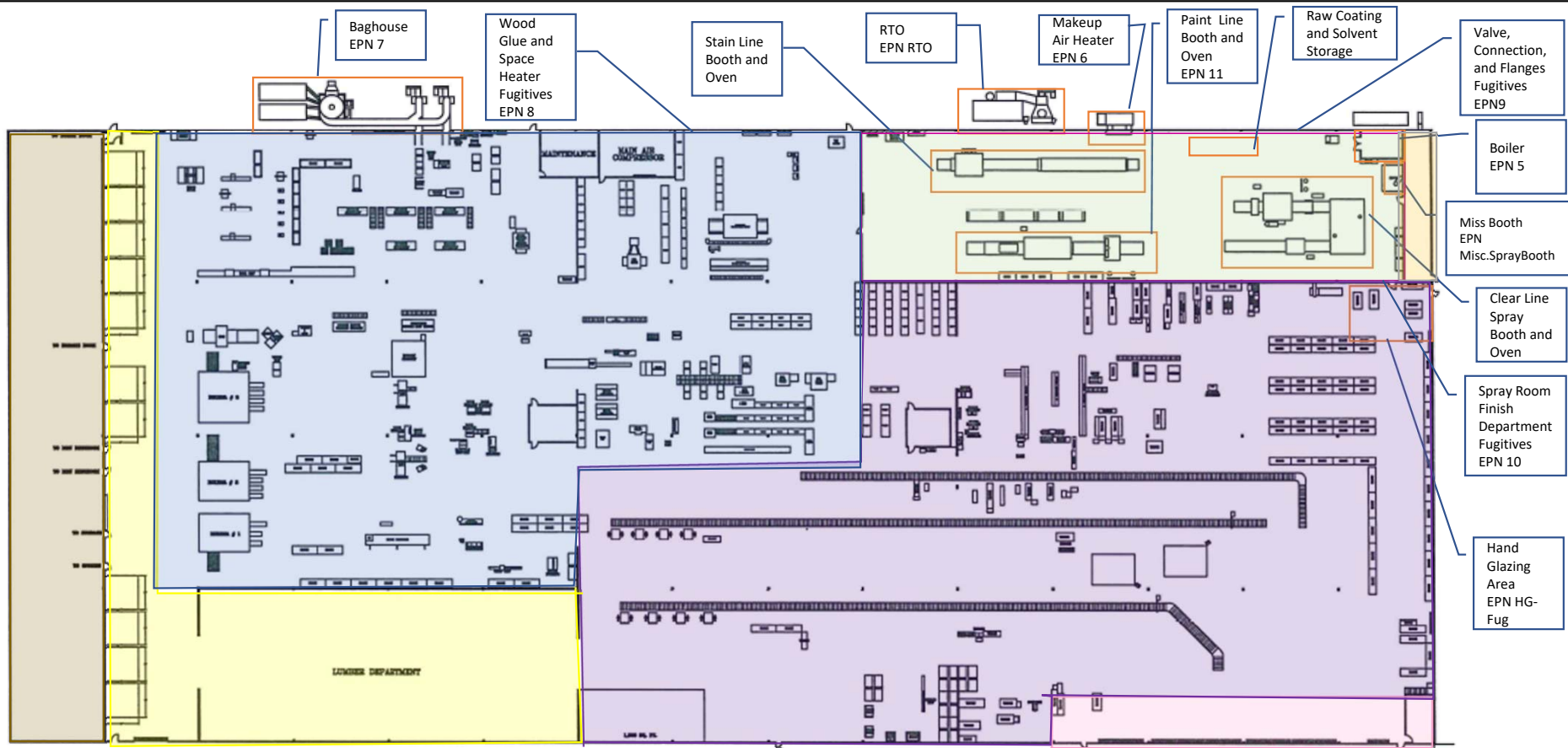
bsi.

7000 North MoPac Expressway, Suite 200
Austin, Texas 78746









Location:
29.405556°
-98.579444°

1 inch = 325 feet

Date:
July 2020



Map Legend

- | | |
|---|---|
|  Office Area |  Loading Docks |
|  Cutting and Initial Cabinet Assembly |  Spray Room Finish Department |
|  Approx. Equipment Location |  Lumber and Raw Material Storage |
|  Final Assembly, QA/QC, and Warehouse |  Coating Waste Storage Area |



bsi.

7000 North MoPac Expressway, Suite 200
Austin, Texas 78746

Nations: Building Layout

Date: July 2020

**Nations Cabinetry LLC - US 90 Facility
State and Federal Regulation Review**

Federal Regulations - Code of Federal Regulations

Rule Reference	Rule Title	Applicability	Applicability Justification
40 CFR Part 52.21	Prevention of Significant Deterioration (PSD) of Air Quality	NO	This facility is not one of the listed stationary sources of air pollutants for which emissions of 100 tons per year (tpy) or more of a regulated NSR pollutant triggers the major source requirements in 40 CFR § 52.21(b)(1)(i)(a) or in 40 CFR § 52.21(b)(1)(iii)(t). This facility will not emit 250 tpy or more of a regulated NSR pollutant; therefore, PSD permitting does not apply.
40 CFR Part 60	Standard of Performance for New Stationary Sources (NSPS)	NO	This facility will not operate sources subject to this rule.
40 CFR Part 61	National Standards for Hazardous Air Pollutants	NO	This facility will not operate sources subject to this rule.
40 CFR Part 63	Maximum Achievable Control Technology (MACT)	NO	40 CFR Part 63 Subpart JJ - National Emission Standards for Wood Furniture Manufacturing Operations is potentially applicable. However, 1. The site is not a major source as defined in 40 CFR part 63, subpart A, 63.2 [63.800(a) - Applicability]. 2. The site/source does not emit more than 5 tons per year of any one HAP per rolling 12-month period and no more than 12.5 tons per year of any combination of HAP per rolling 12-month [63.800(b)(3) - Applicability]; therefore, 40 CFR Part 63, Subpart JJ does not apply.

State Regulations - 30 Texas Administrative Code (30 TAC) Chapter 101

Rule Reference	Rule Title	Applicability	Applicability Justification
101.1	Definitions	NO	This rule is administrative in nature and does not regulate the operation of the facility.
101.2	Multiple Air Contaminant Sources or Properties	NO	Nations is not petitioning for a single property designation with other property owners.
101.3	Circumvention	NO	Nations does not currently use or plan to implement any plan, activity, device or contrivance that will, without resulting in an actual reduction in air contaminants, conceal or appear to minimize the effects of emissions which would otherwise constitute a violation of the Texas Clean Air Act (TCAA) or Texas Commission on Environmental Quality (TCEQ) regulations.
101.4	Nuisance	NO	Nations will not discharge from any source contaminants in a concentration and of such duration as are or may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation, or property, or as to interfere with the normal use and enjoyment of animal life, vegetation, or property.
101.5	Traffic Hazard	NO	No discharge of air contaminants, uncombined water, or other material from the site will cause or have a tendency to cause a traffic hazard or interfere with normal road use.
101.8	Sampling	YES	All required sampling will be performed in accordance with the permit and TCEQ guidance, and records will be maintained as required.
101.9	Sampling Ports	YES	If required, sampling ports will comply with TCEQ requirements.
101.10	Emissions Inventory Requirements	YES	Emission inventories are required for the Nations US90 Facility located in San Antonio, Texas as the facility is located in an ozone nonattainment area emitting a minimum of ten tons per year (tpy) volatile organic compounds (VOC). Nations will prepare and submit emissions inventory to the agency.
101.13	Use and Effect of Rules	NO	This rule is administrative in nature and does not regulate the operation of the facility.
101.14	Sampling Procedure and Terminology	NO	This rule is administrative in nature and does not regulate the operation of the facility.
101.18	Remedies Cumulative	NO	This rule is administrative in nature and does not regulate the operation of the facility.
101.19	Severability	NO	This rule is administrative in nature and does not regulate the operation of the facility.
101.20	Compliance with Environmental Protection Standards	YES	This facility is a source of air contaminants. The applicant will comply to the extent applicable.
101.21	The National Primary and Secondary Ambient Air Quality Standards	YES	The facility will demonstrate compliance with the applicable NAAQS standards.
101.23	Alternate Emission Reduction ("Bubble") Policy	NO	The operation of the facility will not be regulated by the Alternative Emission Reduction Policy.
101.24	Inspection Fees	YES	The facility will remit inspection fees as applicable.
101.26	Surcharge on Fuel Oil in Specified Boilers	NO	Nations does not operate a boiler with a heat input greater than 10.0 million British thermal units (Btu) per hour; therefore, this regulation does not apply. The boiler at the facility has a heat input capacity of 3.5 MMBtu/hr.
101.27	Emissions Fees	YES	Nations will remit emissions fees as applicable.
101.28	Stringency Determination for Federal Operating Permits	NO	Nations is not a major source; therefore, Federal Operating Permits Program is not applicable.
101.201	Emissions Event Reporting and Recordkeeping Requirements	YES	Nations will follow the notification requirements in §101.201, should a reportable emissions event, as defined in §101.1, occur.
101.211	Scheduled Maintenance, Start-Up and Shutdown Reporting	YES	Nations will comply with the provisions of §101.211 to the extent applicable.
101.221	Operational Requirements	YES	Nations will comply with these provisions to the extent applicable.
101.222	Demonstrations	YES	Nations will comply with these provisions to the extent applicable.
101.223	Actions to Reduce Excessive Emissions	YES	Nations will comply with these provisions to the extent applicable.
101.224	Temporary Exemptions During Drought Conditions	YES	Nations will comply with these provisions to the extent applicable.
101.231	Petition for Variance	YES	Nations will comply with these provisions to the extent applicable.
101.232	Effect of Acceptance of Variance or Permit	YES	Nations will comply with these provisions to the extent applicable.
101.233	Variance Transfers	YES	Nations will comply with these provisions to the extent applicable.

**Nations Cabinetry LLC - US 90 Facility
State and Federal Regulation Review**

101 Subchapter B	Failure to Attain Fee	NO	This facility is not in the Houston-Galveston-Brazoria one-hour ozone nonattainment area; therefore, is not subject to this subchapter.
101 Subchapter C	Voluntary Supplemental Leak Detection Program	NO	This facility is not subject to this subchapter.
101 Subchapter H, Division 1	Emission Credit Program	NO	Participation in this program is voluntary. Nations chooses not to participate; therefore, this division does not apply.
101 Subchapter H, Division 2	Emissions Banking and Trading Allowances	NO	This facility does not have an electric generating facility and Nations will not be a broker; therefore, this division does not apply.
101 Subchapter H, Division 3	Mass Cap and Trade Program	NO	This facility is not located in the Houston-Galveston-Brazoria ozone nonattainment area; therefore, this division does not apply.
101 Subchapter H, Division 4	Discrete Emission Credit Program	NO	Participation in this program is voluntary. Nations chooses not to participate; therefore, this division does not apply.
101 Subchapter H, Division 6	Highly Reactive Volatile Organic Compound Emissions Cap and Trade Program	NO	This facility is not located in the Houston-Galveston-Brazoria ozone nonattainment area; therefore, this division does not apply.
101 Subchapter H, Division 7	Clean Air Interstate Rule	NO	This facility will not operate fossil fuel-fired boilers that generate electricity; therefore, this division does not apply.

State Regulations - 30 Texas Administrative Code (30 TAC) Chapter 111 - Control of Air Pollution From Visible Emissions and Particulate Matter

Rule Reference	Rule Title	Applicability	Applicability Justification
111.111	Requirements for Specified Sources	YES	Opacity will not exceed 20% over a six minute period for sources. Compliance will be determined by the use of Text Method 9 (40 CFR 60 Appendix A) as necessary/requested. Should opacity reading be necessary, reading will be obtained by a person with a current certification for determining opacity under 40 CFR 60 Appendix A, Text Method 9.
111.113	Alternate Opacity Limitations	NO	There are no alternate opacity limitations proposed for this facility.
111.121,123,124,125,127,129	Incinerators	NO	No incinerators will be used at the facility; therefore, these sections do not apply.
111.131,133,135,137,139	Abrasive Blasting of Water Storage Tanks Performed By Portable Operations	NO	Abrasive blasting of water storage tanks will not take place at the facility; therefore, these sections do not apply.
111.141,143,145,147,149	Materials Handling, Construction, Roads, Streets, Alleys, and Parking Lots	NO	Nations is not located in any of the listed areas; therefore, these sections do not apply.
111.151	Allowable Emissions Limits	YES	Sources which emit particulate matter will meet the requirements of the standard permit; therefore, compliance §111.151 is expected.
111.153	Emissions Limits for Steam Generators	NO	This facility does not have a steam generator; therefore, this section does not apply.
111.171,173,175	Emission Limits on Agricultural Processes	NO	This facility is not an agricultural process; therefore, these sections do not apply.
111.181,183	Exemptions for Portable or Transient Operations	NO	This facility is not permitting for a portable authorization; therefore, these sections do not apply.
111.201,203,205,207,209,211, 213,215,219,221	Outdoor Burning	NO	Outdoor burning will not be performed at this facility

State Regulations - 30 Texas Administrative Code (30 TAC) Chapter 112 - Control of Air Pollution From Sulfur Compounds

Rule Reference	Rule Title	Applicability	Applicability Justification
112.1	Definitions	NO	This rule is administrative in nature and does not regulate the operation of the facility.
112.3	Net Ground Level Concentrations	NO	Emissions of SO ₂ will not exceed a net ground level concentration of 0.4 part per million by volume (ppmv) averaged over any 30-minute period.
112.4 through 112.18	Allowable Emissions Rates Temporary Fuel Shortage Plan	NO	Nations does not operate sources effected by these regulations; therefore, these regulations are not applicable.
112.19 through 112.21	Application for Area Control Plan	NO	Nations is not applying for an Area Control Plan or a source exemption; therefore, these regulations are not applicable.

State Regulations - 30 Texas Administrative Code (30 TAC) Chapter 113 - Standards of Performance for Hazardous Air Pollutants and for Designated Facilities and Pollutants

Rule Reference	Rule Title	Applicability	Applicability Justification
113.410	Wood Furniture Manufacturing Operations	NO	40 CFR Part 63 Subpart JJ - National Emission Standards for Wood Furniture Manufacturing Operations is potentially applicable. However, 1. The site is not a major source as defined in 40 CFR part 63, subpart A, 63.2 [63.800(a) - Applicability], 2. The site/source does not emit more than 5 tons per year of any one HAP per rolling 12-month period and no more than 12.5 tons per year of any combination of HAP per rolling 12-month [63.800(b)(3) - Applicability]; therefore, 40 CFR Part 63, Subpart JJ does not apply.

State Regulations - 30 Texas Administrative Code (30 TAC) Chapter 114 - Control of Air Pollution from Motor Vehicles

Rule Reference	Rule Title	Applicability	Applicability Justification
114	Control of Air Pollution From Motor Vehicles	NO	Nations is not a motor vehicle; therefore, provisions of this chapter do not apply.

**Nations Cabinetry LLC - US 90 Facility
State and Federal Regulation Review**

State Regulations - 30 Texas Administrative Code (30 TAC) Chapter 115 - Control of Air Pollution from VOCs

Rule Reference	Rule Title	Applicability	Applicability Justification
115.1	Definitions	NO	This rule is administrative in nature and does not regulate the operation of the facility.
115 Subchapter B Division 1	Storage of Volatile Organic Compounds	NO	This subchapter is not applicable to this facility because the site does not have storage tanks with volatile organic compounds.
115 Subchapter B Division 2	Vent Gas Control	YES	The facility is located in Bexar County and will comply to the extent applicable. The facility has a vapor control device in place.
115 Subchapter B Division 3	Water Separation	NO	Nations does not operate a water separation unit; therefore, the provisions of this division do not apply.
115 Subchapter B Division 4	Industrial Wastewater	NO	Nations will not generate wastewater streams at the site; therefore, the provisions of this division do not apply.
115 Subchapter B Division 5	Municipal Solid Waste Landfills	NO	Nations does not operate any municipal solid waste landfill facilities at the site; therefore, the provisions of this division do not apply.
115 Subchapter B Division 6	Batch Processes	NO	Nations does not operate a batch process under one of the specified Standard Industrial Classification (SIC) codes. Furthermore, Nations does not operate an 'exempt' batch process or a batch process which utilizes a highly-reactive VOC; therefore, the provisions of this division do not apply.
115 Subchapter C	Volatile Organic Compound Transfer Operations	NO	Nations is not a gasoline terminal or gasoline motor vehicle fuel dispensing facility nor is the site located in the listed areas; therefore, the provisions of this subchapter do not apply.
115 Subchapter D	Petroleum Refining, Natural Gas Processing, and Petrochemical Processes	NO	Nations is not a petroleum refinery, a natural gas/gasoline processing plant; therefore, the provisions of this subchapter do not apply.
115 Subchapter E Division 1	Degreasing Processes	NO	Nations does not operate a degreasing process; therefore the provisions of this division do not apply.
115 Subchapter E Division 2	Surface Coating Processes	NO	Nations is not located in the listed areas; therefore the provisions of this division do not apply.
115 Subchapter E Division 3-4	Flexographic and Rotogravure Printing and Offset Lithographic Printing	NO	Nations does not a flexographic and rotogravure printing process or an offset lithographic printing process, o; therefore the provisions of this subchapter do not apply.
115 Subchapter E Division 5	Control Requirements for Surface Coating Processes	NO	Nations is not located in the listed areas; therefore the provisions of this division do not apply.
115 Subchapter E Division 6	Industrial Cleaning Solvents	NO	Nations is not located in the listed areas; therefore the provisions of this division do not apply.
115 Subchapter E Division 7	Miscellaneous Industrial Adhesives	NO	Nations is not located in the listed areas; therefore the provisions of this division do not apply.
115 Subchapter F	Miscellaneous Industrial Sources	NO	Nations does not utilize cutback asphalt, own or operator a synthesized pharmaceutical manufacturing facility, degas storage tanks, transport vessels or marine vessels or operate a petroleum dry cleaning system; therefore, the provisions of this subchapter do not apply.
115 Subchapter G	Consumer Related Sources	NO	Nations does not sell, offer for sale, supply, distribute or manufacture automotive windshield washer fluid for use in the State of Texas; therefore, the provisions of this subchapter do not apply.
115 Subchapter H	Highly-Reactive Volatile Organic Compounds	NO	Nations does not have the potential to emit highly-reactive VOCs as defined by 30 TAC §115.10; therefore, the provisions of this division do not apply.
115 Subchapter J	Administrative Provisions	NO	This subchapter is administrative in nature and does not regulate the operation of the facility. Nations will comply with the provisions of this subchapter to the extent applicable.

**Nations Cabinetry LLC - US 90 Facility
State and Federal Regulation Review**

State Regulations - 30 Texas Administrative Code (30 TAC) Chapter 116 - Control of Air Pollution by Permits for New Construction or Modification

Rule Reference	Rule Title	Applicability	Applicability Justification
116.111(a)(2)(A)	Protection of Public Health and Welfare	YES	Nations will comply with all applicable rules and regulations of the commission and with the intent of the TCAA, including protection of the health and property of the public. No schools are located within 3,000 feet of the proposed facility.
116.111(a)(2)(B)	Measurement of Emissions	YES	Nations will comply with permit provisions associated with measuring emissions of significant air contaminants.
116.111(a)(2)(C)	Best Available Control Technology (BACT)	YES	This facility will comply with the provisions in this rule as applicable.
116.111(a)(2)(D)	NSPS	NO	This facility will not operate sources subject to this rule.
116.111(a)(2)(E)	NESHAP	NO	This facility will not operate sources subject to this rule.
116.111(a)(2)(F)	NESHAP for Source Categories	NO	Nations is not subject to 40 CFR Part 63; therefore, this regulation does not apply.
116.111(a)(2)(G)	Performance Demonstration	YES	Nations will achieve the performance specified in the permit application.
116.111(a)(2)(H)	Non-Attainment Review	YES	Nations is located in a marginal nonattainment; therefore, the facility will comply with applicable requirements.
116.111(a)(2)(I)	PSD Review	NO	This facility is not a major source and will not exceed any PSD thresholds; therefore, the provisions of this regulation do not apply.
116.111(a)(2)(J)	Air Dispersion Modeling	YES	The facility is performing a SCREEN3 model to determine air quality impacts. .
116.111(a)(2)(K)	Hazardous Air Pollutants	NO	The facility will not emit HAPs in the excess of 10 tons per year (tpy) of any individual HAP or 25 tpy of combined HAPs; therefore, the provisions of this regulation do not apply.
116.111(a)(2)(L)	Mass Cap and Trade Allowances	NO	Not applicable because this facility is not subject to the Chapter 101, Subchapter H, Division 3.
116.111(a)(2)(K)	Hazardous Air Pollutant Major Source	NO	Nations is not a major source for Hazardous Air Pollutants; therefore, the provisions of this regulation do not apply.
116 Subchapter C	Plant Wide Applicability Limit	NO	Nations is not seeking a plant-wide applicability limit; therefore, the provisions of this regulation do not apply.

State Regulations - 30 Texas Administrative Code (30 TAC) Chapter 117 - Control of Air Pollution from Nitrogen Compounds

Rule Reference	Rule Title	Applicability	Applicability Justification
117 Subchapter A	Definitions	NO	This rule is administrative in nature and does not regulate the operation of the facility.
117 Subchapter B	Combustion Control at Major Industrial, Commercial, and Institutional Sources in Ozone Nonattainment Areas	NO	Nations is not a major source; therefore, the provisions of this subchapter do not apply.
117 Subchapter C	Combustion Control at Major Utility Electric Generation Sources in Ozone Nonattainment Areas	NO	Nations is not a major source nor a Utility Electric Generation Source; therefore, the provisions of this subchapter do not apply.
117 Subchapter D	Combustion Control at Minor Sources in Ozone Nonattainment Areas	NO	Nations is not located in one of the defined ozone nonattainment areas identified in this subchapter; therefore, the provisions of this subchapter do not apply.
117 Subchapter E	Administrative Provisions	NO	Nations does not operate equipment that is subject to this subchapter; therefore, the provisions of this subchapter do not apply.
117 Subchapter F	Acid Manufacturing	NO	Nations does not operate equipment that is subject to this subchapter; therefore, the provisions of this subchapter do not apply.
117 Subchapter G	General Monitoring and Testing Requirements	NO	Nations will not operate sources subject to this rule; therefore this provisions does not apply
117 Subchapter H	Administrative Provisions	NO	Nations will not operate sources subject to this rule; therefore this provisions does not apply

State Regulations - 30 Texas Administrative Code (30 TAC) Chapter 118 - Control of Air Pollution Episodes

Rule Reference	Rule Title	Applicability	Applicability Justification
118.1,2,3,4,5,6	Generalized Air Pollution Episodes	YES	Nations will comply with orders of the TCEQ relating to generalized and localized air pollution episodes.

State Regulations - 30 Texas Administrative Code (30 TAC) Chapter 122 - Federal Operating Permits Program

Rule Reference	Rule Title	Applicability	Applicability Justification
122 Subchapter A	Definitions	NO	This rule is administrative in nature and does not regulate the operation of the facility.
122 Subchapter B	Permit Requirements	NO	Nations is not a major source and, therefore, does not require a Federal Operating Permit.

Table 1A
Stain Line Coatings Properties

Vendor	Coating Name	Coating Type	Flash Data ¹	Components as Received					Mixing Data	As Mixed and Thinned				
				Density (lb/gal)	VOC Content (lb/gal)	Exempt Solvent Content (lb/gal)	Water Content (lb/gal)	Solids Content (lb/gal)		Density (lb/gal)	VOC Content (lb/gal)	Exempt Solvent Content (lb/gal)	Water Content (lb/gal)	Solids Content (lb/gal)
Sherwin Williams	Natural Hybrid Stain	Stain	1.00	8.32	0.00	4.76	3.55	0.01	1.00	8.32	0.00	4.76	3.55	0.01
Sherwin Williams	Charcoal Hybrid Stain	Stain	1.00	7.38	0.75	3.59	2.94	0.10	1.00	7.38	0.75	3.59	2.94	0.10
Sherwin Williams	Chestnut Hybrid Stain	Stain	1.00	7.42	0.75	3.58	2.95	0.14	1.00	7.42	0.75	3.58	2.95	0.14
Sherwin Williams	Cinnamon Hybrid Stain	Stain	1.00	8.40	0.08	0.00	8.18	0.13	1.00	8.40	0.08	0.00	8.18	0.13
Sherwin Williams	Brandy Hybrid Stain	Stain	1.00	7.45	0.79	3.49	3.02	0.15	1.00	7.45	0.79	3.49	3.02	0.15
Sherwin Williams	Mocha Hybrid Stain	Stain	1.00	7.40	0.75	3.52	3.01	0.12	1.00	7.40	0.75	3.52	3.01	0.12
Sherwin Williams	New UV Hybrid Expresso	Stain	1.00	7.38	0.76	3.54	2.98	0.09	1.00	7.38	0.76	3.54	2.98	0.09
Sherwin Williams	Smoke Hybrid Stain	Stain	1.00	7.43	0.76	3.57	2.92	0.17	1.00	7.43	0.76	3.57	2.92	0.17
Sherwin Williams	Toffee Hybrid Stain	Stain	1.00	7.37	0.74	3.58	2.97	0.09	1.00	7.37	0.74	3.58	2.97	0.09
Sherwin Williams	Dusk Hybrid Stain	Stain	1.00	7.43	0.77	3.60	2.90	0.17	1.00	7.43	0.77	3.60	2.90	0.17
Sherwin Williams	Wheat Hybrid Stain	Stain	1.00	7.35	0.74	3.62	2.94	0.04	1.00	7.35	0.74	3.62	2.94	0.04
Sherwin Williams	Pecan Hybrid Stain	Stain	1.00	8.44	0.05	0.00	8.20	0.19	1.00	8.44	0.05	0.00	8.20	0.19
Maximum			1.00	8.44	0.79	4.76	8.20	0.19		8.44	0.79	4.76	8.20	0.19
Minimum			1.00	7.35	0.00	0.00	2.90	0.01		7.35	0.00	0.00	2.90	0.01
Average			1.00	7.65	0.58	3.07	3.88	0.12		7.65	0.58	3.07	3.88	0.12

¹First hour flash fraction based on site specific testing using TCEQ protocol or Figure 655 (AP-40) flash curves

Table 1B
Clear Line Coatings Properties

[illegible]

¹First hour flash fraction based on site specific testing using TCEQ protocol or Figure 655 (AP-40) flash curves

Table 1C
Paint Line Coatings Properties

[illegible]

¹First hour flash fraction based on site specific testing using TCEQ protocol or Figure 655 (AP-40) flash curves

Table 1D
Cleanup Solvent Properties

[illegible]

¹First hour flash fraction based on site specific testing using TCEQ protocol or Figure 655 (AP-40) flash curves

Table 4A
Stain Line Coatings As-Mixed and Thinned Speciation

Thinning Ratio		
Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio
0	1	0.00

Chemical Abstract Service No. (CAS No.)	Chemical Species	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Species in Paint	Species in Thinner	Maximum Wt % in Paint	Maximum Wt % in Thinner	Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio	Maximum Wt % in Mixed Paint
7732-18-5	Water	NE	No	Y	N	97.440	0.000	0.00	1.00	0.00	97.440
104-15-4	4-Methylbenzenesulfonic Acid	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
1047-16-1	Quinacridone	P	No	Y	N	0.170	0.000	0.00	1.00	0.00	0.170
112945-52-5	Fumed Amorphous Silica	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
119681-36-6	Polyester	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
12713-03-0	Umber	P	No	Y	N	0.410	0.000	0.00	1.00	0.00	0.410
1309-37-1	iron oxide	P	No	Y	N	1.400	0.000	0.00	1.00	0.00	1.400
1312-59-5	Clorite	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
1317-61-9	Iron Oxide	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
1332-58-7	Kaolin	P	No	Y	N	0.030	0.000	0.00	1.00	0.00	0.030
1333-86-4	Carbon Black	P	No	Y	N	0.930	0.000	0.00	1.00	0.00	0.930
13463-67-7	Titanium Dioxide	P	No	Y	N	1.990	0.000	0.00	1.00	0.00	1.990
14807-96-6	Talc	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
14808-60-7	Crystalline Silica, respirable powder	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
15467-06-8	Lithium Ricinoleate	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
16389-88-1	Magnesium Calcium Carbonate	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
25973-55-1	Benzotriazole Dipentylphenol	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
2786-76-7	C.I. Pigment Red 170	P	No	Y	N	0.150	0.000	0.00	1.00	0.00	0.150
51274-00-1	Iron Oxide	P	No	Y	N	0.270	0.000	0.00	1.00	0.00	0.270
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	Y	N	0.130	0.000	0.00	1.00	0.00	0.130
61791-92-2	Defoamer	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
669-11-6	Azo Brown	P	No	Y	N	0.380	0.000	0.00	1.00	0.00	0.380
67989-65-5	Polyester	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
72797-02-5	Orange Dye	P	No	Y	N	0.010	0.000	0.00	1.00	0.00	0.010
73003-33-5	C.I. Acid Red	P	No	Y	N	0.090	0.000	0.00	1.00	0.00	0.090
7631-86-9	Amorphous Silica	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
7727-43-7	Barium Sulfate	P	No	Y	N	0.010	0.000	0.00	1.00	0.00	0.010
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
8002-74-2	Paraffin Wax	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
85711-46-2	Unsaturated Fatty Acids	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
857892-58-1	Polyoxyalkylene	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000

Table 4A
Stain Line Coatings As-Mixed and Thinned Speciation

Thinning Ratio		
Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio
0	1	0.00

Chemical Abstract Service No. (CAS No.)	Chemical Species	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Species in Paint	Species in Thinner	Maximum Wt % in Paint	Maximum Wt % in Thinner	Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio	Maximum Wt % in Mixed Paint
9002-88-4	Polyethylene	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	Y	N	0.140	0.000	0.00	1.00	0.00	0.140
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	Y	N	0.070	0.000	0.00	1.00	0.00	0.070
Not Reported	Additive (As rheological additive (flow agent))	P	No	Y	N	0.110	0.000	0.00	1.00	0.00	0.110
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	Y	N	0.020	0.000	0.00	1.00	0.00	0.020
Not Reported	Defoamer	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	N	N	0.000	0.000	0.00	1.00	0.00	0.000
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
Not Reported	Polysiloxane	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	Y	N	0.260	0.000	0.00	1.00	0.00	0.260
100-41-4	Ethylbenzene	V	Yes	N	N	0.000	0.000	0.00	1.00	0.00	0.000
107-21-1	Ethylene Glycol	V	Yes	Y	N	0.030	0.000	0.00	1.00	0.00	0.030
107-98-2	1-Methoxy-2-propanol	V	No	Y	N	0.020	0.000	0.00	1.00	0.00	0.020
108-10-1	Methyl Isobutyl Ketone	V	Yes	N	N	0.000	0.000	0.00	1.00	0.00	0.000
108-65-6	2-methoxy-1-methylethyl acetate	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
108-67-8	1,3,5-Trimethylbenzene	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
108-88-3	Toluene	V	Yes	N	N	0.000	0.000	0.00	1.00	0.00	0.000
109-60-4	n-Propyl Acetate	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
110-43-0	Methyl n-Amyl Ketone	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
111-76-2	2-Butoxyethanol	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
123-86-4	n-butyl acetate	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
1330-20-7	Xylene	V	Yes	N	N	0.000	0.000	0.00	1.00	0.00	0.000
1569-02-4	1-Ethoxy-2-Propanol	V	No	Y	N	0.260	0.000	0.00	1.00	0.00	0.260
50-00-0	Formaldehyde	V	Yes	N	N	0.000	0.000	0.00	1.00	0.00	0.000
526-73-8	1,2,3-Trimethylbenzene	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
540-88-5	t-Butyl Acetate	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
57-55-6	Propylene Glycol	V	No	Y	N	0.980	0.000	0.00	1.00	0.00	0.980
64-17-5	Ethanol	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
64742-82-1	Heavy Aliphatic Solvent	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
64742-95-6	Light Aromatic Hydrocarbons	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000

Table 4A
Stain Line Coatings As-Mixed and Thinned Speciation

Thinning Ratio		
Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio
0	1	0.00

Chemical Abstract Service No. (CAS No.)	Chemical Species	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Species in Paint	Species in Thinner	Maximum Wt % in Paint	Maximum Wt % in Thinner	Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio	Maximum Wt % in Mixed Paint
67-56-1	Methanol	V	Yes	N	N	0.000	0.000	0.00	1.00	0.00	0.000
67-63-0	2-propanol	V	No	Y	N	9.970	0.000	0.00	1.00	0.00	9.970
67-64-1	Acetone	V	No	Y	N	49.860	0.000	0.00	1.00	0.00	49.860
71-36-3	1-Butanol	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
763-69-9	Ethyl 3-Ethoxypropionate	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
78-83-1	2-methyl-1-propanol	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
78-93-3	Methy Ethyl Ketone	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
8052-41-3	Stoddard Solvent	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
95-63-6	1,2,4-Trimethylbenzene	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
98-56-6	p-Chlorobenzotrifluoride	V	No	N	N	0.000	0.000	0.00	1.00	0.00	0.000
98-82-8	Cumene	V	Yes	N	N	0.000	0.000	0.00	1.00	0.00	0.000

Table 4B
Clear Line Coatings As-Mixed and Thinned Speciation

Thinning Ratio		
Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio
0.03	1	0.03

Chemical Abstract Service No. (CAS No.)	Chemical Species	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Species in Paint	Species in Thinner	Maximum Wt % in Paint	Maximum Wt % in Thinner	Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio	Maximum Wt % in Mixed Paint
7732-18-5	Water	NE	No	Y	Y	0.020	4.670	0.03	1.00	0.03	0.156
104-15-4	4-Methylbenzenesulfonic Acid	P	No	N	Y	0.000	37.790	0.03	1.00	0.03	1.101
1047-16-1	Quinacridone	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
112945-52-5	Fumed Amorphous Silica	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
119681-36-6	Polyester	P	No	Y	N	0.590	0.000	0.03	1.00	0.03	0.590
12713-03-0	Umber	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
1309-37-1	iron oxide	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
1312-59-5	Clorite	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
1317-61-9	Iron Oxide	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
1332-58-7	Kaolin	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
1333-86-4	Carbon Black	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
13463-67-7	Titanium Dioxide	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
14807-96-6	Talc	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
14808-60-7	Crystalline Silica, respirable powder	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
15467-06-8	Lithium Ricinoleate	P	No	Y	N	0.020	0.000	0.03	1.00	0.03	0.020
16389-88-1	Magnesium Calcium Carbonate	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
25973-55-1	Benzotriazole Dipentylphenol	P	No	Y	N	0.160	0.000	0.03	1.00	0.03	0.160
2786-76-7	C.I. Pigment Red 170	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
51274-00-1	Iron Oxide	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
61791-92-2	Defoamer	P	No	Y	N	0.110	0.000	0.03	1.00	0.03	0.110
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	Y	N	0.040	0.000	0.03	1.00	0.03	0.040
669-11-6	Azo Brown	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
67989-65-5	Polyester	P	No	Y	N	21.220	0.000	0.03	1.00	0.03	21.220
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	Y	N	11.690	0.000	0.03	1.00	0.03	11.690
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	Y	N	3.720	0.000	0.03	1.00	0.03	3.720
72797-02-5	Orange Dye	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
73003-33-5	C.I. Acid Red	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
7631-86-9	Amorphous Silica	P	No	Y	N	1.650	0.000	0.03	1.00	0.03	1.650
7727-43-7	Barium Sulfate	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
8002-74-2	Paraffin Wax	P	No	Y	N	0.090	0.000	0.03	1.00	0.03	0.090
85711-46-2	Unsaturated Fatty Acids	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000

Table 4B
Clear Line Coatings As-Mixed and Thinned Speciation

Thinning Ratio		
Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio
0.03	1	0.03

Chemical Abstract Service No. (CAS No.)	Chemical Species	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Species in Paint	Species in Thinner	Maximum Wt % in Paint	Maximum Wt % in Thinner	Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio	Maximum Wt % in Mixed Paint
857892-58-1	Polyoxyalkylene	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
9002-88-4	Polyethylene	P	No	Y	N	0.070	0.000	0.03	1.00	0.03	0.070
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	Y	N	0.050	0.000	0.03	1.00	0.03	0.050
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
Not Reported	Additive (As rheological additive (flow agent))	P	No	Y	N	0.120	0.000	0.03	1.00	0.03	0.120
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
Not Reported	Defoamer	P	No	Y	N	0.170	0.000	0.03	1.00	0.03	0.170
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	Y	N	0.020	0.000	0.03	1.00	0.03	0.020
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
Not Reported	Polysiloxane	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	Y	N	0.050	0.000	0.03	1.00	0.03	0.050
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
100-41-4	Ethylbenzene	V	Yes	Y	N	0.550	0.000	0.03	1.00	0.03	0.550
107-21-1	Ethylene Glycol	V	Yes	N	N	0.000	0.000	0.03	1.00	0.03	0.000
107-98-2	1-Methoxy-2-propanol	V	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
108-10-1	Methyl Isobutyl Ketone	V	Yes	N	Y	0.000	2.190	0.03	1.00	0.03	0.064
108-65-6	2-methoxy-1-methylethyl acetate	V	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
108-67-8	1,3,5-Trimethylbenzene	V	No	Y	N	0.090	0.000	0.03	1.00	0.03	0.090
108-88-3	Toluene	V	Yes	N	N	0.000	0.000	0.03	1.00	0.03	0.000
109-60-4	n-Propyl Acetate	V	No	Y	N	0.570	0.000	0.03	1.00	0.03	0.570
110-43-0	Methyl n-Amyl Ketone	V	No	Y	N	7.860	0.000	0.03	1.00	0.03	7.860
111-76-2	2-Butoxyethanol	V	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
123-86-4	n-butyl acetate	V	No	Y	N	12.300	0.000	0.03	1.00	0.03	12.300
1330-20-7	Xylene	V	Yes	Y	N	3.020	0.000	0.03	1.00	0.03	3.020
1569-02-4	1-Ethoxy-2-Propanol	V	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
50-00-0	Formaldehyde	V	Yes	Y	N	0.140	0.000	0.03	1.00	0.03	0.140
526-73-8	1,2,3-Trimethylbenzene	V	No	Y	N	0.030	0.000	0.03	1.00	0.03	0.030
540-88-5	t-Butyl Acetate	V	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
57-55-6	Propylene Glycol	V	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
64-17-5	Ethanol	V	No	Y	Y	9.170	54.780	0.03	1.00	0.03	10.766
64742-82-1	Heavy Aliphatic Solvent	V	No	Y	N	0.680	0.000	0.03	1.00	0.03	0.680
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	Y	N	0.010	0.000	0.03	1.00	0.03	0.010

Table 4B
Clear Line Coatings As-Mixed and Thinned Speciation

Thinning Ratio		
Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio
0.03	1	0.03

Chemical Abstract Service No. (CAS No.)	Chemical Species	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Species in Paint	Species in Thinner	Maximum Wt % in Paint	Maximum Wt % in Thinner	Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio	Maximum Wt % in Mixed Paint
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	Y	Y	9.060	0.580	0.03	1.00	0.03	9.077
64742-95-6	Light Aromatic Hydrocarbons	V	No	Y	N	0.230	0.000	0.03	1.00	0.03	0.230
67-56-1	Methanol	V	Yes	N	N	0.000	0.000	0.03	1.00	0.03	0.000
67-63-0	2-propanol	V	No	Y	N	0.460	0.000	0.03	1.00	0.03	0.460
67-64-1	Acetone	V	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
71-36-3	1-Butanol	V	No	Y	N	6.320	0.000	0.03	1.00	0.03	6.320
763-69-9	Ethyl 3-Ethoxypropionate	V	No	Y	N	0.500	0.000	0.03	1.00	0.03	0.500
78-83-1	2-methyl-1-propanol	V	No	Y	N	8.770	0.000	0.03	1.00	0.03	8.770
78-93-3	Methy Ethyl Ketone	V	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
8052-41-3	Stoddard Solvent	V	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
95-63-6	1,2,4-Trimethylbenzene	V	No	Y	N	0.360	0.000	0.03	1.00	0.03	0.360
98-56-6	p-Chlorobenzotrifluoride	V	No	N	N	0.000	0.000	0.03	1.00	0.03	0.000
98-82-8	Cumene	V	Yes	Y	N	0.050	0.000	0.03	1.00	0.03	0.050

Table 4C
Paint Line Coatings As-Mixed and Thinned Speciation

Thinning Ratio		
Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio
0.32	5	0.06

Chemical Abstract Service No. (CAS No.)	Chemical Species	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Species in Paint	Species in Thinner	Maximum Wt % in Paint	Maximum Wt % in Thinner	Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio	Maximum Wt % in Mixed Paint
7732-18-5	Water	NE	No	Y	Y	35.840	4.67	0.32	5.00	0.06	36.12
104-15-4	4-Methylbenzenesulfonic Acid	P	No	N	N	0.000	37.79	0.32	5.00	0.06	2.27
1047-16-1	Quinacridone	P	No	N	Y	0.000	0.00	0.32	5.00	0.06	0.00
112945-52-5	Fumed Amorphous Silica	P	No	Y	N	0.310	0.00	0.32	5.00	0.06	0.31
119681-36-6	Polyester	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
12713-03-0	Umber	P	No	N	Y	0.000	0.00	0.32	5.00	0.06	0.00
1309-37-1	iron oxide	P	No	N	Y	0.000	0.00	0.32	5.00	0.06	0.00
1312-59-5	Clorite	P	No	Y	N	0.600	0.00	0.32	5.00	0.06	0.60
1317-61-9	Iron Oxide	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
1332-58-7	Kaolin	P	No	Y	N	16.010	0.00	0.32	5.00	0.06	16.01
1333-86-4	Carbon Black	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
13463-67-7	Titanium Dioxide	P	No	Y	Y	50.000	0.00	0.32	5.00	0.06	50.00
14807-96-6	Talc	P	No	Y	N	14.070	0.00	0.32	5.00	0.06	14.07
14808-60-7	Crystalline Silica, respirable powder	P	No	Y	N	0.150	0.00	0.32	5.00	0.06	0.15
15467-06-8	Lithium Ricinoleate	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
16389-88-1	Magnesium Calcium Carbonate	P	No	Y	N	0.150	0.00	0.32	5.00	0.06	0.15
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	Y	N	0.000	0.00	0.32	5.00	0.06	0.00
25973-55-1	Benzotriazole Dipentylphenol	P	No	N	Y	0.000	0.00	0.32	5.00	0.06	0.00
2786-76-7	C.I. Pigment Red 170	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
51274-00-1	Iron Oxide	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
61791-92-2	Defoamer	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
669-11-6	Azo Brown	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
67989-65-5	Polyester	P	No	N	Y	0.000	0.00	0.32	5.00	0.06	0.00
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	Y	N	10.000	0.00	0.32	5.00	0.06	10.00
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
72797-02-5	Orange Dye	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
73003-33-5	C.I. Acid Red	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
7631-86-9	Amorphous Silica	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
7727-43-7	Barium Sulfate	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	Y	N	0.060	0.00	0.32	5.00	0.06	0.06
8002-74-2	Paraffin Wax	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
85711-46-2	Unsaturated Fatty Acids	P	No	Y	N	0.000	0.00	0.32	5.00	0.06	0.00

Table 4C
Paint Line Coatings As-Mixed and Thinned Speciation

Thinning Ratio		
Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio
0.32	5	0.06

Chemical Abstract Service No. (CAS No.)	Chemical Species	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Species in Paint	Species in Thinner	Maximum Wt % in Paint	Maximum Wt % in Thinner	Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio	Maximum Wt % in Mixed Paint
857892-58-1	Polyoxyalkylene	P	No	Y	N	0.220	0.00	0.32	5.00	0.06	0.22
9002-88-4	Polyethylene	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	N		0.000	0.00	0.32	5.00	0.06	0.00
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	Y	N	14.700	0.00	0.32	5.00	0.06	14.70
Not Reported	Additive (As rheological additive (flow agent))	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
Not Reported	Defoamer	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	Y	N	0.410	0.00	0.32	5.00	0.06	0.41
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	N	N	0.000	0.00	0.32	5.00	0.06	0.00
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	Y	N	0.050	0.00	0.32	5.00	0.06	0.05
Not Reported	Polysiloxane	P	No	Y	N	0.270	0.00	0.32	5.00	0.06	0.27
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
100-41-4	Ethylbenzene	V	Yes	Y	Y	1.000	0.00	0.32	5.00	0.06	1.00
107-21-1	Ethylene Glycol	V	Yes	N	N	0.000	0.00	0.32	5.00	0.06	0.00
107-98-2	1-Methoxy-2-propanol	V	No	N	Y	0.000	0.00	0.32	5.00	0.06	0.00
108-10-1	Methyl Isobutyl Ketone	V	Yes	N	N	0.000	2.19	0.32	5.00	0.06	0.13
108-65-6	2-methoxy-1-methylethyl acetate	V	No	Y	N	0.000	0.00	0.32	5.00	0.06	0.00
108-67-8	1,3,5-Trimethylbenzene	V	No	Y	N	0.000	0.00	0.32	5.00	0.06	0.00
108-88-3	Toluene	V	Yes	N	N	0.000	0.00	0.32	5.00	0.06	0.00
109-60-4	n-Propyl Acetate	V	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
110-43-0	Methyl n-Amyl Ketone	V	No	N	N	0.000	100.00	0.32	5.00	0.06	6.02
111-76-2	2-Butoxyethanol	V	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
123-86-4	n-butyl acetate	V	No	Y	Y	0.000	100.00	0.32	5.00	0.06	6.02
1330-20-7	Xylene	V	Yes	Y	N	5.000	0.00	0.32	5.00	0.06	5.00
1569-02-4	1-Ethoxy-2-Propanol	V	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
50-00-0	Formaldehyde	V	Yes	Y	N	0.300	0.00	0.32	5.00	0.06	0.30
526-73-8	1,2,3-Trimethylbenzene	V	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
540-88-5	t-Butyl Acetate	V	No	Y	N	25.000	0.00	0.32	5.00	0.06	25.00
57-55-6	Propylene Glycol	V	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
64-17-5	Ethanol	V	No	Y	N	10.000	54.78	0.32	5.00	0.06	13.30
64742-82-1	Heavy Aliphatic Solvent	V	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00

Table 4C
Paint Line Coatings As-Mixed and Thinned Speciation

Thinning Ratio		
Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio
0.32	5	0.06

Chemical Abstract Service No. (CAS No.)	Chemical Species	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Species in Paint	Species in Thinner	Maximum Wt % in Paint	Maximum Wt % in Thinner	Number of Parts of Thinner	Number of Parts of Paint	Worst Case Thinning Ratio	Maximum Wt % in Mixed Paint
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	Y	Y	0.000	0.58	0.32	5.00	0.06	0.03
64742-95-6	Light Aromatic Hydrocarbons	V	No	Y	N	0.230	0.00	0.32	5.00	0.06	0.23
67-56-1	Methanol	V	Yes	N	N	0.000	0.00	0.32	5.00	0.06	0.00
67-63-0	2-propanol	V	No	N	Y	0.000	0.00	0.32	5.00	0.06	0.00
67-64-1	Acetone	V	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
71-36-3	1-Butanol	V	No	Y	N	0.000	0.00	0.32	5.00	0.06	0.00
763-69-9	Ethyl 3-Ethoxypropionate	V	No	N	N	3.000	0.00	0.32	5.00	0.06	3.00
78-83-1	2-methyl-1-propanol	V	No	Y	Y	5.000	0.00	0.32	5.00	0.06	5.00
78-93-3	Methy Ethyl Ketone	V	No	N	N	0.000	0.00	0.32	5.00	0.06	0.00
8052-41-3	Stoddard Solvent	V	No	Y	N	0.300	0.00	0.32	5.00	0.06	0.30
95-63-6	1,2,4-Trimethylbenzene	V	No	Y	N	0.300	0.00	0.32	5.00	0.06	0.30
98-56-6	p-Chlorobenzotrifluoride	V	No	Y	N	25.000	0.00	0.32	5.00	0.06	25.00
98-82-8	Cumene	V	Yes	N	N	0.000	0.00	0.32	5.00	0.06	0.00

Table 5A
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Stain Line Operations - EPNs RTO and 10

Stain Line Spray Booth				
Parameters	Data	Units	Information Source	
Maximum Application Rate	30.00	gal/hr	Company Data	
Annual Usage	40,000	gal/yr	Company Data	
Maximum Coating Density	8.44	lbs/gal	SDS	
Maximum VOC Content (Short-Term)	0.79	lbs/gal	SDS	
Maximum VOC Content (Annual)	0.58	lbs/gal	SDS	
Minimum VOC Content	0.00	lbs/gal	SDS	
Maximum Exempt Solvent Content (Short-Term)	4.76	lbs/gal	SDS	
Maximum Exempt Solvent Content (Annual)	3.07	lbs/gal	SDS	
Maximum Solids Content	0.19	lbs/gal	SDS	
VOC Control Efficiency	99.10%	-	RTO test data	
Percent Overspray	20.00%	-	TCEQ Guidance for Airless Application Equipment	
Transfer Efficiency	80.00%	-	TCEQ Guidance for Airless Application Equipment	
Filter Efficiency - Booth	99.83%	-	Vendor Data	
PM ₁₀ Filter Efficiency - Booth	99.83%	-	Vendor Data	
PM _{2.5} Filter Efficiency - Booth	99.83%	-	Vendor Data	
VOC Flashoff Short Term	100.00%	-	AP-40 Figure 655	
VOC Flashoff Annual	100.00%	-	Assumed Worst Case	
PM Fallout	98.56%	-	TCEQ Guidance for Airless Application Equipment	
PM ₁₀ Fallout	99.87%	-	TCEQ Guidance for Airless Application Equipment	
PM _{2.5} Fallout	99.99%	-	TCEQ Guidance for Airless Application Equipment	

Total Short-term VOC Emissions Prior to Transfer Efficiency, Control Efficiency, Flash Off, and Emission Distribution

Spray Rate (gal/hr)		Max VOC Content (lbs/gal)			
30.00	X	0.79	=	23.691	lb VOC/hr

Total PM Emissions - Cabinet Parts Coating Operations in Stain Line Spray Booth (EPN RTO)

PM Emissions¹	Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	30.00	X	0.19	X	20.00%	X	0.17%	X	1.44%	=	0.0000 lb PM/hr
PM₁₀ Emissions	Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	30.00	X	0.19	X	20.00%	X	0.17%	X	0.13%	=	0.0000 lb PM₁₀/hr
PM_{2.5} Emissions	Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	30.00	X	0.19	X	20.00%	X	0.17%	X	0.01%	=	0.0000 lb PM_{2.5}/hr
Annual PM Emission Rates											
PM Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (tons/yr)
	40,000	X	0.19	X	20.00%	X	0.17%	X	1.44%	=	0.0000 tons PM/yr
PM₁₀ Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (tons/yr)
	40,000	X	0.19	X	20.00%	X	0.17%	X	0.13%	=	0.0000 tons PM₁₀/yr
PM_{2.5} Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (tons/yr)
	40,000	X	0.19	X	20.00%	X	0.17%	X	0.01%	=	0.0000 tons PM_{2.5}/yr

¹ Stain Line Spray Booth has 100% capture efficiency and PM emissions are exhausted through filters, to the RTO filter house and then through the RTO stack.

Table 5A
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Stain Line Operations - EPNs RTO and 10

Emission Distribution Data

Flashoff Fractions for Parts - Table 18 (Emission Distributions for Conveyorized Painting Operations)

Source Name	EPN	Solvent Loss Fraction
Stain Line Spray Booth	RTO	0.62
Spray Room Finish Department Fugitives	10	0.05
Stain Line Oven	RTO	0.33
Total		<u>1.00</u>

Flashoff Fraction for Overspray

Source Name	EPN	Solvent Loss Fraction
Stain Line Spray Booth	RTO	1.00
Total		<u>1.00</u>

Short-term Emission Rates

Solvent Loss in the Stain Line Spray Booth (EPN RTO)

Overspray										
Short-Term	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		(1 - Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (lbs/hr)
VOC Emissions	30.00	X	0.79	X	20.00%	X	100.00%	X	0.90%	= 0.04 lbs VOC/hr
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		(1 - Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (lbs/hr)
	30.00	X	4.76	X	20.00%	X	100.00%	X	0.90%	= 0.26 lbs Exempt Solvent/hr
Parts										
Short-Term	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (lbs/hr)
VOC Emissions	30.00	X	0.79	X	80.00%	X	62.00%	X	0.90%	= 0.11 lbs VOC/hr
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (lbs/hr)
	30.00	X	4.76	X	80.00%	X	62.00%	X	0.90%	= 0.64 lbs Exempt Solvent/hr
Total Short-Term Solvent Loss in the Stain Line Spray Booth										
VOC Emissions										0.15 lbs VOC/hr
Exempt Solvent										0.89 lbs Exempt Solvent/hr

Solvent Loss to Spray Room Finish Department Fugitives (EPN 10)

Parts										
Short-Term	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		Total VOC Emissions (lbs/hr)	
VOC Emissions	30.00	X	0.79	X	80.00%	X	5.00%	=	0.95 lbs VOC/hr	
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		Total Ex Solvent Emissions (lbs/hr)	
	30.00	X	4.76	X	80.00%	X	5.00%	=	5.71 lbs Exempt Solvent/hr	

Table 5A
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Stain Line Operations - EPNs RTO and 10

Solvent Loss to Stain Line Oven (EPN RTO)

Short-Term	Parts									
	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (lbs/hr)
VOC Emissions	30.00	X	0.79	X	80.00%	X	33.00%	X	0.90%	= 0.06 lbs VOC/hr
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (lbs/hr)
	30.00	X	4.76	X	80.00%	X	33.00%	X	0.90%	= 0.34 lbs Exempt Solvent/hr

Annual Emission Rates

Solvent Loss in the Stain Line Spray Booth (EPN RTO)

Annual	Overspray									
	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		(1-Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (tons/yr)
VOC Emissions	40,000	X	0.58	X	20.00%	X	100.00%	X	0.90%	= 0.02 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		(1-Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (tons/yr)
	40,000	X	3.07	X	20.00%	X	100.00%	X	0.90%	= 0.11 tons Exempt Solvent/yr
Annual	Parts									
	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (tons/yr)
VOC Emissions	40,000	X	0.58	X	80.00%	X	62.00%	X	0.90%	= 0.05 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (tons/yr)
	40,000	X	3.07	X	80.00%	X	62.00%	X	0.90%	= 0.27 tons Exempt Solvent/yr
Total Annual Solvent Loss in the Stain Line Spray Booth										
VOC Emissions										0.07 tons VOC/yr
Exempt Solvent										0.38 tons Exempt Solvent/yr

Solvent Loss to Spray Room Finish Department Fugitives (EPN 10)

Annual	Parts									
	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		Total VOC Emissions (tons/yr)	
VOC Emissions	40,000	X	0.58	X	80.00%	X	5.00%	=	0.46 tons VOC/yr	
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		Total Ex Solvent Emissions (tons/yr)	
	40,000	X	3.07	X	80.00%	X	5.00%	=	2.46 tons Exempt Solvent/yr	

Solvent Loss to Stain Line Oven (EPN RTO)

Annual	Parts									
	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (tons/yr)
VOC Emissions	40,000	X	0.58	X	80.00%	X	33.00%	X	0.90%	= 0.03 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (tons/yr)
	40,000	X	3.07	X	80.00%	X	33.00%	X	0.90%	= 0.15 tons Exempt Solvent/yr

Table 5B
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Clear Line Operations - EPNs RTO and 10

Clear Line Spray Booth				
Parameters	Data	Units	Information Source	
Maximum Application Rate	30.00	gal/hr	Company Data	
Annual Usage	55,000	gal/yr	Company Data	
Maximum Coating Density	7.69	lbs/gal	SDS	
Maximum VOC Content (Short-Term)	4.62	lbs/gal	SDS	
Maximum VOC Content (Annual)	4.62	lbs/gal	SDS	
Minimum VOC Content	4.62	lbs/gal	SDS	
Maximum Exempt Solvent Content (Short-Term)	0.00	lbs/gal	SDS	
Maximum Exempt Solvent Content (Annual)	0.00	lbs/gal	SDS	
Maximum Solids Content	3.05	lbs/gal	SDS	
VOC Control Efficiency	99.10%	-	RTO test data	
Percent Overspray	20.00%	-	TCEQ Guidance for Airless Application Equipment	
Transfer Efficiency	80.00%	-	TCEQ Guidance for Airless Application Equipment	
Filter Efficiency - Booth	99.00%	-	water filter	
PM ₁₀ Filter Efficiency - Booth	99.00%	-	water filter	
PM _{2.5} Filter Efficiency - Booth	99.00%	-	water filter	
VOC Flashoff Short Term	100.00%	-	AP-40 Figure 655	
VOC Flashoff Annual	100.00%	-	Assumed Worst Case	
PM Fallout	98.56%	-	TCEQ Guidance for Airless Application Equipment	
PM ₁₀ Fallout	99.87%	-	TCEQ Guidance for Airless Application Equipment	
PM _{2.5} Fallout	99.99%	-	TCEQ Guidance for Airless Application Equipment	

Total PM Emissions - Cabinet Parts Coating Operations in Clear Line (RTO)

Short-Term PM Emission Rates

PM Emissions ¹	Spray Rate (gal/hr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	30.00	X	3.05	X	20.00%	X	1.00%	X	1.44%	= 0.0026 lb PM/hr
PM ₁₀ Emissions	Spray Rate (gal/hr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	30.00	X	3.05	X	20.00%	X	1.00%	X	0.13%	= 0.0002 lb PM ₁₀ /hr
PM _{2.5} Emissions	Spray Rate (gal/hr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	30.00	X	3.05	X	20.00%	X	1.00%	X	0.01%	= 0.0000 lb PM _{2.5} /hr
Annual PM Emission Rates										
PM Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (tons/yr)
	55,000	X	3.05	X	20.00%	X	1.00%	X	1.44%	= 0.0024 tons PM/yr
PM ₁₀ Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (tons/yr)
	55,000	X	3.05	X	20.00%	X	1.00%	X	0.13%	= 0.0002 tons PM ₁₀ /yr
PM _{2.5} Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (tons/yr)
	55,000	X	3.05	X	20.00%	X	1.00%	X	0.01%	= 0.0000 tons PM _{2.5} /yr

¹ Clear Line Spray Booth has 100% capture efficiency and PM emissions are exhausted through filters, to the RTO filter house and then through the RTO stack.

Table 5B
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Clear Line Operations - EPNs RTO and 10

Emission Distribution Data

Flashoff Fractions for Parts - Table 18 (Emission Distributions for Conveyorized Painting Operations)

EPN	Solvent Loss Fraction
RTO	0.36
10	0.11
RTO	0.53
Total	1.00

Flashoff Fraction for Overspray

Source Name	EPN	Solvent Loss Fraction
Clear Line Spray Booth	RTO	1.00
	Total	1.00

Short-term Emission Rates

Solvent Loss in the Clear Line Spray Booth (EPN RTO)

		Overspray									
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	(1 - Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	=	Total VOC Emissions (lbs/hr)
VOC Emissions		30.00	X	4.62	20.00%	X	100.00%	X	0.90%	=	0.25 lbs VOC/hr
Exempt Solvent		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	(1 - Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	=	Total Ex Solvent Emissions (lbs/hr)
		30.00	X	0.00	20.00%	X	100.00%	X	0.90%	=	0.00 lbs Exempt Solvent/hr
		Parts									
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	=	Total VOC Emissions (lbs/hr)
VOC Emissions		30.00	X	4.62	80.00%	X	36.00%	X	0.90%	=	0.36 lbs VOC/hr
Exempt Solvent		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	=	Total Ex Solvent Emissions (lbs/hr)
		30.00	X	0.00	80.00%	X	36.00%	X	0.90%	=	0.00 lbs Exempt Solvent/hr
Total Short-Term Solvent Loss in the Clear Line Spray Booth											
VOC Emissions											0.61 lbs VOC/hr
Exempt Solvent											0.00 lbs Exempt Solvent/hr

Solvent Loss to Spray Room Finish Department (EPN 10)

		Parts									
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)		Total VOC Emissions (lbs/hr)		
VOC Emissions		30.00	X	4.62	80.00%	X	11.00%	=	12.19 lbs VOC/hr		
Exempt Solvent		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)		Total Ex Solvent Emissions (lbs/hr)		
		30.00	X	0.00	80.00%	X	11.00%	=	0.00 lbs Exempt Solvent/hr		

Solvent Loss to Clear Line Oven (EPN RTO)

		Parts									
Short-Term		Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	=	Total VOC Emissions (lbs/hr)
VOC Emissions		30.00	X	4.62	80.00%	X	53.00%	X	0.90%	=	0.53 lbs VOC/hr
Exempt Solvent		Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	=	Total Ex Solvent Emissions (lbs/hr)
		30.00	X	0.00	80.00%	X	53.00%	X	0.90%	=	0.00 lbs Exempt Solvent/hr

Table 5B
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Clear Line Operations - EPNs RTO and 10

Annual Emission Rates

Solvent Loss in the Clear Line Spray Booth (EPN RTO)

		Overspray									
Annual		Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		(1-Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (tons/yr)
VOC Emissions		55,000	X	4.62	X	20.00%	X	100.00%	X	0.90%	= 0.23 tons VOC/yr
Exempt Solvent		Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		(1-Transfer Efficiency) (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (tons/yr)
		55,000	X	0.00	X	20.00%	X	100.00%	X	0.90%	= 0.00 tons Exempt Solvent/yr
		Parts									
Annual		Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total VOC Emissions (tons/yr)
VOC Emissions		55,000	X	4.62	X	80.00%	X	36.00%	X	0.90%	= 0.33 tons VOC/yr
Exempt Solvent		Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)	Total Ex Solvent Emissions (tons/yr)
		55,000	X	0.00	X	80.00%	X	36.00%	X	100.00%	= 0.00 tons Exempt Solvent/yr
Total Annual Solvent Loss in the Clear Line Spray Booth											
VOC Emissions											0.56 tons VOC/yr
Exempt Solvent											0.00 tons Exempt Solvent/yr

Solvent Loss to Spray Room Finish Department Fugitives (EPN 10)

		Parts						
Annual		Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		Total VOC Emissions (tons/yr)
VOC Emissions		55,000	X	4.62	X	80.00%	X	= 11.18 tons VOC/yr
Exempt Solvent		Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		Total Ex Solvent Emissions (tons/yr)
		55,000	X	0.00	X	80.00%	X	= 0.00 tons Exempt Solvent/yr

Solvent Loss to Clear Oven (EPN RTO)

Annual	Parts										
	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)
VOC Emissions	55,000	X	4.62	X	80.00%	X	53.00%	X	0.90%	=	0.48 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		Transfer Efficiency (%)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)
	55,000	X	0.00	X	80.00%	X	53.00%	X	0.90%	=	0.00 tons Exempt Solvent/yr

Table 5C
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Paint Line Operations - EPNs 10 and 11

Paint Line Spray Booth			
Parameters	Data	Units	Information Source
Maximum Application Rate	20.00	gal/hr	Company Data
Annual Usage	22,000	gal/yr	Company Data
Maximum Coating Density	12.64	lbs/gal	SDS
Maximum VOC Content (Short-Term)	4.64	lbs/gal	SDS
Maximum VOC Content (Annual)	2.32	lbs/gal	SDS
Minimum VOC Content	0.00	lbs/gal	SDS
Maximum Exempt Solvent Content (Short-Term)	1.26	lbs/gal	SDS
Maximum Exempt Solvent Content (Annual)	0.63	lbs/gal	SDS
Maximum Solids Content	8.11	lbs/gal	SDS
VOC Control Efficiency	0.00%	-	no control
Percent Overspray	20.00%	-	TCEQ Guidance for Airless Application Equipment
Transfer Efficiency	80.00%	-	TCEQ Guidance for Airless Application Equipment
Filter Efficiency - Booth	99.03%	-	Vendor Data
PM ₁₀ Filter Efficiency - Booth	99.03%	-	Vendor Data
PM _{2.5} Filter Efficiency - Booth	99.03%	-	Vendor Data
VOC Flashoff Short Term	100.00%	-	AP-40 Figure 655
VOC Flashoff Annual	100.00%	-	Assumed Worst Case
PM Fallout	98.56%	-	TCEQ Guidance for Airless Application Equipment
PM ₁₀ Fallout	99.87%	-	TCEQ Guidance for Airless Application Equipment
PM _{2.5} Fallout	99.99%	-	TCEQ Guidance for Airless Application Equipment

Total PM Emissions - Cabinet Parts Coating Operations in Paint Line (EPN 11)

Short-Term PM Emission Rates

PM Emissions ¹									
	Spray Rate (gal/hr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)	(1 - Filter Efficiency) (%)	(1 - Fallout) (%)	Total PM Emissions (lbs/hr)		
	20.00	X	8.11	20.00%	0.97%	1.44%	=		0.0045 lb PM/hr
PM₁₀ Emissions									
	Spray Rate (gal/hr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)	(1 - Filter Efficiency) (%)	(1 - Fallout) (%)	Total PM Emissions (lbs/hr)		
	20.00	X	8.11	20.00%	0.97%	0.13%	=		0.0004 lb PM₁₀/hr
PM_{2.5} Emissions									
	Spray Rate (gal/hr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)	(1 - Filter Efficiency) (%)	(1 - Fallout) (%)	Total PM Emissions (lbs/hr)		
	20.00	X	8.11	20.00%	0.97%	0.01%	=		0.0000 lb PM_{2.5}/hr
Annual PM Emission Rates									
PM Emissions									
	Spray Rate (gal/yr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)	(1 - Filter Efficiency) (%)	(1 - Fallout) (%)	Total PM Emissions (tons/yr)		
	22,000	X	8.11	20.00%	0.97%	1.44%	=		0.0025 tons PM/yr
PM₁₀ Emissions									
	Spray Rate (gal/yr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)	(1 - Filter Efficiency) (%)	(1 - Fallout) (%)	Total PM Emissions (tons/yr)		
	22,000	X	8.11	20.00%	0.97%	0.13%	=		0.0002 tons PM₁₀/yr
PM_{2.5} Emissions									
	Spray Rate (gal/yr)		Max PM Content (lbs/gal)	(1 - Transfer Efficiency) (%)	(1 - Filter Efficiency) (%)	(1 - Fallout) (%)	Total PM Emissions (tons/yr)		
	22,000	X	8.11	20.00%	0.97%	0.01%	=		0.0000 tons PM_{2.5}/yr

¹ Paint Line Spray Booth has 100% capture efficiency and PM emissions are exhausted through the EPN 11.

Table 5C
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Paint Line Operations - EPNs 10 and 11

Emission Distribution Data

Flashoff Fractions for Parts - Table 18 (Emission Distributions for Conveyorized Painting Operations)

Source Name	EPN	Solvent Loss Fraction
Paint Line Spray Booth	11	0.35
Room Finish Department Fugitives	10	0.01
Paint Line Oven	11	0.64
Total		1.00

Flashoff Fraction for Overspray

Source Name	EPN	Solvent Loss Fraction
Paint Line Spray Booth	11	1.00
Total		1.00

Short-term Emission Rates

Solvent Loss in the Paint Line Spray Booth (EPN 11)

Overspray										
Short-Term	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	(1 - Transfer Efficiency) (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (lbs/hr)	
VOC Emissions	20.00	X	4.64	X 20.00%	X	100.00%	X 100.00%	=	18.56 lbs VOC/hr	
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	(1 - Transfer Efficiency) (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (lbs/hr)	
	20.00	X	1.26	X 20.00%	X	100.00%	X 100.00%	=	5.05 lbs Exempt Solvent/hr	
Parts										
Short-Term	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (lbs/hr)	
VOC Emissions	20.00	X	4.64	X 80.00%	X	35.00%	X 100.00%	=	25.98 lbs VOC/hr	
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (lbs/hr)	
	20.00	X	1.26	X 80.00%	X	35.00%	X 100.00%	=	7.07 lbs Exempt Solvent/hr	
Total Short-Term Solvent Loss in the Paint Line Spray Booth									VOC Emissions	44.54 lbs VOC/hr
									Exempt Solvent	12.13 lbs Exempt Solvent/hr

Solvent Loss to Spray Room Finish Department Fugitives (EPN 10)

Parts										
Short-Term	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	Total VOC Emissions (lbs/hr)			
VOC Emissions	20.00	X	4.64	X 80.00%	X	1.00%	=	0.74 lbs VOC/hr		
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	Total Ex Solvent Emissions (lbs/hr)			
	20.00	X	1.26	X 80.00%	X	1.00%	=	0.20 lbs Exempt Solvent/hr		

Solvent Loss to Paint Line Oven (EPN 11)

Parts										
Short-Term	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (lbs/hr)	
VOC Emissions	20.00	X	4.64	X 80.00%	X	64.00%	X 100.00%	=	47.51 lbs VOC/hr	
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (lbs/hr)	
	20.00	X	1.26	X 80.00%	X	64.00%	X 100.00%	=	12.93 lbs Exempt Solvent/hr	

Table 5C
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Line with Open Conveyor - Paint Line Operations - EPNs 10 and 11

Annual Emission Rates

Solvent Loss in the Paint Line Spray Booth (EPN 11)

Overspray										
Annual	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)	(1-Transfer Efficiency) (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)	
VOC Emissions	22,000	X	2.32	X 20.00%	X	100.00%	X 100.00%	=	5.10 tons VOC/yr	
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)	(1-Transfer Efficiency) (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)	
	22,000	X	0.63	X 20.00%	X	100.00%	X 100.00%	=	1.39 tons Exempt Solvent/yr	
Parts										
Annual	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)	
VOC Emissions	22,000	X	2.32	X 80.00%	X	35.00%	X 100.00%	=	7.15 tons VOC/yr	
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)	
	22,000	X	0.63	X 80.00%	X	35.00%	X 100.00%	=	1.95 tons Exempt Solvent/yr	
Total Annual Solvent Loss in the Paint Line Spray Booth									VOC Emissions	
									12.25 tons VOC/yr	
									Exempt Solvent	
									3.33 tons Exempt Solvent/yr	

Solvent Loss to Spray Room Finish Department Fugitives (EPN 10)

Parts							
Annual	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	Total VOC Emissions (tons/yr)
VOC Emissions	22,000	X	2.32	X 80.00%	X	1.00%	= 0.20 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	Total Ex Solvent Emissions (tons/yr)
	22,000	X	0.63	X 80.00%	X	1.00%	= 0.06 tons Exempt Solvent/yr

Solvent Loss to Paint Oven (EPN 11)

					Parts				
Annual	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)
VOC Emissions	22,000	X	2.32	X 80.00%	X	64.00%	X 100.00%	=	13.07 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)	Transfer Efficiency (%)		VOC Flashoff (%)	(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)
	22,000	X	0.63	X 80.00%	X	64.00%	X 100.00%	=	3.56 tons Exempt Solvent/yr

Table 5D
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Coating Booth - EPN Misc.SprayBooth (PBR Registration No. 74161)

Parameters	Data	Units	Information Source
Maximum Application Rate	0.50	gal/hr	Company Data
Annual Usage	1,000	gal/yr	Company Data
Maximum Coating Density	12.64	lbs/gal	SDS
Maximum VOC Content (Short-Term)	4.64	lbs/gal	SDS
Maximum VOC Content (Annual)	4.62	lbs/gal	SDS
Minimum VOC Content	0.00	lbs/gal	SDS
Maximum Exempt Solvent Content (Short-Term)	4.76	lbs/gal	SDS
Maximum Exempt Solvent Content (Annual)	3.07	lbs/gal	SDS
Maximum Solids Content	8.11	lbs/gal	SDS
VOC Control Efficiency	0.00%	-	No VOC Control
Transfer Efficiency	65.00%	-	Company Data
PM Filter Efficiency - Booth	99.00%	-	Vendor Data
PM ₁₀ Filter Efficiency - Booth	99.00%	-	Vendor Data
PM _{2.5} Filter Efficiency - Booth	99.00%	-	Vendor Data
VOC Flashoff Short Term	100.00%	-	AP-40 Figure 655
VOC Flashoff Annual	100.00%	-	Assumed Worst Case
PM Fallout	90.00%	-	TCEQ Guidance for HVLP Application Equipment
PM ₁₀ Fallout	90.00%	-	TCEQ Guidance for HVLP Application Equipment
PM _{2.5} Fallout	90.00%	-	TCEQ Guidance for HVLP Application Equipment

Short-Term Criteria Pollutant Emission Rates

	Spray Rate (gal/hr)		Max VOC Content (lbs/gal)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total VOC Emissions (lbs/hr)
VOC Emissions	0.50	X	4.64	X	100.00%	X	100.00%	=	2.32 lbs VOC/hr
Exempt Solvent	Spray Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (lbs/hr)
	0.50	X	4.76	X	100.00%	X	100.00%	=	2.38 lbs Exempt Solvent/hr
PM Emissions ¹	Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%) Total PM Emissions (lbs/hr)
	0.50	X	8.11	X	35.00%	X	1.00%	X	10.00% = 0.00142 lbs PM/hr
PM₁₀ Emissions	Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%) Total PM Emissions (lbs/hr)
	0.50	X	8.11	X	35.00%	X	1.00%	X	10.00% = 0.00142 lbs PM₁₀/hr
PM_{2.5} Emissions	Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%) Total PM Emissions (lbs/hr)
	0.50	X	8.11	X	35.00%	X	1.00%	X	10.00% = 0.00142 lbs PM_{2.5}/hr

Annual Criteria Pollutant Emission Rates

	Spray Rate (gal/yr)		Max VOC Content (lbs/gal)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total VOC Emissions (tons/yr)
VOC Emissions	1,000	X	4.62	X	100.00%	X	100.00%	=	2.31 tons VOC/yr
Exempt Solvent	Spray Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		VOC Flashoff (%)		(1- VOC Control Eff.) (%)		Total Ex Solvent Emissions (tons/yr)
	1,000	X	3.07	X	100.00%	X	100.00%	=	1.54 tons Exempt Solvent/yr
PM Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%) Total PM Emissions (lbs/hr)
	1,000	X	8.11	X	35.00%	X	1.00%	X	10.00% = 0.00142 tons PM/yr
PM₁₀ Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%) Total PM Emissions (lbs/hr)
	1,000	X	8.11	X	35.00%	X	1.00%	X	10.00% = 0.00142 tons PM₁₀/yr
PM_{2.5} Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%) Total PM Emissions (lbs/hr)
	1,000	X	8.11	X	35.00%	X	1.00%	X	10.00% = 0.00142 tons PM_{2.5}/yr

¹ Booth has 100% capture efficiency and all PM/PM₁₀/PM_{2.5} emissions are exhausted through the booth stacks.

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Stain Line Booth - EPNs RTO and 10

Parameters	Overspray/Belt Cleaning EPN 10	Spray Equipment Cleanup EPN RTO	Units	Information Source
Product name	Hybrind Belt Cleaner	Acetone	--	Company Data
Maximum Usage Rate	4.50	5.00	gal/hr	Company Data
Annual Usage Rate	17,850	1,530	gal/yr	Company Data
Maximum Solvent Density	8.345	6.59	lbs/gal	Assumed Worst Case
Maximum VOC Content (Short-Term)	2.50	0.00	lbs/gal	SDS
Maximum VOC Content (Annual)	2.50	0.00	lbs/gal	SDS
Maximum Exempt Solvent Content (Short-Term)	7.51	6.59	lbs/gal	SDS
Maximum Exempt Solvent Content (Annual)	7.51	6.59	lbs/gal	SDS
VOC Control Efficiency	0.00%	99.10%	-	Test Data
Collected to RTO	0.00%	100.00%	-	
Captured as Waste	95.00%	0.00%	-	Company Data
Emissions to EPN 10 - Fugitives from Overspray/Belt Cleaning				
Short-Term Criteria Pollutant Emission Rates	Use Rate (gal/hr)	Max VOC Content (lbs/gal)	(1-Captured as Waste) (%)	Total VOC Emissions (lbs/hr)
VOC Emissions	4.50	X	2.50	X
			5.00%	=
				0.5633
				lbs VOC/hr <i>as CAS 111-76-2</i> <i>2-butoxyethanol</i>
Exempt Solvent	Use Rate (gal/hr)	Max Ex Solvent Content (lbs/gal)	(1-Captured as Waste) (%)	Total Ex Solvent Emissions (lbs/hr)
	4.50	X	7.51	X
			5.00%	=
				1.6899
				lbs Exempt Solvent/hr <i>as CAS 67-64-1</i> <i>acetone</i>
Annual Criteria Pollutant Emission Rates	Use Rate (gal/yr)	Max VOC Content (lbs/gal)	(1-Captured as Waste) (%)	Total VOC Emissions (tons/yr)
VOC Emissions	17,850	X	2.50	X
			5.00%	=
				1.1172
				tons VOC/yr <i>as CAS 111-76-2</i> <i>2-butoxyethanol</i>
Exempt Solvent	Use Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)	(1-Captured as Waste) (%)	Total Ex Solvent Emissions (tons/yr)
	17,850	X	7.51	X
			5.00%	=
				3.3516
				tons Exempt Solvent/yr <i>as CAS 67-64-1</i> <i>acetone</i>

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Emissions to EPN RTO - Spray Equipment Cleanup

Short-Term Criteria Pollutant Emission Rates

VOC Emissions

Use Rate (gal/hr)		Max VOC Content (lbs/gal)		1 - VOC Control Eff. (%)		Total VOC Emissions (lbs/hr)
5.00	X	0.00	X	0.90%	=	0.0000
						lbs VOC/hr <i>no VOC</i>

Exempt Solvent

Use Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		1 - VOC Control Eff. (%)		Total Ex Solvent Emissions (lbs/hr)
5.00	X	6.59	X	0.90%	=	0.2966
						lbs Exempt Solvent/hr <i>as CAS 67-64-1</i> <i>acetone</i>

Annual Criteria Pollutant Emission Rates

VOC Emissions

Use Rate (gal/yr)		Max VOC Content (lbs/gal)		1 - VOC Control Eff. (%)		Total VOC Emissions (tons/yr)
1,530	X	0.00	X	0.90%	=	0.0000
						tons VOC/yr <i>no VOC</i>

Exempt Solvent

Use Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		1 - VOC Control Eff. (%)		Total Ex Solvent Emissions (tons/yr)
1,530	X	6.59	X	0.90%	=	0.0454
						tons Exempt Solvent/yr <i>as CAS 67-64-1</i> <i>acetone</i>

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Clear Line - EPNs RTO and 10

Parameters	Overspray/Belt Cleaning EPN 10	Spray Equipment Cleanup EPN RTO	Units	Information Source
Product Name	50/50 Blend	'Virgin' Topcoat Clear Conversion Varnish 30 Sheen (no catalyst)		Company Data
Maximum Usage Rate	6.00	5.00	gal/hr	Company Data
Annual Usage Rate	24,480	1,275	gal/yr	Company Data
Maximum Solvent Density	7.09	7.67	lbs/gal	Assumed Worst Case
Maximum VOC Content (Short-Term)	7.09	4.62	lbs/gal	SDS
Maximum VOC Content (Annual)	7.09	4.62	lbs/gal	SDS
Maximum Exempt Solvent Content (Short-Term)	0.00	0.00	lbs/gal	SDS
Maximum Exempt Solvent Content (Annual)	0.00	0.00	lbs/gal	SDS
Maximum PM Content	--	3.05	lbs/gal	SDS
VOC Control Efficiency	0.00%	99.10%	-	Test Data
Percent Overspray	--	20.00%	-	TCEQ Guidance for Airless Application Equipment
Transfer Efficiency	--	80.00%	-	TCEQ Guidance for Airless Application Equipment
Filter Efficiency - Booth	--	99.00%	-	water filter
PM ₁₀ Filter Efficiency - Booth	--	99.00%	-	water filter
PM _{2.5} Filter Efficiency - Booth	--	99.00%	-	water filter
PM Fallout	--	98.56%	-	TCEQ Guidance for Airless Application Equipment
PM ₁₀ Fallout	--	99.87%	-	TCEQ Guidance for Airless Application Equipment
PM _{2.5} Fallout	--	99.99%	-	TCEQ Guidance for Airless Application Equipment
Collected to RTO	0.00%	100.00%	-	
Captured as Waste	95.00%	0.00%	-	Company Data
Emissions to EPN 10 - Fugitives from Overspray/Belt Cleaning				
Short-Term Criteria Pollutant Emission Rates	Use Rate (gal/hr)	Max VOC Content (lbs/gal)	(1-Captured as Waste) (%)	Total VOC Emissions (lbs/hr)
VOC Emissions	6.00 X	7.09 X	5.00%	=
	HAP	CAS 108-10-1 CAS 123-86-4 CAS 64-17-5	Methyl Isobutyl Ketone n-butyl acetate ethanol	2.1270 lbs VOC/hr 0.0638 lb/hr 1.2762 lb/hr 1.0635 lb/hr
	HAP	CAS 67-56-1 CAS 67-63-0	methanol 2-propanol	0.0638 lb/hr 0.2127 lb/hr
Exempt Solvent	Use Rate (gal/hr)	Max Ex Solvent Content (lbs/gal)	(1-Captured as Waste) (%)	Total Ex Solvent Emissions (lbs/hr)
	6.00 X	0.00 X	5.00%	=
				0.0000 lbs Exempt Solvent/hr no exempt solvent
Annual Criteria Pollutant Emission Rates	Use Rate (gal/yr)	Max VOC Content (lbs/gal)	(1-Captured as Waste) (%)	Total VOC Emissions (tons/yr)
VOC Emissions	24,480 X	7.09 X	5.00%	=
	HAP	CAS 108-10-1 CAS 123-86-4 CAS 64-17-5	Methyl Isobutyl Ketone n-butyl acetate ethanol	4.3391 tons VOC/yr 0.1302 ton/yr 2.6034 ton/yr 2.1695 ton/yr
	HAP	CAS 67-56-1 CAS 67-63-0	methanol 2-propanol	0.1302 ton/yr 0.4339 ton/yr
Exempt Solvent	Use Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)	(1-Captured as Waste) (%)	Total Ex Solvent Emissions (tons/yr)
	24,480 X	0.00 X	5.00%	=
				0.0000 tons Exempt Solvent/yr no exempt solvent

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Emissions to EPN RTO - Spray Equipment Cleanup

Short-Term Criteria Pollutant Emission Rates

PM Emissions

Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
5.00	x	3.05	x	20.00%	x	1.00%	x	1.44%	=	0.0004 lb PM/hr
Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
5.00	x	3.05	x	20.00%	x	1.00%	x	0.13%	=	0.0000 lb PM₁₀/hr
Spray Rate (gal/hr)		Max Product Density (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		PM Wt% Factor (wt% lbs/hr)
5.00	x	7.67	x	20.00%	x	1.00%	x	0.13%	=	0.0001

CAS 119681-36-6	Polyester	0.0000 lb/hr
CAS 15467-06-8	Lithium Ricinoleate	0.0000 lb/hr
CAS 25973-55-1	Benzotriazole	0.0000 lb/hr
CAS 61791-92-2	Dipentylphenol	0.0000 lb/hr
	Defoamer	0.0000 lb/hr
	Hydrocarbon waxes	
CAS 64742-60-5	(petroleum), hydrotreated microcrystalline	0.0000 lb/hr
CAS 67989-65-5	Polyester	0.0000 lb/hr
CAS 68002-18-6	Isobutylated Urea- Formaldehyde Polymer	0.0000 lb/hr
CAS 68002-20-0	Methylated Melamine- Formaldehyde Polymer	0.0000 lb/hr
CAS 7631-86-9	Amorphous Silica	0.0000 lb/hr
CAS 8002-74-2	Paraffin Wax	0.0000 lb/hr
CAS 9002-88-4	Polyethylene	0.0000 lb/hr
CAS 9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	0.0000 lb/hr
CAS Not Reported	Additive (As rheological additive (flow agent))	0.0000 lb/hr
CAS Not Reported	Defoamer	0.0000 lb/hr
	Glycol Ether (As glycol ether, generic, not otherwise specified)	0.0000 lb/hr
CAS Not Reported	Silicone Solids (As Silicone, Generic)	0.0000 lb/hr

HAP

PM_{2.5} Emissions

Spray Rate (gal/hr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
5.00	x	3.05	x	20.00%	x	1.00%	x	0.01%	=	0.0000 lb PM_{2.5}/hr

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

VOC Emissions	Use Rate (gal/hr)		Max VOC Content (lbs/gal)		1 - VOC Control Eff. (%)	=	Total VOC Emissions (lbs/hr)	
	5.00	X	4.62	X	0.90%	=	0.2078	lbs VOC/hr
	Use Rate (gal/hr)		Max Product Density (lbs/gal)		1 - VOC Control Eff. (%)		VOC Wt% Factor (wt% lbs/hr)	
	5.00	X	7.67	X	0.90%	=	0.3453	
	HAP		CAS 100-41-4		Ethylbenzene		0.0019	lb/hr
			CAS 108-67-8		1,3,5-Trimethylbenzene		0.0003	lb/hr
			CAS 109-60-4		n-Propyl Acetate		0.0020	lb/hr
			CAS 110-43-0		Methyl n-Amyl Ketone		0.0271	lb/hr
			CAS 123-86-4		n-butyl acetate		0.0425	lb/hr
	HAP		CAS 1330-20-7		Xylene		0.0104	lb/hr
	HAP		CAS 50-00-0		Formaldehyde		0.0005	lb/hr
			CAS 526-73-8		1,2,3-Trimethylbenzene		0.0001	lb/hr
			CAS 64-17-5		Ethanol		0.0317	lb/hr
			CAS 64742-82-1		Heavy Aliphatic Solvent		0.0023	lb/hr
			CAS 64742-88-7		Med. Aliphatic Hydrocarbon Solvent		0.0000	lb/hr
			CAS 64742-89-8		lt. aliphatic hydrocarbon solvent		0.0313	lb/hr
			CAS 64742-95-6		Light Aromatic Hydrocarbons		0.0008	lb/hr
			CAS 67-63-0		2-propanol		0.0016	lb/hr
			CAS 71-36-3		1-Butanol		0.0218	lb/hr
			CAS 763-69-9		Ethyl 3-Ethoxypropionate		0.0017	lb/hr
			CAS 78-83-1		2-methyl-1-propanol		0.0303	lb/hr
			CAS 95-63-6		1,2,4-Trimethylbenzene		0.0012	lb/hr
	HAP		CAS 98-82-8		Cumene		0.0002	lb/hr
Exempt Solvent	Use Rate (gal/hr)		Max Ex Solvent Content (lbs/gal)		1 - VOC Control Eff. (%)	=	Total Ex Solvent Emissions (lbs/hr)	
	5.00	X	0.00	X	0.90%	=	0.0000	lbs Exempt Solvent/hr <i>no exempt solvent</i>

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Annual Criteria Pollutant Emission Rates	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)	=	Total PM Emissions (lbs/hr)
PM Emissions	1,275	x	3.05	x	20.00%	x	1.00%	x	1.44%	=	0.0001 tons PM/yr
	Spray Rate (gal/yr)		Max Product Density (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		PM Wt% Factor (wt% tpy)
	1,275	x	7.67	x	20.00%	x	1.00%	x	1.44%	=	0.0001
							CAS 119681-36-6		Polyester		0.0000 tpy
							CAS 15467-06-8		Lithium Ricinoleate		0.0000 tpy
							CAS 25973-55-1		Benzotriazole		0.0000 tpy
							CAS 61791-92-2		Dipentylphenol		0.0000 tpy
									Defoamer		0.0000 tpy
									Hydrocarbon waxes (petroleum), hydrotreated microcrystalline		0.0000 tpy
							CAS 64742-60-5		Polyester		0.0000 tpy
							CAS 67989-65-5		Isobutylated Urea- Formaldehyde Polymer		0.0000 tpy
							CAS 68002-18-6				0.0000 tpy
							CAS 68002-20-0		Methylated Melamine- Formaldehyde Polymer		0.0000 tpy
							CAS 7631-86-9		Amorphous Silica		0.0000 tpy
							CAS 8002-74-2		Paraffin Wax		0.0000 tpy
							CAS 9002-88-4		Polyethylene		0.0000 tpy
							CAS 9038-95-3		Oxirane, methyl-, polymer with oxirane, monobutyl ether		0.0000 tpy
							CAS Not Reported		Additive (As rheological additive (flow agent))		0.0000 tpy
							CAS Not Reported		Defoamer		0.0000 tpy
									Glycol Ether (As glycol ether, generic, not otherwise specified)		0.0000 tpy
							CAS Not Reported		Silicone Solids (As Silicone, Generic)		0.0000 tpy
PM₁₀ Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	1,275	x	3.05	x	20.00%	x	1.00%	x	0.13%	=	0.0000 tons PM₁₀/yr
PM_{2.5} Emissions	Spray Rate (gal/yr)		Max PM Content (lbs/gal)		(1 - Transfer Efficiency) (%)		(1 - Filter Efficiency) (%)		(1 - Fallout) (%)		Total PM Emissions (lbs/hr)
	1,275	x	3.05	x	20.00%	x	1.00%	x	0.01%	=	0.0000 tons PM_{2.5}/yr
VOC Emissions	Use Rate (gal/yr)		Max VOC Content (lbs/gal)		1 - VOC Control Eff. (%)		Total VOC Emissions (tons/yr)				
	1,275	X	4.62	X	0.90%	=	0.0265		tons VOC/yr		
Exempt Solvent	Use Rate (gal/yr)		Max Ex Solvent Content (lbs/gal)		1 - VOC Control Eff. (%)		Total Ex Solvent Emissions (tons/yr)				
	1,275	X	0	X	0.90%	=	0.0000		tons Exempt Solvent/yr <i>no exempt solvent</i>		

Table 6
Short-Term and Annual VOC, Exempt Solvent, and PM Emissions
Application Equipment Cleanup

Paint Line - EPN 11

Parameters	Spray Equipment Cleanup EPN RTO		Units	Information Source
Product Name	Acetone	MEK		Company Data
Maximum Usage Rate	4.00	3	gal/hr	Company Data
Annual Usage Rate	1,020	765	gal/yr	Company Data
Maximum Solvent Density	6.59	7.49	lbs/gal	Assumed Worst Case
Maximum VOC Content (Short-Term)	0.00	7.49	lbs/gal	SDS
Maximum VOC Content (Annual)	0.00	7.49	lbs/gal	SDS
Maximum Exempt Solvent Content (Short-Term)	6.59	0.00	lbs/gal	SDS
Maximum Exempt Solvent Content (Annual)	6.59	0.00	lbs/gal	SDS
VOC Control Efficiency	0.00%	0.00%	-	Test Data
Collected to RTO	0.00%	0.00%	-	
Captured as Waste	0.00%	0.00%		Company Data
Emissions to EPN 11 - Spray Equipment Cleanup				
Acetone				
Short-Term Criteria Pollutant Emission Rates	Use Rate (gal/hr)	Max VOC Content (lbs/gal)	Total VOC Emissions (lbs/hr)	
VOC Emissions	4.00	X 0.00	=	0.0000 lbs VOC/hr <i>no VOC</i>
Exempt Solvent	Use Rate (gal/hr)	Max Ex Solvent Content (lbs/gal)	Total Ex Solvent Emissions (lbs/hr)	
	4.00	X 6.59	=	26.3600 lbs Exempt Solvent/hr <i>as CAS 67-64-1 acetone</i>
Annual Criteria Pollutant Emission Rates	Use Rate (gal/yr)	Max VOC Content (lbs/gal)	Total VOC Emissions (tons/yr)	
VOC Emissions	1,020	X 0.00	=	0.0000 tons VOC/yr <i>no VOC</i>
Exempt Solvent	Use Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)	Total Ex Solvent Emissions (tons/yr)	
	1,020	X 6.59	=	3.3609 tons Exempt Solvent/yr <i>as CAS 67-64-1 acetone</i>
MEK				
Short-Term Criteria Pollutant Emission Rates	Use Rate (gal/hr)	Max VOC Content (lbs/gal)	Total VOC Emissions (lbs/hr)	
VOC Emissions	3.00	X 7.49	=	22.4700 lbs VOC/hr <i>as CAS 78-93-3 MEK</i>
Exempt Solvent	Use Rate (gal/hr)	Max Ex Solvent Content (lbs/gal)	Total Ex Solvent Emissions (lbs/hr)	
	3.00	X 0.00	=	0.0000 lbs Exempt Solvent/hr <i>no exempt solvent</i>
Annual Criteria Pollutant Emission Rates	Use Rate (gal/yr)	Max VOC Content (lbs/gal)	Total VOC Emissions (tons/yr)	
VOC Emissions	765	X 7.49	=	2.8649 tons VOC/yr <i>as CAS 78-93-3 MEK</i>
Exempt Solvent	Use Rate (gal/yr)	Max Ex Solvent Content (lbs/gal)	Total Ex Solvent Emissions (tons/yr)	
	765	X 0.00	=	0.0000 tons Exempt Solvent/yr <i>no exempt solvent</i>

Table 7
Short-Term and Annual VOC, Exempt Solvent and PM Emissions
Coating Operations - Total Emissions by EPN

VOC

Coating Type	Emissions from Spray Booths and Ovens to RTO EPN RTO		Emissions from Paint Line EPN 11		Emissions from Spray Room Finish Department Fugitives EPN 10	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Stain Line	0.2047	0.0999	--	--	0.9476	0.4624
Clear Line	1.1371	1.0423	--	--	12.1910	11.1750
Paint Line	--	--	92.0564	25.3155	0.7424	0.2042
Clean up Solvent	0.2078	0.0265	22.4700	2.8649	2.6903	5.4563
TOTAL	1.3418	1.1687	92.0564	28.1804	13.8810	17.2979

Exempt Solvent

Coating Type	Emissions from Spray Booths and Ovens to RTO EPN RTO		Emissions from Paint Line EPN 11		Emissions from Spray Room Finish Department Fugitives EPN 10	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Stain Line	1.2338	0.5309	--	--	5.7120	2.4576
Clear Line	0.0000	0.0000	--	--	0.0000	0.0000
Paint Line	--	--	25.0592	6.8913	0.2021	0.0556
Clean up Solvent	0.2966	0.0454	26.3600	3.3609	1.6899	3.3516
TOTAL	1.2338	0.5762	26.3600	10.2522	5.9141	5.8648

Particulate Matter

Particulate Matter	Emissions from Spray Booths and Ovens to RTO EPN RTO		Emissions from Paint Line EPN 11		Emissions from Spray Room Finish Department Fugitives EPN 10	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
PM	0.0031	0.0025	0.0026	0.0024	--	--
PM ₁₀	0.0003	0.0002	0.0002	0.0002	--	--
PM _{2.5}	0.0000	0.0000	0.0000	0.0000	--	--

TABLE 8A
Short-Term VOC, Exempt Solvent, and PM Species Emission Rates
Stain Line with an Open Conveyor - EPNs RTO and 10

EPN RTO - Emissions from Stain Line Spray Booth

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Stain Line Booth Solvent Flash Fraction (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	30.00	8.44	62.00%	0.90%	1.4129	
PM Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	(1-T.E.) (%)	(1-F.E.) (%)	(1-Fallout) (%)	PM Wt% Factor (wt% lbs/hr)
	30.00	8.44	20.00%	0.17%	0.13%	0.0001

PM emissions only occur in the Stain Line Spray Booth
PM fallout values are based on PM₁₀ since TCEQ ESLs are for PM₁₀

EPN 10 - Stain Line - Emission from Spray Room Finish Department Fugitives

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Stain Line - Fugitive Solvent Flash Fraction (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	30.00	8.44	5.00%	100.00%	12.6600	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

EPN RTO - Emissions from Stain Line Oven

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Stain Line Oven Solvent Flash Fraction (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	30.00	8.44	33.00%	0.90%	0.7520	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

					Stain Line Spray Booth EPN RTO		Stain Line Oven EPN RTO		Stain Line Spray Booth AND Oven EPN RTO	Stain Line - Spray Room Finish Department Fugitives EPN 10	
CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)
7732-18-5	Water	NE	No	97.44	0.0000	0.000	0.0000	0.000	0.000	0.0000	0.000
104-15-4	4-Methylbenzenesulfonic Acid	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
1047-16-1	Quinacridone	P	No	0.17	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
112945-52-5	Fumed Amorphous Silica	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
119681-36-6	Polyester	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
12713-03-0	Umber	P	No	0.41	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
1309-37-1	iron oxide	P	No	1.40	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
1312-59-5	Clorite	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
1317-61-9	Iron Oxide	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
1332-58-7	Kaolin	P	No	0.03	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
1333-86-4	Carbon Black	P	No	0.93	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
13463-67-7	Titanium Dioxide	P	No	1.99	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
14807-96-6	Talc	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
14808-60-7	Crystalline Silica, respirable powder	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
15467-06-8	Lithium Ricinoleate	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
16389-88-1	Magnesium Calcium Carbonate	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
25973-55-1	Benztiazole Dipentylphenol	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
2786-76-7	C.I. Pigment Red 170	P	No	0.15	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
51274-00-1	Iron Oxide	P	No	0.27	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.13	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
61791-92-2	Defoamer	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
669-11-6	Azo Brown	P	No	0.38	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
67989-65-5	Polyester	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
72797-02-5	Orange Dye	P	No	0.01	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
73003-33-5	C.I. Acid Red	P	No	0.09	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Stain Line Spray Booth EPN RTO		Stain Line Oven EPN RTO		Stain Line Spray Booth AND Oven EPN RTO	Stain Line - Spray Room Finish Department Fugitives EPN 10	
					Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)
7631-86-9	Amorphous Silica	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
7727-43-7	Barium Sulfate	P	No	0.01	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
8002-74-2	Paraffin Wax	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
85711-46-2	Unsaturated Fatty Acids	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
857892-58-1	Polyoxyalkylene	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
9002-88-4	Polyethylene	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	0.14	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	0.07	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Additive (As rheological additive (flow agent))	P	No	0.11	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	0.02	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Defoamer	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Epichlorohydrin-mercaptopethanol Alcohol	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Polysiloxane	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	0.00	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	0.26	0.0001	0.000	0.0000	0.000	0.000	0.0000	0.000
100-41-4	Ethylbenzene	V	Yes	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
107-21-1	Ethylene Glycol	V	Yes	0.03	1.4129	0.000	0.7520	0.000	0.001	12.6600	0.004
107-98-2	1-Methoxy-2-propanol	V	No	0.02	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.003
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
108-67-8	1,3,5-Trimethylbenzene	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
108-88-3	Toluene	V	Yes	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
109-60-4	n-Propyl Acetate	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
110-43-0	Methyl n-Amyl Ketone	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
111-76-2	2-Butoxyethanol	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
123-86-4	n-butyl acetate	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
1330-20-7	Xylene	V	Yes	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.26	1.4129	0.004	0.7520	0.002	0.006	12.6600	0.033
50-00-0	Formaldehyde	V	Yes	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
526-73-8	1,2,3-Trimethylbenzene	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
540-88-5	t-Butyl Acetate	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
57-55-6	Propylene Glycol	V	No	0.98	1.4129	0.014	0.7520	0.007	0.021	12.6600	0.124
64-17-5	Ethanol	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
64742-82-1	Heavy Aliphatic Solvent	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
67-56-1	Methanol	V	Yes	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
67-63-0	2-propanol	V	No	9.97	1.4129	0.141	0.7520	0.075	0.216	12.6600	1.262
67-64-1	Acetone	V	No	49.86	1.4129	0.704	0.7520	0.375	1.079	12.6600	6.312
71-36-3	1-Butanol	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
763-69-9	Ethyl 3-Ethoxypropionate	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
78-83-1	2-methyl-1-propanol	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
78-93-3	Methyl Ethyl Ketone	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
8052-41-3	Stoddard Solvent	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
95-63-6	1,2,4-Trimethylbenzene	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
98-56-6	p-Chlorobenzotrifluoride	V	No	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000
98-82-8	Cumene	V	Yes	0.00	1.4129	0.000	0.7520	0.000	0.000	12.6600	0.000

TABLE 8B
Short-Term VOC, Exempt Solvent, and PM Species Emission Rates
Clear Line with an Open Conveyor - EPNs RTO and 10

EPN RTO - Emissions from Clear Line Spray Booth

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line Booth Solvent Flash Fraction (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	30.00	7.69	36.00%	0.90%	0.7470	
PM Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	(1-T.E.) (%)	(1-F.E.) (%)	(1-Fallout) (%)	PM Wt% Factor (wt% lbs/hr)
	30.00	7.69	20.00%	1.00%	0.13%	0.0006

PM emissions only occur in the Clear Line Spray Booth
PM fallout values are based on PM₁₀ since TCEQ ESLs are for PM₁₀

EPN 10 - Clear Line - Emission from Spray Room Finish Department Fugitives

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line - Fugitive Solvent Flash Fraction (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	30.00	7.69	11.00%	100.00%	25.3620	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

EPN RTO - Emissions from Clear Line Oven

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line Oven Solvent Flash Fraction (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	30.00	7.69	53.00%	0.90%	1.0998	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Clear Line Spray Booth EPN RTO		Clear Line Oven EPN RTO		Clear Line Spray Booth AND Oven EPN RTO	Clear Line - Spray Room Finish Department Fugitives EPN 10	
					Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)		Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)
7732-18-5	Water	NE	No	0.16	0.0000	0.000	0.0000	0.000	0.000	0.0000	0.000
104-15-4	4-Methylbenzenesulfonic Acid	P	No	1.10	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1047-16-1	Quinacridone	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
112945-52-5	Fumed Amorphous Silica	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
119681-36-6	Polyester	P	No	0.59	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
12713-03-0	Umber	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1309-37-1	iron oxide	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1312-59-5	Clorite	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1317-61-9	Iron Oxide	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1332-58-7	Kaolin	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1333-86-4	Carbon Black	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
13463-67-7	Titanium Dioxide	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
14807-96-6	Talc	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
14808-60-7	Crystalline Silica, respirable powder	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
15467-06-8	Lithium Ricinoleate	P	No	0.02	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
16389-88-1	Magnesium Calcium Carbonate	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
25973-55-1	Benzotriazole Dipentylphenol	P	No	0.16	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
2786-76-7	C.I. Pigment Red 170	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
51274-00-1	Iron Oxide	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
61791-92-2	Defoamer	P	No	0.11	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.04	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
669-11-6	Azo Brown	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
67989-65-5	Polyester	P	No	21.22	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	11.69	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	3.72	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
72797-02-5	Orange Dye	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
73003-33-5	C.I. Acid Red	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
7631-86-9	Amorphous Silica	P	No	1.65	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Clear Line Spray Booth EPN RTO		Clear Line Oven EPN RTO		Clear Line Spray Booth AND Oven EPN RTO	Clear Line - Spray Room Finish Department Fugitives EPN 10	
					Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)
7727-43-7	Barium Sulfate	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
8002-74-2	Paraffin Wax	P	No	0.09	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
85711-46-2	Unsaturated Fatty Acids	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
857892-58-1	Polyoxyalkylene	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
9002-88-4	Polyethylene	P	No	0.07	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	0.05	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Additive (As rheological additive (flow agent))	P	No	0.12	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Defoamer	P	No	0.17	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	0.02	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Polysiloxane	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	0.05	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
100-41-4	Ethylbenzene	V	Yes	0.55	0.7470	0.004	1.0998	0.006	0.010	25.3620	0.139
107-21-1	Ethylene Glycol	V	Yes	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
107-98-2	1-Methoxy-2-propanol	V	No	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.06	0.7470	0.000	1.0998	0.001	0.001	25.3620	0.016
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
108-67-8	1,3,5-Trimethylbenzene	V	No	0.09	0.7470	0.001	1.0998	0.001	0.002	25.3620	0.023
108-88-3	Toluene	V	Yes	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
109-60-4	n-Propyl Acetate	V	No	0.57	0.7470	0.004	1.0998	0.006	0.011	25.3620	0.145
110-43-0	Methyl n-Amyl Ketone	V	No	7.86	0.7470	0.059	1.0998	0.086	0.145	25.3620	1.993
111-76-2	2-Butoxyethanol	V	No	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
123-86-4	n-butyl acetate	V	No	12.30	0.7470	0.092	1.0998	0.135	0.227	25.3620	3.120
1330-20-7	Xylene	V	Yes	3.02	0.7470	0.023	1.0998	0.033	0.056	25.3620	0.766
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
50-00-0	Formaldehyde	V	Yes	0.14	0.7470	0.001	1.0998	0.002	0.003	25.3620	0.036
526-73-8	1,2,3-Trimethylbenzene	V	No	0.03	0.7470	0.000	1.0998	0.000	0.001	25.3620	0.008
540-88-5	t-Butyl Acetate	V	No	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
57-55-6	Propylene Glycol	V	No	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
64-17-5	Ethanol	V	No	10.77	0.7470	0.080	1.0998	0.118	0.199	25.3620	2.730
64742-82-1	Heavy Aliphatic Solvent	V	No	0.68	0.7470	0.005	1.0998	0.007	0.013	25.3620	0.172
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.01	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.003
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	9.08	0.7470	0.068	1.0998	0.100	0.168	25.3620	2.302
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.23	0.7470	0.002	1.0998	0.003	0.004	25.3620	0.058
67-56-1	Methanol	V	Yes	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
67-63-0	2-propanol	V	No	0.46	0.7470	0.003	1.0998	0.005	0.008	25.3620	0.117
67-64-1	Acetone	V	No	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
71-36-3	1-Butanol	V	No	6.32	0.7470	0.047	1.0998	0.070	0.117	25.3620	1.603
763-69-9	Ethyl 3-Ethoxypropionate	V	No	0.50	0.7470	0.004	1.0998	0.005	0.009	25.3620	0.127
78-83-1	2-methyl-1-propanol	V	No	8.77	0.7470	0.066	1.0998	0.096	0.162	25.3620	2.224
78-93-3	Methyl Ethyl Ketone	V	No	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
8052-41-3	Stoddard Solvent	V	No	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
95-63-6	1,2,4-Trimethylbenzene	V	No	0.36	0.7470	0.003	1.0998	0.004	0.007	25.3620	0.091
98-56-6	p-Chlorobenzotrifluoride	V	No	0.00	0.7470	0.000	1.0998	0.000	0.000	25.3620	0.000
98-82-8	Cumene	V	Yes	0.05	0.7470	0.000	1.0998	0.001	0.001	25.3620	0.013

TABLE 8C
Short-Term VOC, Exempt Solvent, and PM Species Emission Rates
Pant Line with an Open Conveyor - EPNs 10 and 11

EPN 11 - Emissions from Paint Line Spray Booth

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line Booth Solvent Flash Fraction (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	20.00	12.64	35.00%	100.00%	88.4800	
PM Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	(1-T.E.) (%)	(1-F.E) (%)	(1-Fallout) (%)	PM Wt% Factor (wt% lbs/hr)
	20.00	12.64	20.00%	0.97%	0.13%	0.0006

PM emissions only occur in the Paint Line Spray Booth
PM fallout values are based on PM₁₀ since TCEQ ESLs are for PM₁₀

EPN 10 - Paint Line - Emission from Spray Room Finish Department Fugitives

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line - Fugitive Solvent Flash Fraction (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	20.00	12.64	1.00%	100.00%	2.5280	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

EPN RTO - Emissions from Stain Line Oven

VOC Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	Clear Line Oven Solvent Flash Fraction (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	20.00	12.64	64.00%	100.00%	161.7920	
PM Emissions Wt% Factor						PM Wt% Factor (wt% lbs/hr)
						0.0000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Paint Line Spray Booth EPN 11		Paint Line Oven EPN 11		Paint Line Spray Booth AND Oven EPN 11	Paint Line Spray Room Finish Department Fugitives EPN 10	
					Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)
7732-18-5	Water	NE	No	36.12	0.0000	0.000	0.0000	0.000	0.000	0.0000	0.000
104-15-4	4-Methylbenzenesulfonic Acid	P	No	2.27	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1047-16-1	Quinacridone	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
112945-52-5	Fumed Amorphous Silica	P	No	0.31	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
119681-36-6	Polyester	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
12713-03-0	Umber	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1309-37-1	iron oxide	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1312-59-5	Clorite	P	No	0.60	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1317-61-9	Iron Oxide	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1332-58-7	Kaolin	P	No	16.01	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
1333-86-4	Carbon Black	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
13463-67-7	Titanium Dioxide	P	No	50.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
14807-96-6	Talc	P	No	14.07	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
14808-60-7	Crystalline Silica, respirable powder	P	No	0.15	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
15467-06-8	Lithium Ricinoleate	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
16389-88-1	Magnesium Calcium Carbonate	P	No	0.15	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
25973-55-1	Benzotriazole Dipentylphenol	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
2786-76-7	C.I. Pigment Red 170	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
51274-00-1	Iron Oxide	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
61791-92-2	Defoamer	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
669-11-6	Azo Brown	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
67989-65-5	Polyester	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	10.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
72797-02-5	Orange Dye	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
73003-33-5	C.I. Acid Red	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
7631-86-9	Amorphous Silica	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000

¹ For species emission rates, flashoff and transfer efficiency are taken into account.

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Paint Line Spray Booth EPN 11		Paint Line Oven EPN 11		Paint Line Spray Booth AND Oven EPN 11	Paint Line Spray Room Finish Department Fugitives EPN 10	
					Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)	Emission Rate (lb/hr)	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)
7727-43-7	Barium Sulfate	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.06	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
8002-74-2	Paraffin Wax	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
85711-46-2	Unsaturated Fatty Acids	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
857892-58-1	Polyoxyalkylene	P	No	0.22	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
9002-88-4	Polyethylene	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	14.70	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Additive (As rheological additive (flow agent))	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Defoamer	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	0.41	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	0.05	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Polysiloxane	P	No	0.27	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	0.00	0.0006	0.000	0.0000	0.000	0.000	0.0000	0.000
100-41-4	Ethylbenzene	V	Yes	1.00	88.4800	0.885	161.7920	1.618	2.503	2.5280	0.025
107-21-1	Ethylene Glycol	V	Yes	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
107-98-2	1-Methoxy-2-propanol	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.13	88.4800	0.117	161.7920	0.213	0.330	2.5280	0.003
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
108-67-8	1,3,5-Trimethylbenzene	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
108-88-3	Toluene	V	Yes	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
109-60-4	n-Propyl Acetate	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
110-43-0	Methyl n-Amyl Ketone	V	No	6.02	88.4800	5.322	161.7920	9.732	15.054	2.5280	0.152
111-76-2	2-Butoxyethanol	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
123-86-4	n-butyl acetate	V	No	6.02	88.4800	5.322	161.7920	9.732	15.054	2.5280	0.152
1330-20-7	Xylene	V	Yes	5.00	88.4800	4.424	161.7920	8.090	12.514	2.5280	0.126
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
50-00-0	Formaldehyde	V	Yes	0.30	88.4800	0.265	161.7920	0.485	0.751	2.5280	0.008
526-73-8	1,2,3-Trimethylbenzene	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
540-88-5	t-Butyl Acetate	V	No	25.00	88.4800	22.120	161.7920	40.448	62.568	2.5280	0.632
57-55-6	Propylene Glycol	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
64-17-5	Ethanol	V	No	13.30	88.4800	11.763	161.7920	21.510	33.274	2.5280	0.336
64742-82-1	Heavy Aliphatic Solvent	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	0.03	88.4800	0.031	161.7920	0.056	0.087	2.5280	0.001
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.23	88.4800	0.204	161.7920	0.372	0.576	2.5280	0.006
67-56-1	Methanol	V	Yes	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
67-63-0	2-propanol	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
67-64-1	Acetone	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
71-36-3	1-Butanol	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
763-69-9	Ethyl 3-Ethoxypropionate	V	No	3.00	88.4800	2.654	161.7920	4.854	7.508	2.5280	0.076
78-83-1	2-methyl-1-propanol	V	No	5.00	88.4800	4.424	161.7920	8.090	12.514	2.5280	0.126
78-93-3	Methyl Ethyl Ketone	V	No	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000
8052-41-3	Stoddard Solvent	V	No	0.30	88.4800	0.265	161.7920	0.485	0.751	2.5280	0.008
95-63-6	1,2,4-Trimethylbenzene	V	No	0.30	88.4800	0.265	161.7920	0.485	0.751	2.5280	0.008
98-56-6	p-Chlorobenzotrifluoride	V	No	25.00	88.4800	22.120	161.7920	40.448	62.568	2.5280	0.632
98-82-8	Cumene	V	Yes	0.00	88.4800	0.000	161.7920	0.000	0.000	2.5280	0.000

Table 8D
Short-Term VOC, Exempt Solvent, and PM Species Emission Rates
Coating Booth - EPN Misc.SprayBooth (PBR Registration No. 74161)

Short-Term VOC Emissions Wt% Factor (Coating)	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	VOC Flashoff (%)	(1-C.E.) (%)	VOC Wt% Factor (wt% lbs/hr)	
	0.50	12.64	100.00%	100.00%	6.32	
PM Emissions Wt% Factor	Spray Rate (gal/hr)	Max Coating Density (lbs/gal)	(1-T.E.) (%)	(1-F.E.) (%)	(1-Fallout) (%)	PM Wt% Factor (wt% lbs/hr)
	0.50	12.64	35.00%	1.00%	10.00%	0.00221

PM fallout values are based on PM₁₀ since TCEQ ESLs are for PM₁₀

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)
7732-18-5	Water	NE	No	97.440	0.0000	0.0000
104-15-4	4-Methylbenzenesulfonic Acid	P	No	2.273	0.0022	0.0001
1047-16-1	Quinacridone	P	No	0.170	0.0022	0.0000
112945-52-5	Fumed Amorphous Silica	P	No	0.310	0.0022	0.0000
119681-36-6	Polyester	P	No	0.590	0.0022	0.0000
12713-03-0	Umber	P	No	0.410	0.0022	0.0000
1309-37-1	iron oxide	P	No	1.400	0.0022	0.0000
1312-59-5	Clorite	P	No	0.600	0.0022	0.0000
1317-61-9	Iron Oxide	P	No	0.000	0.0022	0.0000
1332-58-7	Kaolin	P	No	16.010	0.0022	0.0004
1333-86-4	Carbon Black	P	No	0.930	0.0022	0.0000
13463-67-7	Titanium Dioxide	P	No	50.000	0.0022	0.0011
14807-96-6	Talc	P	No	14.070	0.0022	0.0003
14808-60-7	Crystalline Silica, respirable powder	P	No	0.150	0.0022	0.0000
15467-06-8	Lithium Ricinoleate	P	No	0.020	0.0022	0.0000
16389-88-1	Magnesium Calcium Carbonate	P	No	0.150	0.0022	0.0000
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.000	0.0022	0.0000
25973-55-1	Benzotriazole Dipentylphenol	P	No	0.160	0.0022	0.0000
2786-76-7	C.I. Pigment Red 170	P	No	0.150	0.0022	0.0000
51274-00-1	Iron Oxide	P	No	0.270	0.0022	0.0000
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.130	0.0022	0.0000
61791-92-2	Defoamer	P	No	0.110	0.0022	0.0000
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.040	0.0022	0.0000
669-11-6	Azo Brown	P	No	0.380	0.0022	0.0000
67989-65-5	Polyester	P	No	21.220	0.0022	0.0005
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	11.690	0.0022	0.0003
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	3.720	0.0022	0.0001
72797-02-5	Orange Dye	P	No	0.010	0.0022	0.0000
73003-33-5	C.I. Acid Red	P	No	0.090	0.0022	0.0000
7631-86-9	Amorphous Silica	P	No	1.650	0.0022	0.0000
7727-43-7	Barium Sulfate	P	No	0.010	0.0022	0.0000
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.060	0.0022	0.0000
8002-74-2	Paraffin Wax	P	No	0.090	0.0022	0.0000
85711-46-2	Unsaturated Fatty Acids	P	No	0.000	0.0022	0.0000
857892-58-1	Polyoxyalkylene	P	No	0.220	0.0022	0.0000
9002-88-4	Polyethylene	P	No	0.070	0.0022	0.0000

CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Max Weight %	Wt% Factor (wt% lb/hr)	Emission Rate (lb/hr)
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	0.140	0.0022	0.0000
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	0.050	0.0022	0.0000
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	14.700	0.0022	0.0003
Not Reported	Additive (As rheological additive (flow agent))	P	No	0.120	0.0022	0.0000
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	0.020	0.0022	0.0000
Not Reported	Defoamer	P	No	0.170	0.0022	0.0000
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	0.410	0.0022	0.0000
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	0.020	0.0022	0.0000
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	0.050	0.0022	0.0000
Not Reported	Polysiloxane	P	No	0.270	0.0022	0.0000
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	0.050	0.0022	0.0000
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	0.260	0.0022	0.0000
100-41-4	Ethylbenzene	V	Yes	1.000	6.3200	0.0632
107-21-1	Ethylene Glycol	V	Yes	0.030	6.3200	0.0019
107-98-2	1-Methoxy-2-propanol	V	No	0.020	6.3200	0.0013
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.132	6.3200	0.0083
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.000	6.3200	0.0000
108-67-8	1,3,5-Trimethylbenzene	V	No	0.090	6.3200	0.0057
108-88-3	Toluene	V	Yes	0.000	6.3200	0.0000
109-60-4	n-Propyl Acetate	V	No	0.570	6.3200	0.0360
110-43-0	Methyl n-Amyl Ketone	V	No	7.860	6.3200	0.4968
111-76-2	2-Butoxyethanol	V	No	0.000	6.3200	0.0000
123-86-4	n-butyl acetate	V	No	12.300	6.3200	0.7774
1330-20-7	Xylene	V	Yes	5.000	6.3200	0.3160
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.260	6.3200	0.0164
50-00-0	Formaldehyde	V	Yes	0.300	6.3200	0.0190
526-73-8	1,2,3-Trimethylbenzene	V	No	0.030	6.3200	0.0019
540-88-5	t-Butyl Acetate	V	No	25.000	6.3200	1.5800
57-55-6	Propylene Glycol	V	No	0.980	6.3200	0.0619
64-17-5	Ethanol	V	No	13.295	6.3200	0.8402
64742-82-1	Heavy Aliphatic Solvent	V	No	0.680	6.3200	0.0430
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.010	6.3200	0.0006
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	9.077	6.3200	0.5737
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.230	6.3200	0.0145
67-56-1	Methanol	V	Yes	0.000	6.3200	0.0000
67-63-0	2-propanol	V	No	9.970	6.3200	0.6301
67-64-1	Acetone	V	No	49.860	6.3200	3.1512
71-36-3	1-Butanol	V	No	6.320	6.3200	0.3994
763-69-9	Ethyl 3-Ethoxypropionate	V	No	3.000	6.3200	0.1896
78-83-1	2-methyl-1-propanol	V	No	8.770	6.3200	0.5543
78-93-3	Methy Ethyl Ketone	V	No	0.000	6.3200	0.0000
8052-41-3	Stoddard Solvent	V	No	0.300	6.3200	0.0190
95-63-6	1,2,4-Trimethylbenzene	V	No	0.360	6.3200	0.0228
98-56-6	p-Chlorobenzotrifluoride	V	No	25.000	6.3200	1.5800
98-82-8	Cumene	V	Yes	0.050	6.3200	0.0032

				Stain Line Spray Booth AND Oven	Clear Line Spray Booth AND Oven	Stain and Clear Line Spray Booths AND Ovens		Stain Line Conveyor Fugitives	Clear Line Conveyor Fugitives	Paint Line Conveyor Fugitives	Stain Line Belt Cleaning Fugitives	Clear Line Belt Cleaning Fugitives	Stain, Clear, and Paint Conveyor Fugitives AND Stain and Clear Line Belt Cleaning Fugitives		Paint Line Spray Booth AND Oven		Paint Line Spray Booth AND Oven		5/21/20 1-Hour ESL (ug/m³)	Hourly Off-Site GLCs (ug/m³)	Cumulative Fraction of Hourly ESL	Less than Hourly ESL? (Y/N)	5/21/20 Hourly ESL Basis (Health or Odor)	2018 Annual ESL (ug/m³)	Annual Off-Site GLCs (ug/m³)	Cumulative Fraction of Annual ESL	Less than Annual ESL? (Y/N)	5/21/20 Annual ESL Basis (Health or Odor)
CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	GLCs (ug/m³)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	GLCs (ug/m³)	Emission Rate (LB/HR)	GLCs (ug/m³)	Emission Rate (LB/HR)	GLCs (ug/m³)										
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.0000	0.0012	0.0012	0.0244	0.0000	0.0162	0.0033	0.0000	0.0638	0.0833	14.8377	0.3297	3.0838	0.0083	1.0973	820	19.043	0.0232	Yes	Health	82	1.523	0.019	Yes	Health
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
108-67-8	1,3,5-Trimethylbenzene	V	No	0.0000	0.0017	0.0017	0.0344	0.0000	0.0228	0.0000	0.0000	0.0000	0.0228	4.0649	0.0000	0.0000	0.0057	0.7497	4400	4.849	0.0011	Yes	Health	54	0.388	0.007	Yes	Health
108-98-3	Toluene	V	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	4500	0.000	0.0000	Yes	Health	1200	0.000	0.000	Yes	Health
109-60-4	n-Propyl Acetate	V	No	0.0000	0.0105	0.0105	0.2181	0.0000	0.1446	0.0000	0.0000	0.0000	0.1446	25.7447	0.0000	0.0000	0.0360	4.7480	8350	30.711	0.0037	Yes	Health	835	2.457	0.003	Yes	Health
110-43-0	Methyl n-Amyl Ketone	V	No	0.0000	0.1452	0.1452	3.0077	0.0000	1.9935	0.1521	0.0000	0.0000	2.1455	382.0853	15.0540	140.8147	0.4968	65.4719	4500	591.380	0.1314	Yes	Health	840	47.310	0.056	Yes	Health
111-76-2	2-Butoxyethanol	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5633	0.0000	0.5633	100.3136	0.0000	0.0000	0.0000	0.0000	2900	100.314	0.0346	Yes	Health	3700	8.025	0.002	Yes	Health
123-86-4	n-butyl acetate	V	No	0.0000	0.2272	0.2272	4.7067	0.0000	3.1195	0.1521	0.0000	1.2762	4.5478	809.8962	15.0540	140.8147	0.7774	102.4560	11000	1057.874	0.0962	Yes	Health	1400	84.630	0.060	Yes	Health
1330-20-7	Xylene	V	Yes	0.0000	0.0558	0.0558	1.1556	0.0000	0.7659	0.1264	0.0000	0.0000	0.8923	158.9117	12.5136	117.0522	0.3160	41.6488	2200	318.768	0.1449	Yes	Health	180	25.501	0.142	Yes	Health
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.0056	0.0000	0.0056	0.1166	0.0329	0.0000	0.0000	0.0000	0.0000	0.0329	5.8619	0.0000	0.0000	0.0164	2.1657	2200	8.144	0.0037	Yes	Health	220	0.652	0.003	Yes	Health
50-00-0	Formaldehyde	V	Yes	0.0000	0.0026	0.0026	0.0536	0.0000	0.0355	0.0076	0.0000	0.0000	0.0431	7.6739	0.7508	7.0231	0.0190	2.4989	15	17.249	1.1500	No	Health	3.3	1.380	0.418	Yes	Health
526-73-8	1,2,3-Trimethylbenzene	V	No	0.0000	0.0006	0.0006	0.0115	0.0000	0.0076	0.0000	0.0000	0.0000	0.0076	1.3550	0.0000	0.0000	0.0019	0.2499	4400	1.616	0.0004	Yes	Health	54	0.129	0.002	Yes	Health
540-88-5	t-Butyl Acetate	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6320	0.0000	0.0000	0.6320	112.5504	62.5680	585.2611	1.5800	208.2440	9500	906.055	0.0954	Yes	Health	950	72.484	0.076	Yes	Health
57-55-6	Propylene Glycol	V	No	0.0212	0.0000	0.0212	0.4396	0.1241	0.0000	0.0000	0.0000	0.0000	0.1241	22.0948	0.0000	0.0000	0.0619	8.1632	1800	30.698	0.0171	Yes	Health	18	2.456	0.136	Yes	Health
64-17-5	Ethanol	V	No	0.0000	0.1988	0.1988	4.1195	0.0000	2.7304	0.3361	0.0000	1.0635	4.1299	735.4861	33.2738	311.2427	0.8402	110.7445	18800	1161.593	0.0618	Yes	Health	1880	92.927	0.049	Yes	Health
64742-82-1	Heavy Aliphatic Solvent	V	No	0.0000	0.0126	0.0126	0.2602	0.0000	0.1725	0.0000	0.0000	0.0000	0.1725	30.7129	0.0000	0.0000	0.0430	5.6642	3500	36.637	0.0105	Yes	Health	350	2.931	0.008	Yes	Health
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.0000	0.0002	0.0002	0.0038	0.0000	0.0025	0.0000	0.0000	0.0000	0.0025	0.4517	0.0000	0.0000	0.0006	0.0833	3500	0.539	0.0002	Yes	Health	350	0.043	0.000	Yes	Health
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	0.0000	0.1676	0.1676	3.4734	0.0000	2.3021	0.0009	0.0000	0.0000	2.3030	410.1249	0.0873	0.8167	0.5737	75.6083	3500	490.023	0.1400	Yes	Health	350	39.202	0.112	Yes	Health
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.0000	0.0042	0.0042	0.0880	0.0000	0.0583	0.0058	0.0000	0.0000	0.0641	11.4237	0.5756	5.3844	0.0145	1.9158	4400	18.812	0.0043	Yes	Health	54	1.505	0.028	Yes	Health
67-56-1	Methanol	V	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0638	0.0638	11.3637	0.0000	0.0000	0.0000	0.0000	3900	11.364	0.0029	Yes	Health	2100	0.909	0.000	Yes	Health
67-63-0	2-propanol	V	No	0.2158	0.0085	0.2243	4.6482	1.2622	0.1167	0.0000	0.0000	0.2127	1.5916	283.4358	0.0000	0.0000	0.6301	83.0477	4920	371.132	0.0754	Yes	Health	492	29.691	0.060	Yes	Health
67-64-1	Acetone	V	No	1.0794	0.0000	1.0794	22.3652	6.3123	0.0000	0.0000	1.6899	0.0000	8.0021	1425.0688	0.0000	0.0000	3.1512	415.3218	7800	1862.756	0.2388	Yes	Health	4800	149.020	0.031	Yes	Health
71-36-3	1-Butanol	V	No	0.0000	0.1167	0.1167	2.4184	0.0000	1.6029	0.0000	0.0000	0.0000	1.6029	285.4498	0.0000	0.0000	0.3994	52.6441	610	340.512	0.5582	Yes	Health	61	27.241	0.447	Yes	Health
763-69-9	Ethyl 3-Ethoxypropionate	V	No	0.0000	0.0092	0.0092	0.1913	0.0000	0.1298	0.0758	0.0000	0.0000	0.2026	36.0891	7.5082	70.2313	0.1896	24.9893	270	131.501	0.4870	Yes	Health	27	10.520	0.390	Yes	Health
78-83-1	2-methyl-1-propanol	V	No	0.0000	0.1620	0.1620	3.3559	0.0000	2.2242	0.1264	0.0000	0.0000	2.3506	418.6168	12.5136	117.0522	0.5543	73.0520	1500	612.077	0.4081	Yes	Health	150	48.966	0.326	Yes	Health
78-93-3	Methy Ethyl Ketone	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	18000	0.000	0.0000	Yes	Health	2600	0.000	0.000	Yes	Health
8052-41-3	Stoddard Solvent	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0076	0.0000	0.0000	0.0076	1.3506	0.7508	7.0231	0.0190	2.4989	3500	10.873	0.0031	Yes	Health	350	0.870	0.002	Yes	Health
95-63-6	1,2,4-Trimethylbenzene	V	No	0.0000	0.0066	0.0066	0.1378	0.0000	0.0913	0.0076	0.0000	0.0000	0.0989	17.6104	0.7508	7.0231	0.0228	2.9987	4400	27.770	0.0063	Yes	Health	54	2.222	0.041	Yes	Health
98-56-6	p-Chlorobenzotrifluoride	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6320	0.0000	0.0000	0.6320	112.5504	62.5680	585.2611	1.5800	208.2440	1830	906.055	0.4951	Yes	Health	183	72.484	0.396	Yes	Health
98-82-8	Cumene	V	Yes	0.0000	0.0009	0.0009	0.0191	0.0000	0.0127	0.0000	0.0000	0.0000	0.0127	2.2583	0.0000	0.0000	0.0032	0.4165	650	2.694	0.0041	Yes	Odor	250	0.216	0.001	Yes	Health

If a species does not have an ESL, no impacts analysis is required. See the Modeling and Effects Review and Analysis Guidance document which is located at:

<https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/mersa.pdf>

Refer to review Step 0

Table 9B
Spray Equipment Cleanup Maximum Speciated VOC and PM Off-Site Cumulative GLCs (ug/m³)

EPN/Source Grouping

Worst-Case Modeled Unit Impact (ug/m³/lb/hr)

EPN RTO

20.72

EPN 11

9.35

				EPN RTO				EPN 11											
CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Stain Line Spray Booth - Equipment Cleaning	Clear Line Spray Booth - Equipment Cleaning	Stain and Clear Line Spray Booths - Equipment Cleaning		Paint Line Spray Booth - Equipment Cleaning		5/21/20 1-Hour ESL (ug/m ³)	Hourly Off-Site GLCs (ug/m ³)	Cumulative Fraction of Hourly ESL	Less than Hourly ESL? (Y/N)	5/21/20 Hourly ESL Basis (Health or Odor)	2018 Annual ESL (ug/m ³)	Annual Off-Site GLCs (ug/m ³)	Cumulative Fraction of Annual ESL	Less than Annual ESL? (Y/N)	5/21/20 Annual ESL Basis (Health or Odor)
				Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	GLCs (ug/m ²)	Emission Rate (LB/HR)	GLCs (ug/m ²)										
7732-18-5	Water	NE	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
104-15-4	4-Methylbenzenesulfonic Acid	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	24	0.000	0.0000	Yes	Health	2.4	0.000	0.000	Yes	Health
1047-16-1	Quinacridone	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
112945-52-5	Fumed Amorphous Silica	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	27	0.000	0.0000	Yes	Health	2	0.000	0.000	Yes	Health
119681-36-6	Polyester	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
12713-03-0	Umber	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
1309-37-1	iron oxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
1312-59-5	Clorite	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
1317-61-9	Iron Oxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
1332-58-7	Kaolin	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	50	0.000	0.0000	Yes	Health	5	0.000	0.000	Yes	Health
1333-86-4	Carbon Black	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	35	0.000	0.0000	Yes	Health	3.5	0.000	0.000	Yes	Health
13463-67-7	Titanium Dioxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	50	0.000	0.0000	Yes	Health	5	0.000	0.000	Yes	Health
14807-96-6	Talc	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	20	0.000	0.0000	Yes	Health	2	0.000	0.000	Yes	Health
14808-60-7	Crystalline Silica, respirable powder	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	14	0.000	0.0000	Yes	Health	0	0.000		No	0
15467-06-8	Lithium Ricinoleate	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
16389-88-1	Magnesium Calcium Carbonate	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
25119-62-4	2-propen-1-ol, polymer with ethenylbenzene	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
25973-55-1	Benzotriazole Dipentylphenol	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	120	0.000	0.0000	Yes	Health	12	0.000	0.000	Yes	Health
2786-76-7	C.I. Pigment Red 170	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
51274-00-1	Iron Oxide	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
5567-15-7	C.I. Pigment Yellow 83 (21108)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
61791-92-2	Defoamer	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
64742-60-5	Hydrocarbon waxes (petroleum), hydrotreated microcrystalline	P	No	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	2	0.000	0.0002	Yes	NA	0.02	0.000	0.002	Yes	NA
669-11-6	Azo Brown	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
67989-65-5	Polyester	P	No	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	2	0.000	0.0002	Yes	NA	0.02	0.000	0.002	Yes	NA
68002-18-6	Isobutylated Urea-Formaldehyde Polymer	P	No	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
68002-20-0	Methylated Melamine-Formaldehyde Polymer	P	No	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
72797-02-5	Orange Dye	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
73003-33-5	C.I. Acid Red	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
7631-86-9	Amorphous Silica	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	27	0.000	0.0000	Yes	Health	2	0.000	0.000	Yes	Health
7727-43-7	Barium Sulfate	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	50	0.000	0.0000	Yes	Health	5	0.000	0.000	Yes	Health
77-99-6	2-Ethyl-2-(hydroxymethyl)-1,3- propanediol	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	50	0.000	0.0000	Yes	Health	5	0.000	0.000	Yes	Health
8002-74-2	Paraffin Wax	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1000	0.000	0.0000	Yes	Health	100	0.000	0.000	Yes	Health
85711-46-2	Unsaturated Fatty Acids	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
857892-58-1	Polyoxyalkylene	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
9002-88-4	Polyethylene	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health	Must Meet NAAQS	0.000	See NAAQS Analysis	Yes	Health
9004-98-2	Polyethylene Glycol Monooleyl Ether	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1000	0.000	0.0000	Yes	Health	100	0.000	0.000	Yes	Health
9038-95-3	Oxirane, methyl-, polymer with oxirane, monobutyl ether	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1000	0.000	0.0000	Yes	Health	100	0.000	0.000	Yes	Health
Not Reported	Acrylic Polymer (As Acrylic Polymer, Cas No. 23877-44-3)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Additive (As rheological additive (flow agent))	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Additive (surfactant, generic, not otherwise specified)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Defoamer	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Epichlorohydrin-mercaptoethanol Alcohol	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Glycol Ether (As glycol ether, generic, not otherwise specified)	P	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Polyether Polyol (As Polyether Polyol)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Polysiloxane	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Silicone Solids (As Silicone, Generic)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
Not Reported	Surfactant (As surfactant, generic, not otherwise specified)	P	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA
100-41-4	Ethylbenzene	V	Yes	0.0000	0.0019	0.0019	0.0393	0.0000	0.0000	26000	0.039	0.0000	Yes	Health	570	0.003	0.000	Yes	Health
107-21-1	Ethylene Glycol	V	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	450	0.000	0.0000	Yes	Health	4.5	0.000	0.000	Yes	Health
107-98-2	1-Methoxy-2-propanol	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3700	0.000	0.0000	Yes	Health	370	0.000	0.000	Yes	Health
108-10-1	Methyl Isobutyl Ketone	V	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	820	0.000	0.0000	Yes	Health	82	0.000	0.000	Yes	Health
108-65-6	2-methoxy-1-methylethyl acetate	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2	0.000	0.0000	Yes	NA	0.02	0.000	0.000	Yes	NA

				Stain Line Spray Booth - Equipment Cleaning	Clear Line Spray Booth - Equipment Cleaning	Stain and Clear Line Spray Booths - Equipment Cleaning		Paint Line Spray Booth - Equipment Cleaning		5/21/20 1-Hour ESL (ug/m³)	Hourly Off-Site GLCs (ug/m³)	Cumulative Fraction of Hourly ESL	Less than Hourly ESL? (Y/N)	5/21/20 Hourly ESL Basis (Health or Odor)	2018 Annual ESL (ug/m³)	Annual Off-Site GLCs (ug/m³)	Cumulative Fraction of Annual ESL	Less than Annual ESL? (Y/N)	5/21/20 Annual ESL Basis (Health or Odor)
CAS No.	Species Name	Volatile, Particulate, or Not Emitted (V, P, NE)	HAP? (Yes/No)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	Emission Rate (LB/HR)	GLCs (ug/m³)	Emission Rate (LB/HR)	GLCs (ug/m³)										
108-67-8	1,3,5-Trimethylbenzene	V	No	0.0000	0.0003	0.0003	0.0064	0.0000	0.0000	4400	0.006	0.0000	Yes	Health	54	0.001	0.000	Yes	Health
108-88-3	Toluene	V	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	4500	0.000	0.0000	Yes	Health	1200	0.000	0.000	Yes	Health
109-60-4	n-Propyl Acetate	V	No	0.0000	0.0020	0.0020	0.0408	0.0000	0.0000	8350	0.041	0.0000	Yes	Health	835	0.003	0.000	Yes	Health
110-43-0	Methyl n-Amyl Ketone	V	No	0.0000	0.0271	0.0271	0.5623	0.0000	0.0000	4500	0.562	0.0001	Yes	Health	840	0.045	0.000	Yes	Health
111-76-2	2-Butoxyethanol	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2900	0.000	0.0000	Yes	Health	3700	0.000	0.000	Yes	Health
123-86-4	n-butyl acetate	V	No	0.0000	0.0425	0.0425	0.8800	0.0000	0.0000	11000	0.880	0.0001	Yes	Health	1400	0.070	0.000	Yes	Health
1330-20-7	Xylene	V	Yes	0.0000	0.0104	0.0104	0.2161	0.0000	0.0000	2200	0.216	0.0001	Yes	Health	180	0.017	0.000	Yes	Health
1569-02-4	1-Ethoxy-2-Propanol	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2200	0.000	0.0000	Yes	Health	220	0.000	0.000	Yes	Health
50-00-0	Formaldehyde	V	Yes	0.0000	0.0005	0.0005	0.0100	0.0000	0.0000	15	0.010	0.0007	Yes	Health	3.3	0.001	0.000	Yes	Health
526-73-8	1,2,3-Trimethylbenzene	V	No	0.0000	0.0001	0.0001	0.0021	0.0000	0.0000	4400	0.002	0.0000	Yes	Health	54	0.000	0.000	Yes	Health
540-88-5	t-Butyl Acetate	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	9500	0.000	0.0000	Yes	Health	950	0.000	0.000	Yes	Health
57-55-6	Propylene Glycol	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1800	0.000	0.0000	Yes	Health	18	0.000	0.000	Yes	Health
64-17-5	Ethanol	V	No	0.0000	0.0317	0.0317	0.6560	0.0000	0.0000	18800	0.656	0.0000	Yes	Health	1880	0.052	0.000	Yes	Health
64742-82-1	Heavy Aliphatic Solvent	V	No	0.0000	0.0023	0.0023	0.0486	0.0000	0.0000	3500	0.049	0.0000	Yes	Health	350	0.004	0.000	Yes	Health
64742-88-7	Med. Aliphatic Hydrocarbon Solvent	V	No	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	3500	0.001	0.0000	Yes	Health	350	0.000	0.000	Yes	Health
64742-89-8	lt. aliphatic hydrocarbon solvent	V	No	0.0000	0.0313	0.0313	0.6482	0.0000	0.0000	3500	0.648	0.0002	Yes	Health	350	0.052	0.000	Yes	Health
64742-95-6	Light Aromatic Hydrocarbons	V	No	0.0000	0.0008	0.0008	0.0165	0.0000	0.0000	4400	0.016	0.0000	Yes	Health	54	0.001	0.000	Yes	Health
67-56-1	Methanol	V	Yes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3900	0.000	0.0000	Yes	Health	2100	0.000	0.000	Yes	Health
67-63-0	2-propanol	V	No	0.0000	0.0016	0.0016	0.0329	0.0000	0.0000	4920	0.033	0.0000	Yes	Health	492	0.003	0.000	Yes	Health
67-64-1	Acetone	V	No	0.2966	0.0000	0.2966	6.1445	26.3600	246.5714	7800	252.716	0.0324	Yes	Health	4800	20.217	0.004	Yes	Health
71-36-3	1-Butanol	V	No	0.0000	0.0218	0.0218	0.4521	0.0000	0.0000	610	0.452	0.0007	Yes	Health	61	0.036	0.001	Yes	Health
763-69-9	Ethyl 3-Ethoxypropionate	V	No	0.0000	0.0017	0.0017	0.0358	0.0000	0.0000	270	0.036	0.0001	Yes	Health	27	0.003	0.000	Yes	Health
78-83-1	2-methyl-1-propanol	V	No	0.0000	0.0303	0.0303	0.6274	0.0000	0.0000	1500	0.627	0.0004	Yes	Health	150	0.050	0.000	Yes	Health
78-93-3	Methy Ethyl Ketone	V	No	0.0000	0.0000	0.0000	0.0000	22.4700	210.1844	18000	210.184	0.0117	Yes	Health	2600	16.815	0.006	Yes	Health
8052-41-3	Stoddard Solvent	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3500	0.000	0.0000	Yes	Health	350	0.000	0.000	Yes	Health
95-63-6	1,2,4-Trimethylbenzene	V	No	0.0000	0.0012	0.0012	0.0258	0.0000	0.0000	4400	0.026	0.0000	Yes	Health	54	0.002	0.000	Yes	Health
98-56-6	p-Chlorobenzotrifluoride	V	No	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1830	0.000	0.0000	Yes	Health	183	0.000	0.000	Yes	Health
98-82-8	Cumene	V	Yes	0.0000	0.0002	0.0002	0.0036	0.0000	0.0000	650	0.004	0.0000	Yes	Odor	250	0.000	0.000	Yes	Health

If a species does not have an ESL, no impacts analysis is required. See the Modeling and Effects Review and Analysis Guidance document which is located at:

<https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/mera.pdf>

Refer to review Step 0

Table 10
Products of Combustion

Unit Name	Emission Point	Firing Rate (MMBTu/hr)	Fuel Type	Fuel HHV (BTU/SCF)	Operating Schedule (HR/YR)	Firing Rate Between (MMBTU/HR)	NOx Emission Factor (LB/MMSCF)	CO Emission Factor (LB/MMSCF)	TOC Emission Factor (LB/MMSCF)	PM Emission Factor (LB/MMSCF)	SO ₂ Emission Factor (LB/MMSCF)	Hourly NOx Emissions (LB/HR)	Hourly CO Emissions (LB/HR)	Hourly TOC Emissions (LB/HR)	Hourly PM Emissions (LB/HR)	Hourly SO ₂ Emissions (LB/HR)	Annual NOx Emissions (TPY)	Annual CO Emissions (TPY)	Annual TOC Emissions (TPY)	Annual PM Emissions (TPY)	Annual SO ₂ Emissions (TPY)
Regenerative Thermal Oxidizer	RTO	6.000	NG	1020	8,760		100	84	11	7.6	0.6	0.59	0.49	0.06	0.04	0.00	2.58	2.16	0.28	0.20	0.02
Boiler	5	4.500	NG	1020	8760		100	84	11	7.6	0.6	0.44	0.37	0.05	0.03	0.00	1.93	1.62	0.21	0.15	0.01
Make Up Air Heater	6	5.500	NG	1020	8760		100	84	11	7.6	0.6	0.54	0.45	0.06	0.04	0.00	2.36	1.98	0.26	0.18	0.01
Space Heaters	8	0.960	NG	1020	8760		100	84	11	7.6	0.6	0.09	0.08	0.01	0.01	0.00	0.41	0.35	0.05	0.03	0.00
		16.960					Total	1.66	1.40	0.18	0.13	0.01	7.28	6.12	0.80	0.55	0.04				

Emission Factors from AP-42 for Natural Gas, Section 1.4, 5th Edition, Supplement E

Table 11
EPN 7 - Baghouse Emissions Calculations

Airflow Rate	67,200	ft ³ /min
PM Emission Factor	0.0012	grain/ft ³
PM ₁₀ Emission Factor	52.90%	of PM
PM _{2.5} Emission Factor	29.50%	of PM
Conversion Factor	60	min/hr
Conversion Factor	7,000	grain/lb
Annual Operating Hours	8,760	hr/yr

Contaminant	Short-term Emission Rate (lb/hr)	Annual Emission Rate (tpy)
PM	0.69	3.03
PM ₁₀	0.37	1.60
PM _{2.5}	0.20	0.89

Calculation Methodology and Notes

No change to PM emissions for this EPN from the current permit (2010)

Applicant is adding PM_{2.5} to the emissions profile for this EPN and request PM₁₀ be a subject of the to PM emissions represented.

PM₁₀ and PM_{2.5} factors have been obtained from AP-42 Appendix B. 1 Section 10.5 (page B.1-49) Woodworking Waste Collection Operations

Short-term Emission Rate (lb/hr) = [Airflow Rate (ft³/min) * 60 (min/hr) * PM Emission Factor (grain/ft³)] / 7,000 (grain/lb)

Annual Emission Rate (tpy) = [Airflow Rate (ft³/min) * PM Emission Factor (grain/ft³) * 1.40E+07 (grain/ton)] / 8,760 (hr/yr)

Table 12
EPN 8 - Wood Shop Glue Emissions Calculations

Parameter	Units	Multibond 2000	3M Hi-Strength 94 ET	3M Hi-Strength Spray Adhesive 90	Proposed Totals	Current Total
Annual Usage	gal/yr	1,100	35	20	1,155	660.00
Product Density	lb/gal	9.10	7.89	6.06	--	--
Annual Usage	lb/yr	10,006	276	121	10,403	--
Average Short-term Usage	lb/hr	2.45	0.07	0.03	2.55	--
VOC Content	lb/gal	0.037	0.668	3.332	--	5.50
VOC wt %	%	0.41%	8.47%	54.99%	--	--
VOC Emissions	lb/hr	0.01	0.01	0.02	0.03	3.64
VOC Emissions	tpy	0.02	0.01	0.03	0.07	1.82

Calculation Methodology and Notes

Information from 1999 application carried forward to last permitting action in 2010:

Maximum VOC/gal	5.5	lb/gal	
Gallons used per year	660	gal/yr	based on 55 gallon/month
Tons VOC/year	1.82	tpy	
Average lb/hr	1.82	lb/hr	
Maximum lbs/hr	3.64	lb/hr	based on double the average emission rate

Annual Usage (lb/yr) = Annual Usage (gal/yr) * Product Density (lb/gal)

Average Short-term Usage (lb/hr) = Annual Usage (lb/yr) / 4,080 (hr/yr)

VOC wt% = VOC Content (lb/gal) / Product Density (lb/gal) *100

Product VOC Emissions (lb/hr) = Average Short-term Usage (lb/hr) * VOC wt%

Total VOC Emissions (lb/hr) = Sum of Product VOC Emissions (lb/hr)

Annual VOC Emissions (tpy) = Annual Usage (lb/yr) * VOC wt% / 2,000 (lb/ton)

Total VOC Emissions (tpy) = Sum of Product VOC Emissions (tpy)

Table 13
EPN 9 - Natural Gas Valve, Connection, and Flange Fugitives

Operating Schedule		8,760	hr/yr			
Equipment Description	Count	Emission Factor (lb/hr/valve)	Current Short-term Emission Rate (ER) (tpy)	Proposed Short-term ER (lb/hr)	Current Annual ER (tpy)	Proposed Annual ER (tpy)
Natural Gas (NG) safety relief valves	2	0.01940	--	0.04	--	0.17
NG shut-off valve	1	0.00992	--	0.01	--	0.04
NG vent valve	1	0.00992	--	0.01	--	0.04
NG leak test connection	1	0.00992	--	0.01	--	0.04
Butterfly gas metering valve	1	0.00992	--	0.01	--	0.04
Flange connections	12	0.00086	--	0.01	--	0.05
		TOC	0.09	0.09	0.39	0.39
		Non-methane and non-ethane organic compounds in natural gas	15.10%	15.10%	15.10%	15.10%
		VOC	0.02	0.01	0.06	0.06

Calculation Methodology and Notes

No change to this EPN from current permit (2010)

These emissions are associated with natural gas VOC and have not been modeled.

Emissions factors have been obtained from TCEQ Guidance APDG 6422 June 2018, Table II: Facility/Compound Specific Fugitive Emission Factors, for Oil and Gas Production Operation

Proposed Short-term ER (lb/hr) = Count * Emission Factor (lb/hr/valve)

Proposed Annual ER (tpy) = Short-term ER (lb/hr) * Operating Schedule (hr/yr) / 2,000 (lb/ton)

Per information in historic permitting documentation 15.1% on non-methan and no-ethan organic compounds is present in natural gas.

This same factor has been carried forward for this permit renewal to estimate VOC emissions .

Table 14
Modeling Input Parameters

Short-Term Impacts Analysis and NAAQS Screening Analysis

Source	Source EPN	Source Type	Zone	X Coordinate (UTM meters)	Y Coordinate (UTM meters)	Emission Rate (lbs/hr)	Stack/ Release Height ³ (ft)	Stack Inside Diameter ¹ (ft)	Stack Flow Rate (cfm)	Stack Flow Rate (acfm)	Stack Exit Velocity ² (ft/s)	Stack Exit Temperature (*F)	Dispersion Coefficient Urban/ Rural Option	Building Height (ft)	Building Width (ft)	Building Length (ft)	L (ft)	Region of Building Influence (5L) (ft)	Area or Volume Length (ft)	Area or Volume Width (ft)	Area Axis (Degrees)	Minimum Distance from Property Line (ft)	Building Cavity Zone (3L) (ft)	Property Line Within Cavity Zone? (Yes/No)	Cavity Calculation Required? (Yes/No)
Regenerative Thermal Oxidizer	RTO	Point	14	540865.75	3252916.95	1.000	35.00	3.63	--	--	32.83	127.9	Rural	25	307	675.21	25	125.0	NA	NA	--	54.17	75	YES	YES
Spray Room Finish Department Fugitives	EPN 10	Volume	14	540861.66	3252921.93	1.000	12.50	--	--	--	--	--	Rural	25	307	675.21	25	125.0	180.00	180.00	--	72.70	75	YES	YES
Paint Line - Spray Booth	EPN 11	Point	14	540841.88	3252903.01	1.000	47.00	2.10	--	13,542	65.16	150.0	Rural	25	307	675.21	25	125.0	NA	NA	--	130.00	75	NO	NO
Miscellaneous Spray Booth	EPN Misc.SprayBooth	Point	14	540846.04	3252859.48	1.000	31.00	2.00	--	6,077	32.24	80.0	Rural	25	307	675.21	25	125.0	NA	NA	--	78.46	75	NO	NO
Boiler	EPN 5	Point	14	540852.35	3252861.44	1.000	27.75	3.50	--	18,900	32.74	77.0	Rural	25	307	675.21	25	125.0	NA	NA	--	82.02	75	NO	NO
Makeup Air Heater	EPN 6	Area	14	540859.22	3252895.13	1.000	12.50	--	--	--	--	--	Rural	25	307	675.21	25	125.0	18.62	9.55	--	61.14	75	YES	YES
Baghouse	EPN 7	Point	14	540877.77	3253011.47	1.000	35.00	5.00	--	69,979	59.40	80.0	Rural	25	307	675.21	25	125.0	NA	NA	--	47.30	75	YES	YES
Wood Glue and Space Heater Fugitives	EPN 8	Volume	14	540855.12	3252866.64	1.000	12.50	--	--	--	--	--	Rural	25	307	675.21	25	125.0	162	162	--	67.70	75	YES	YES

Pseudo Point Sources

- ¹ Stack inside diameter revised to 0.001 meters per TCEQ guidance memo for Modeling Fugitive Emissions as Pseudo-Point Sources dated July 25, 1997.
- ² Stack exit velocity revised to 0.001 meters/sec per TCEQ guidance memo for Modeling Fugitive Emissions as Pseudo-Point Sources dated July 25, 1997.
- ³ Stack height for pseudo point sources may either be 1.0 meters or the actual release height for horizontal discharges and stacks with rain hats or gooseneck exhaust. Please contact TCEQ for additional guidance for other situations.

TCEQ memo on pseudo-point sources: <https://www.tceq.texas.gov/assets/public/permitting/air/memos/pseudopt.pdf>

Area Sources

- ³ Stack height for area sources is set to either one half of the over head door height or the structure. Please contact TCEQ for additional guidance for other situations.

Volume Sources

Volume source length and width are based on the EPA SCREEN3 Users Guide - EPA - 454/B-95-004, Table 1

SCREEN3 user guide: <https://www3.epa.gov/scram001/userg/screen/screen3d.pdf>

SUMMARY OF SUGGESTED PROCEDURES FOR ESTIMATING INITIAL LATERAL DIMENSIONS σ_{y0} AND INITIAL VERTICAL DIMENSIONS σ_{z0} FOR VOLUME AND LINE SOURCES	
Type of Source	Procedure for Obtaining Initial Dimension
(a) Initial Lateral Dimensions (σ_{y0})	
Single Volume Source	σ_{y0} = length of side divided by 4.3
Line Source Represented by Adjacent Volume Sources (see Figure 1-8(a))	σ_{y0} = length of side divided by 2.15
Line Source Represented by Separated Volume Sources (see Figure 1-8(b))	σ_{y0} = center to center distance divided by 2.15
(b) Initial Vertical Dimensions (σ_{z0})	
Surface-Based Source ($h_e \sim 0$)	σ_{z0} = vertical dimension of source divided by 2.15
Elevated Source ($h_e > 0$) on or Adjacent to a Building	σ_{z0} = building height divided by 2.15
Elevated Source ($h_e > 0$) not on or Adjacent to a Building	σ_{z0} = vertical dimension of source divided by 4.3

For volume sources, the base of the volume must be square.
For a building 150 ft x 100 ft the dimensions of a square with an equal area is (L2 + W2)*0.5 = 122.47 ft
 σ_{y0} = 122.47 ft + 4.30 = 28.48 ft
 σ_{z0} = 27 ft + 2.15 = 12.55 ft

Table 15
Unit Impact Multipliers Using SCREEN3

EPN RTO

Modeled Concentration	20.72	µg/m ³	max at STAB 4
Fugitive Reduction ²	1.00		
Low Wind Speed Reduction ³	1.00		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	Factor ¹ 1.00	20.720	1.00	1.00	1.00	20.720
3-hr	0.90	18.648	1.00	1.00	1.00	18.648
8-hr	0.70	14.504	1.00	1.00	1.00	14.504
24-hr	0.40	8.288	1.00	1.00	1.00	8.288
Annual	0.08	1.658	1.00	1.00	1.00	1.658

EPN 10 - Spray Room Finish Department Fugitives

Modeled Concentration	443	µg/m ³	max at STAB 6
Fugitive Reduction ²	0.60		
Low Wind Speed Reduction ³	0.67		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	Factor ¹ 1.00	443.000	0.60	0.67	1.00	178.086
3-hr	0.90	398.700	0.60	0.67	1.00	160.277
8-hr	0.70	310.100	0.60	0.67	1.00	124.660
24-hr	0.40	177.200	0.60	0.67	1.00	71.234
Annual	0.08	35.440	0.60	0.67	1.00	14.247

EPN 11 - Paint Line

Modeled Concentration	9.354	µg/m ³	max at STAB 4
Fugitive Reduction ²	1.00		
Low Wind Speed Reduction ³	1.00		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	Factor ¹ 1.00	9.354	1.00	1.00	1.00	9.354
3-hr	0.90	8.419	1.00	1.00	1.00	8.419
8-hr	0.70	6.548	1.00	1.00	1.00	6.548
24-hr	0.40	3.742	1.00	1.00	1.00	3.742
Annual	0.08	0.748	1.00	1.00	1.00	0.748

EPN Misc.SprayBooth

Modeled Concentration	131.800	µg/m ³	max at STAB 6
Fugitive Reduction ²	1.00		
Low Wind Speed Reduction ³	1.00		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	Factor ¹ 1.00	131.800	1.00	1.00	1.00	131.800
3-hr	0.90	118.620	1.00	1.00	1.00	118.620
8-hr	0.70	92.260	1.00	1.00	1.00	92.260
24-hr	0.40	52.720	1.00	1.00	1.00	52.720
Annual	0.08	10.544	1.00	1.00	1.00	10.544

Table 15
Unit Impact Multipliers Using SCREEN3

EPN 5 - Boiler

Modeled Concentration	78.570	µg/m ³	max at STAB 5
Fugitive Reduction ²	1.00		
Low Wind Speed Reduction ³	1.00		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion Factor ¹	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	1.00	78.570	1.00	1.00	1.00	78.570
3-hr	0.90	70.713	1.00	1.00	1.00	70.713
8-hr	0.70	54.999	1.00	1.00	1.00	54.999
24-hr	0.40	31.428	1.00	1.00	1.00	31.428
Annual	0.08	6.286	1.00	1.00	1.00	6.286

EPN 6 - Makeup Air Heater

Modeled Concentration	1188	µg/m ³	max at STAB 6
Fugitive Reduction ²	0.60		
Low Wind Speed Reduction ³	0.67		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion Factor ¹	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	1.00	1188.000	0.60	0.67	1.00	477.576
3-hr	0.90	1069.200	0.60	0.67	1.00	429.818
8-hr	0.70	831.600	0.60	0.67	1.00	334.303
24-hr	0.40	475.200	0.60	0.67	1.00	191.030
Annual	0.08	95.040	0.60	0.67	1.00	38.206

EPN 7 - Baghouse

Modeled Concentration	10.6	µg/m ³	max at STAB 4
Fugitive Reduction ²	1.00		
Low Wind Speed Reduction ³	1.00		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion Factor ¹	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	1.00	10.600	1.00	1.00	1.00	10.600
3-hr	0.90	9.540	1.00	1.00	1.00	9.540
8-hr	0.70	7.420	1.00	1.00	1.00	7.420
24-hr	0.40	4.240	1.00	1.00	1.00	4.240
Annual	0.08	0.848	1.00	1.00	1.00	0.848

EPN 8 - Wood glue and Space Heater Fugitives

Modeled Concentration	514.5	µg/m ³	max at STAB 6
Fugitive Reduction ²	0.60		
Low Wind Speed Reduction ³	0.67		
Shroud Factor ⁴	1.00		

Concentration Adjustment

Averaging Period	Averaging Period Conversion Factor ¹	Unit Impact Multiplier ((µg/m ³)/(lb/hr))	Fugitive Reduction ²	Low Wind Speed Reduction ³	Shroud Factor Reduction ⁴	Adjusted Impact For Use in Analysis ((µg/m ³)/(lb/hr))
1-hr	1.00	514.500	0.60	0.67	1.00	206.829
3-hr	0.90	463.050	0.60	0.67	1.00	186.146
8-hr	0.70	360.150	0.60	0.67	1.00	144.780
24-hr	0.40	205.800	0.60	0.67	1.00	82.732
Annual	0.08	41.160	0.60	0.67	1.00	16.546

¹ Conversion factors are from EPA Screening Procedures for Estimating the Air Quality Impact of Stationary Sources - Revised, EPA 454/R-92-019, page 4-16

<https://www.tceq.texas.gov/assets/public/permitting/air/memos/pseudopt.pdf>

³ TCEQ 0.67 factor to adjust for low wind speed of 1.0 m/sec - SCREEN3 only.

⁴ Shroud factor is based on the shroud guidance memo which is located at:

<https://www.tceq.texas.gov/assets/public/permitting/air/memos/shroudcrodit.pdf>

If an adjustment is not applicable, enter 1.00.

Table 16
NAAQS SIL Analysis and Impacts Analysis

EPN RTO

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.050	0.045	-0.005	Decrease	24-hr	8.288	0.042
PM _{2.5}	0.000	0.045	0.045	Increase	24-hr	8.288	0.371
PM _{2.5}	0.000	0.045	0.045	Increase	Annual	1.658	0.074

EPN 5 - Boiler

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.030	0.034	0.004	Increase	24-hr	31.428	0.111
PM _{2.5}	0.000	0.034	0.034	Increase	24-hr	31.428	1.054
PM _{2.5}	0.000	0.034	0.034	Increase	Annual	6.286	0.211

EPN 6 - Make Up Air Heater

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.040	0.041	0.001	Increase	24-hr	191.030	0.187
PM _{2.5}	0.000	0.041	0.041	Increase	24-hr	191.030	7.829
PM _{2.5}	0.000	0.041	0.041	Increase	Annual	38.206	1.566

EPN 7 - Baghouse

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.690	0.366	-0.324	Decrease	24-hr	4.240	1.375
PM _{2.5}	0.000	0.204	0.204	Increase	24-hr	4.240	0.865
PM _{2.5}	0.000	0.204	0.204	Increase	Annual	0.848	0.173

EPN 8 - Space Heaters

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.010	0.007	-0.003	Decrease	24-hr	82.732	0.236
PM _{2.5}	0.000	0.007	0.007	Increase	24-hr	82.732	0.592
PM _{2.5}	0.000	0.007	0.007	Increase	Annual	16.546	0.118

EPN 11 - Paint Line

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
PM ₁₀	0.000	0.0002	0.000	Increase	24-hr	3.742	0.001
PM _{2.5}	0.000	0.0000	0.000	Increase	24-hr	3.742	0.000
PM _{2.5}	0.000	0.0000	0.000	Increase	Annual	0.748	0.000

Total Impacts

Criteria Pollutant	Project Impact (µg/m ³)	Significant Impact Level (µg/m ³)	Less than Significant Impact Level? (Y/N)	Further Analysis Required?	Site-Wide Impact (µg/m ³) ¹	Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)	Less than Standard? (Y/N)
PM ₁₀	1.951	5.0	Yes	Analysis Complete	1.951	--	--	150	--
PM _{2.5}	10.709	1.2	No	Go to Full Analysis	10.709	20.000	30.709	35	Yes
PM _{2.5}	2.142	0.3	No	Go to Full Analysis	2.142	8.167	10.309	12	Yes

¹ If the project increase is greater than the SIL, enter total statewide impacts based on site wide modeling here.
If the project increase is equal to statewide impacts, enter the project impact here.

EPN RTO

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
NO _x	0.590	0.588	-0.002	Decrease	Hourly	20.720	0.037
NO _x	0.590	0.588	-0.002	Decrease	Annual	1.658	0.003

EPN 5 - Boiler

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
NO _x	0.340	0.441	0.101	Increase	Hourly	78.570	7.949
NO _x	0.340	0.441	0.101	Increase	Annual	6.286	0.636

EPN 6 - Make Up Air Heater

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
NO _x	0.540	0.539	-0.001	Decrease	Hourly	477.576	0.375
NO _x	0.540	0.539	-0.001	Decrease	Annual	38.206	0.030

EPN 8 - Space Heaters

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
NO _x	0.090	0.094	0.004	Increase	Hourly	206.829	0.852
NO _x	0.090	0.094	0.004	Increase	Annual	16.546	0.068

Total Impacts

Criteria Pollutant	Project Impact (µg/m ³)	Significant Impact Level (µg/m ³)	Less than Significant Impact Level? (Y/N)	Further Analysis Required?	Site-Wide Impact (µg/m ³) ¹	Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)	Less than Standard? (Y/N)
NO _x	9.212	7.8	No	Go to Full Analysis	9.212	141.376	150.588	188	Yes
NO _x	0.737	1.0	Yes	Analysis Complete	0.737	--	--	100	--

Table 16
NAAQS SIL Analysis and Impacts Analysis

EPN RTO

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
CO	0.500	0.494	-0.006	Decrease	Hourly	20.720	0.122
CO	0.500	0.494	-0.006	Decrease	8-hr	14.504	0.085

EPN 5 - Boiler

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
CO	0.290	0.371	0.081	Increase	Hourly	78.570	6.332
CO	0.290	0.371	0.081	Increase	8-hr	54.999	4.432

EPN 6 - Make Up Air Heater

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
CO	0.450	0.453	0.003	Increase	Hourly	477.576	1.405
CO	0.450	0.453	0.003	Increase	8-hr	334.303	0.983

EPN 8 - Space Heaters

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
CO	0.040	0.079	0.039	Increase	Hourly	206.829	8.078
CO	0.040	0.079	0.039	Increase	8-hr	144.780	5.655

Total Impacts

Criteria Pollutant	Project Impact (µg/m ³)	Significant Impact Level (µg/m ³)	Less than Significant Impact Level? (Y/N)	Further Analysis Required?	Site-Wide Impact (µg/m ³) ¹	Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)	Less than Standard? (Y/N)
CO	15.937	2000	Yes	Analysis Complete	15.937	--	--	40000	--
CO	11.156	500	Yes	Analysis Complete	11.156	--	--	10000	--

EPN RTO

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
SO ₂	0.010	0.004	-0.006	Decrease	1-hr	20.720	0.134
SO ₂	0.010	0.004	-0.006	Decrease	3-hr	18.648	0.121
SO ₂	0.010	0.004	-0.006	Decrease	24-hr	8.288	0.054
SO ₂	0.010	0.004	-0.006	Decrease	Annual	1.658	0.011

EPN 5 - Boiler

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
SO ₂	0.010	0.003	-0.007	Decrease	1-hr	78.570	0.578
SO ₂	0.010	0.003	-0.007	Decrease	3-hr	70.713	0.520
SO ₂	0.010	0.003	-0.007	Decrease	24-hr	31.428	0.213
SO ₂	0.010	0.003	-0.007	Decrease	Annual	6.286	0.046

EPN 6 - Make Up Air Heater

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
SO ₂	0.010	0.003	-0.007	Decrease	1-hr	477.576	3.231
SO ₂	0.010	0.003	-0.007	Decrease	3-hr	429.818	2.908
SO ₂	0.010	0.003	-0.007	Decrease	24-hr	191.030	1.292
SO ₂	0.010	0.001	-0.009	Decrease	Annual	38.206	0.360

EPN 8 - Space Heaters

Criteria Pollutant	Current Allowable Emission Rate (lb/hr)	Proposed Allowable Emission Rate (lb/hr)	Difference in Allowable Emission Rate (lb/hr)	Emission Rate Increase or Decrease?	Averaging Period	Unit Impact Multiplier (µg/m ³ /lb/hr)	Change in Impact (µg/m ³)
SO ₂	0.010	0.001	-0.009	Decrease	1-hr	206.829	1.951
SO ₂	0.010	0.001	-0.009	Decrease	3-hr	186.146	1.756
SO ₂	0.010	0.001	-0.009	Decrease	24-hr	82.732	0.781
SO ₂	0.010	0.001	-0.009	Decrease	Annual	16.546	0.156

Total Impacts

Criteria Pollutant	Project Impact (µg/m ³)	Significant Impact Level (µg/m ³)	Less than Significant Impact Level? (Y/N)	Further Analysis Required?	Site-Wide Impact (µg/m ³) ¹	Background Concentration (µg/m ³)	Total Concentration (µg/m ³)	NAAQS (µg/m ³)	Less than Standard? (Y/N)
SO ₂	5.894	7.8	Yes	Analysis Complete	5.894	--	--	196	--
SO ₂	5.305	25.0	Yes	Analysis Complete	5.305	--	--	1300	--
SO ₂	2.339	5.0	Yes	Analysis Complete	2.339	--	--	365	--
SO ₂	0.574	1.0	Yes	Analysis Complete	0.574	--	--	80	--

Table 17
Background NAAQS Monitor Values

PM_{2.5} **µg/m³**

County	City	Address	Monitor ID	24-HR 98th Percentile				Annual Average			
				2019	2018	2017	3-Year Avg.	2019	2018	2017	3-Year Avg.
				17.00	18.00	25.00	20.00	8.20	7.70	8.60	8.17

NO_x **ppb**

County	City	Address	Monitor ID	1-Hr 98th Percentile				Annual Average			
				2019	2018	2017	3-Year Avg.	2019	2018	2017	3-Year Avg.
				75.20	75.20	75.20	75.20				
				141.38	141.38	141.38	141.38	0.00	0.00	0.00	

Conversion from NO_x ppb to µg/m³ = ppb x 1.88

Table 18
Emission Distributions for Conveyorized Painting Operations

Emission distributions are based on the following:

1. Conveyor Speed
2. Distance Traveled between Process/Transfer Points
3. Coating Type
4. AP-40 Figure 655 or Site Specific Flashoff Testing

Painting Operation	Coating Type	Flashoff Curve No. from Figure 655	Conveyor Speed (Ft/Min)	Distance Traveled (Ft)	Transfer No. 1			Transfer No. 2				Transfer No. 3
					Time between Start of Painting until Parts Exit the Booth (Min)	Total Solvent Loss from Figure 655 (%)	Loss between Start of Painting and Booth Exit (%)	Distance Traveled (Ft)	Time between Exiting Booth until Oven Entry (Min)	Total Solvent Loss from Figure 655 (%)	Solvent Loss between Booth Exit and Oven Entry (%)	Solvent Loss in Oven (%)
Stain	Stain	3	24	96	1.00	62.00	62.00	25.00	1.04	67.00	5.00	33.00
Clear	Clear	4	18	120	0.74	36.00	36.00	45.00	2.50	47.00	11.00	53.00
Paint	Primer	4	14.5	87	0.50	36.00	35.00	4.42	0.30	36.00	1.00	64.00

Transfer No. 1 represents the solvent loss between the start of coating application in the booth until the part exits the booth.

Transfer No. 2 represents the solvent loss on the conveyor between the booth and the oven.

Transfer No. 3 represents the solvent loss from the oven.

Table 19
Enclosure Capture Velocities

Emission Capture Criteria

Criteria Source	Face Velocity for Capture (ft/min)	Source
TCEQ	100	Capture velocity guidance
EPA Procedure T	200	Capture velocity for permanent total enclosures (referenced in 40 CFR 63 - MACT)
ACGIH Industrial Ventilation	100-200	Table 6-2, 28th edition

Process	Ventilation System Flow Rate (CFM)	Number of Enclosure Openings	Enclosure Opening Width (ft.)	Enclosure Opening Height (ft.)	Enclosure Open Area (sq. ft.)	Area of Other Openings (sq. ft.)	Total Flow Area (sq. ft.)	Face Velocity Across Openings (ft/min)	Subject to MACT (Yes/No)	VOC Emission Controls Required to Meet MACT	Applicable Capture Velocity (ft/min)
Stain Line Booth (inlet and outlet)	1,177	2	6.79	0.54	7.36	0	7.36	160	No	No	100
Stain Line Oven	1,138	2	4.75	0.42	3.96	0	3.96	287	No	No	100
Clean Line Booth	4,708	2	6.83	0.67	9.11	0	9.11	517	No	No	100
Clear Line Oven	1,471	2	0.42	0.42	0.35	0	0.35	4236	No	No	100
Paint Line Booth (total)	3,534	--	--	--	2.83	0	2.83	1250	No	No	100
Paint Line Booth (opening at inlet)		1	6.17	0.29	1.80	--	--	--	--	--	--
Paint Line Booth (opening at outlet)		1	6.17	0.17	1.03	--	--	--	--	--	--
Paint Line Oven	3,532	--	--	--	3.52	0	3.52	1003	No	No	100
Paint Line Oven (opening at inlet)		1	6.17	0.25	1.54	--	--	--	--	--	--
Paint Line Oven (opening at outlet)		1	4.75	0.42	1.98	--	--	--	--	--	--

Air Pollution Engineering Manual - AP-40
Second Edition
Environmental Protection Agency
Office of Air Quality and Standards
May-73

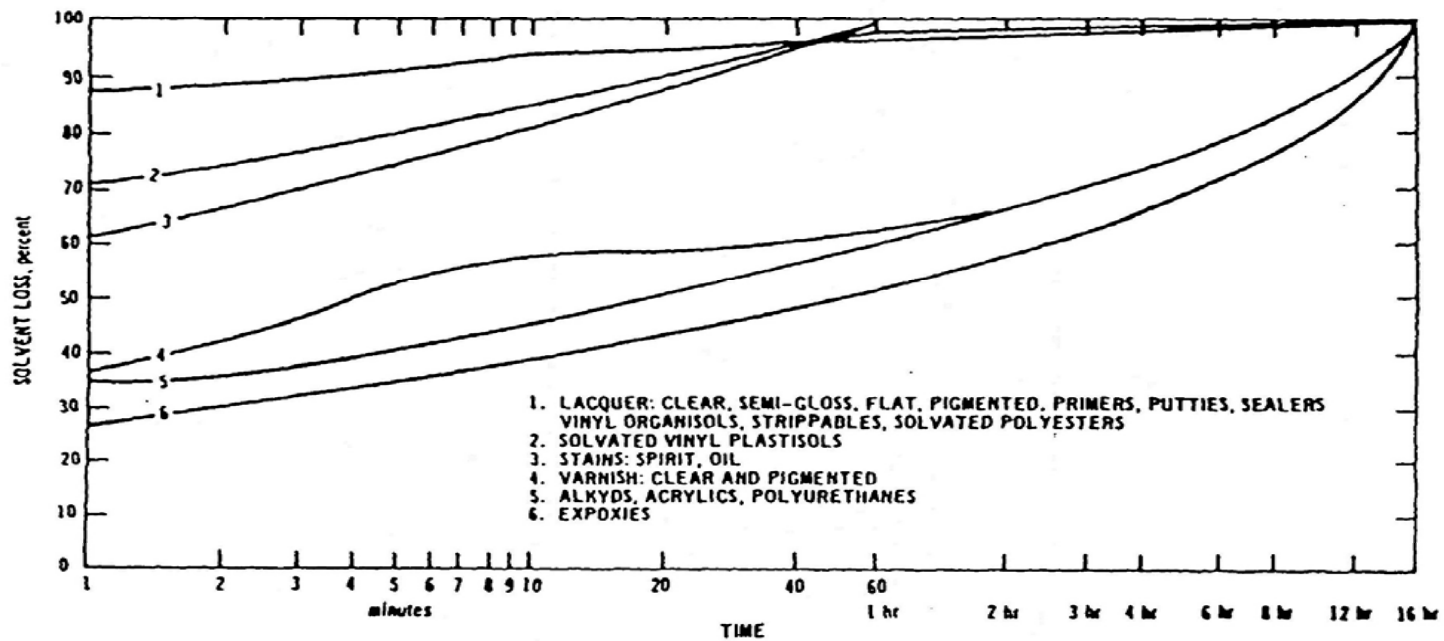


Figure 655. Evaporation curves relating percent solvent losses to solvent flash-off times.

Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology

The following are emitted at the facility and have been quantified in the emissions calculation section of this application:

- Volatile Organic Compounds (VOCs)
- Exempt Solvents (ES)
- Particulate Matter (PM)
- Oxides of Nitrogen (NOx)
- Carbon Monoxide (CO)
- Sulfur Dioxide (SO2)
- Speciated emissions

Emission sources covered by this permit application are as follows:

<u>EPN</u>	<u>Source Name</u>	<u>Air Contaminants</u>
RTO	Regenerative Thermal Oxidizer	VOC, ES, NOx, CO, PM/PM10/PM2.5, SO2
5	Boiler	VOC, NOx, CO, PM/PM10/PM2.5, SO2
6	Make Up Air Heater	VOC, NOx, CO, PM/PM10/PM2.5, SO2
7	Baghouse	PM/PM10/PM2.5
8	Wood Shop Glue and Space Heater	VOC, NOx, CO, PM/PM10/PM2.5, SO2
9	Valve, Connection, and Flange Fugitives	VOC
10	Spray Room Finish Department Fugitives	VOC and ES
11	Paint Line	VOC, ES, PM/PM10/PM2.5

Emission sources included in this permit application for site-wide modeling purposes only are as follows:

<u>EPN</u>	<u>Emission Source</u>	<u>Air Contaminants</u>
Misc.SprayBooth	Miscellaneous Spray Booth	VOC, ES, PM/PM10/PM2.5

Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology

A discussion of the quantification of emission rates follows, and a summary of the criteria pollutant emission rates by source is provided in Table 7 Coating Operations – Total Emissions by EPN found in the emissions calculation section of this application and in the NSR Application Workbook (Unit Types - Emission Rates). The emissions estimates, speciated impacts, and NAAQS analysis have been completed using the Texas Commission on Environmental Quality's (TCEQ's) latest version of the Coatings – Paint Emission Calculation and Impacts Analysis Spreadsheet found on the TCEQ website (Version 1.1)

Coating operations at the facility that are included in the NSR Permit are conducted in the Stain Line (EPN RTO), Clear Line (EPN RTO), and Paint Line (EPN 11). These coating lines operate on a conveyor system taking parts through an automated spray booth and then through drying ovens where parts are considered dried/cured as they exit the oven. In each line there is a section of conveyor that is not covered. Emissions from these uncovered portions of conveyor are quantified and summed as EPN 10 - Spray Room Finish Department Fugitives. Coatings are applied using airless spray guns. See process description for additional details.

VOC and ES Emissions – Coating Operations

Short-term and annual VOC and ES emissions are estimated for the coating operations at the site. The following describes the estimation of ES and VOC emissions from coating operations for EPNs RTO, 10, and 11.

For short-term VOC and ES emission rates, flash-off fractions are used to distribute the volatile emissions to the emission points in the proper portions. The amount of flash-off has been determined by selecting the type of coating that is used. This information was used in conjunction with EPA's AP-40 Figure 655 (Evaporation Curves Relating Percent Solvent Losses to Solvent Flash-off Times). Flash-off has been distributed based on conveyor speed, conveyor length within each spray booth, uncovered conveyor length between spray booth and drying oven, and assumes flash completion within each oven. Refer to Table 18 – Emission Distributions for Conveyorized Painting Operating in the emissions calculation section of this application.

Additionally, the calculations are based on maximum application rates, overspray/transfer efficiency, maximum VOC and ES content per coating line for short-term emissions, and average VOC and ES content per coating line for annual emissions. See emissions calculation section of this application for more details.

**Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology**

Short-term VOC Emissions Overspray in Spray Booth (EPN RTO [Stain and Clear Line] and EPN 11)

Short-term VOC Emissions = Spray Rate (gal/hr) × Max VOC Content (lbs/gal) × (1 – Transfer Efficiency) × VOC Flash-off × (1 – VOC Control Efficiency) = lbs VOC/hr

Short-term ES Emissions Overspray in Spray Booth (EPN RTO [Stain and Clear Line] and EPN 11)

Short-term ES Emissions = Spray Rate (gal/hr) × Max ES Content (lbs/gal) × (1 – Transfer Efficiency) × VOC Flash-off × (1 – VOC Control Efficiency) = lbs ES/hr

Short-term VOC Emissions Parts in Spray Booth (EPN RTO [Stain and Clear Line] and EPN 11)

Short-term VOC Emissions = Spray Rate (gal/hr) × Max VOC Content (lbs/gal) × Transfer Efficiency × VOC Flash-off × (1 – VOC Control Efficiency) = lbs VOC/hr

Short-term ES Emissions Parts in Spray Booth (EPN RTO [Stain and Clear Line] and EPN 11)

Short-term ES Emissions = Spray Rate (gal/hr) × Max ES Content (lbs/gal) × Transfer Efficiency × VOC Flash-off × (1 – VOC Control Efficiency) = lbs ES/hr

Short-term VOC Emissions Parts on Open Conveyor Between Spray Booth and Oven (EPN 10)

Short-term VOC Emissions = Spray Rate (gal/hr) × Max VOC Content (lbs/gal) × Transfer Efficiency × VOC Flash-off = lbs VOC/hr

Short-term ES Emissions Parts on Open Conveyor Between Spray Booth and Oven (EPN 10)

Short-term ES Emissions = Spray Rate (gal/hr) × Max ES Content (lbs/gal) × Transfer Efficiency × VOC Flash-off = lbs ES/hr

**Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology**

Short-term VOC Emissions Parts in Oven (EPN RTO [Stain and Clear Line] and EPN 11)

Short-term VOC Emissions = Spray Rate (gal/hr) × Max VOC Content (lbs/gal) × Transfer Efficiency × VOC Flash-off × (1 – VOC Control Efficiency) = lbs VOC/hr

Short-term ES Emissions Parts in Spray Oven (EPN RTO [Stain and Clear Line] and EPN 11)

Short-term ES Emissions = Spray Rate (gal/hr) × Max ES Content (lbs/gal) × Transfer Efficiency × VOC Flash-off × (1 – VOC Control Efficiency) = lbs ES/hr

Annual VOC Emissions Overspray in Spray Booth (EPN RTO [Stain and Clear Line] and EPN 11)

Annual VOC Emissions = Spray Rate (gal/yr) × Max VOC Content (lbs/gal) × (1 – Transfer Efficiency) × VOC Flash-off × (1 – VOC Control Efficiency) / 2,000 (lb/ton) = tons VOC/yr

Annual ES Emissions Overspray in Spray Booth (EPN RTO [Stain and Clear Line] and EPN 11)

Annual ES Emissions = Spray Rate (gal/yr) × Max ES Content (lbs/gal) × (1 – Transfer Efficiency) × VOC Flash-off × (1 – VOC Control Efficiency) / 2,000 (lb/ton) = tons ES/yr

Annual VOC Emissions Parts in Spray Booth (EPN RTO [Stain and Clear Line] and EPN 11)

Annual VOC Emissions = Spray Rate (gal/yr) × Max VOC Content (lbs/gal) × Transfer Efficiency × VOC Flash-off × (1 – VOC Control Efficiency) / 2,000 (lb/ton) = tons VOC/yr

Annual ES Emissions Parts in Spray Booth (EPN RTO [Stain and Clear Line] and EPN 11)

Annual ES Emissions = Spray Rate (gal/yr) × Max ES Content (lbs/gal) × Transfer Efficiency × VOC Flash-off × (1 – VOC Control Efficiency) / 2,000 (lb/ton) = tons ES/yr

**Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology**

Annual VOC Emissions Parts on Open Conveyor Between Spray Booth and Oven (EPN 10)

Annual VOC Emissions = Spray Rate (gal/yr) × Max VOC Content (lbs/gal) × Transfer Efficiency × VOC Flash-off / 2,000 (lb/ton) = tons VOC/yr

Annual ES Emissions Parts on Open Conveyor Between Spray Booth and Oven (EPN 10)

Annual ES Emissions = Spray Rate (gal/yr) × Max ES Content (lbs/gal) × Transfer Efficiency × VOC Flash-off / 2,000 (lb/ton) = tons ES/yr

Annual VOC Emissions Parts in Oven (EPN RTO [Stain and Clear Line] and EPN 11)

Annual VOC Emissions = Spray Rate (gal/yr) × Max VOC Content (lbs/gal) × Transfer Efficiency × VOC Flash-off × (1 – VOC Control Efficiency) / 2,000 (lb/ton) = tons VOC/yr

Annual ES Emissions Parts in Oven (EPN RTO [Stain and Clear Line] and EPN 11)

Annual ES Emissions = Spray Rate (gal/yr) × Max ES Content (lbs/gal) × Transfer Efficiency × VOC Flash-off × (1 – VOC Control Efficiency) / 2,000 (lb/ton) = tons ES/yr

PM Emissions – Coating Operations

PM emission from coating operations originate from overspray generated in the coating application processes conducted at the facility. The following describes the estimation of PM emissions from coating operations for EPNs RTO and 11.

PM calculations are based on maximum application rates, maximum coating density, minimum VOC content, percent overspray/transfer efficiency, and fallout. See emissions calculation section of this application for more details.

The percent overspray is estimated using rates for coating flat surfaces with airless type as presented in the TCEQ's document titled Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications. The selected transfer efficiency for coating operations using airless type guns is 80 percent. The transfer efficiency table and references for said table from the TCEQ's document follow.

Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology

Application Equipment	Flat Surface	Table Leg Surface	Bird Cage Surface
Air Atomized	50	15	10
Airless	75-80	10	10
HVLP	65	15	10
Electrostatic Disk	95	90-95	90-95
Electrostatic Airless	80	70	70
Electrostatic Air Atomized	75	65	65

- Air Pollution Engineering Manual, AP-40. 2nd ed., J.A. Danielson, Ed.; Air Pollution Control District of Los Angeles, Environmental Protection Agency, Office of Air and Water Programs, Office of Air Quality Planning and Standards, Research Triangle Park, NC, May 1973
- Air Pollution Engineering Manual. Anthony J. Buonicore and Wayne T. Davis, Ed., Air and Waste Management Association, 1992, p. 362

PM fallout is estimated using rates for Airless type guns in their respective application areas as presented in the TCEQ's document titled Painting Basics and Emissions Calculations for TCEQ Air Quality Permit Applications. The selected fallout factors for painting operations using Airless type guns are 0.9856, 0.9987 and 0.9999 percent for PM₃₀ (PM), PM₁₀ and PM_{2.5} droplet size, respectively. The distribution table from the TCEQ's document is below.

Application Equipment Type	Droplet Fraction Greater than PM ₃₀	Droplet Fraction Greater than PM ₁₀	Droplet Fraction Greater than PM _{2.5}
Air Atomized	0.81	0.94	0.99
Airless	0.9856	0.9987	0.9999
HVLP	0.90	0.90	0.90

**Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology**

Short-Term PM Emissions in Spray Booth (EPN RTO [Stain and Clear Line] and EPN 11)

Short-term PM Emissions = Spray Rate (gal/hr) × Max PM Content (lbs/gal) × (1 – Transfer Efficiency) × (1 – Filter Efficiency) × (1 – Fallout) = lbs PM/hr

Annual PM Emissions in Spray Booth (EPN RTO [Stain and Clear Line] and EPN 11)

Annual PM Emissions = Spray Rate (gal/yr) × Max PM Content (lbs/gal) × (1 – Transfer Efficiency) × (1 – Filter Efficiency) × (1 – Fallout) / 2000 (lb/ton) = tons PM/yr

VOC, ES and PM Emissions – Cleanup

Coating cleanup emissions are based on cleanup solvent/product usage data.

Each coating delivery system is cleaned at the end of each operational shift (typically twice per operational day).

The Stain Line utilizes acetone to clean/clear the coating delivery system. Acetone is pumped through the coating application system and sprayed into the Stain Line Spray Booth onto the conveyor belt. The RTO remains turned on during this cleaning process. Solvent is not collected/recovered during this process. See process description for more details.

Short-term ES Emissions – Stain Line Spray Equipment Cleanup (EPN RTO)

Short-term ES Emissions = Usage Rate (gal/hr) × Max ES Content (lbs/gal) × (1 – VOC Control Efficiency) = lbs ES/hr

Annual ES Emissions – Stain Line Spray Equipment Cleanup (EPN RTO)

Annual ES Emissions = Usage Rate (gal/yr) × Max ES Content (lbs/gal) × (1 – VOC Control Efficiency) / 2,000 (lb/ton) = tons ES/yr

The Clear Line utilizes 'Virgin' Conversion Varnish 30 Sheen with no catalyst to clean/clear the coating delivery system. The virgin varnish is pumped through the coating application system and sprayed into the Clear Line Spray Booth onto the conveyor belt. The RTO remains turned on during this cleaning

Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology

process. Solvent is not collected/recovered during this process. See process description for more details.

Short-term VOC Emissions – Clear Line Spray Equipment Cleanup (EPN RTO)

Short-term VOC Emissions = Usage Rate (gal/hr) × Max VOC Content (lbs/gal) × (1 – VOC Control Efficiency)
= lbs VOC/hr

Annual VOC Emissions – Clear Line Spray Equipment Cleanup (EPN RTO)

Annual VOC Emissions = Usage Rate (gal/yr) × Max VOC Content (lbs/gal) × (1 – VOC Control Efficiency) /
2,000 (lb/ton) = tons VOC/yr

Short-term PM Emissions – Clear Line Spray Equipment Cleanup (EPN RTO)

Short-term PM Emissions = Usage Rate (gal/hr) × Max PM Content (lbs/gal) × (1 – Transfer Efficiency) × (1
– Filter Efficiency) × (1 – Fallout) = lbs PM/hr

Annual PM Emissions – Clear Line Spray Equipment Cleanup (EPN RTO)

Annual PM Emissions = Usage Rate (gal/yr) × Max PM Content (lbs/gal) × ((1 – Transfer Efficiency) × (1 –
Filter Efficiency) × (1 – Fallout) / 2,000 (lb/ton) = tons PM/yr

The Paint Line utilizes acetone and methyl ethyl ketone (MEK) to clean/clear the coating delivery system. Acetone or MEK is pumped through the coating application system and sprayed into the Paint Line Spray Booth onto a conveyor belt paper roll system. Solvent is not collected/recovered during this process. See process description for more details.

Short-term ES Emissions – Paint Line Spray Equipment Cleanup (EPN 11)

Short-term ES Emissions = Usage Rate (gal/hr) × Max ES Content (lbs/gal) = lbs ES/hr

Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology

Annual ES Emissions – Paint Line Spray Equipment Cleanup (EPN 11)

Annual ES Emissions = Usage Rate (gal/yr) × Max ES Content (lbs/gal) / 2,000 (lb/ton) = tons ES/yr

Short-term VOC Emissions – Paint Line Spray Equipment Cleanup (EPN 11)

Short-term VOC Emissions = Usage Rate (gal/hr) × Max VOC Content (lbs/gal) = lbs ES/hr

Annual VOC Emissions – Paint Line Spray Equipment Cleanup (EPN 11)

Annual VOC Emissions = Usage Rate (gal/yr) × Max VOC Content (lbs/gal) / 2,000 (lb/ton) = tons ES/yr

The Stain Line Spray Booth and Clear Line Spray Booth are each equipped with a cleaning system to clean overspray on the spray booth conveyor belt. The cleaning systems consist of a longitudinally removable cleaning trolley, wiping blade, and waste collection container. This cleaning system is located under each spray booth at the exit side of the booth and operates simultaneously with the spray booth (if the booth is in operation, the cleaning trolley/wiping blade is in operation). Spent cleaner collected in the waste collection container is transferred throughout the day to the waste collection area and transferred in to closed containers where it awaits disposal. It is assumed that 95% of spent stain cleaning solvent is collected for waste disposal. Emissions from this cleaning systems are assumed to be fugitive in nature (EPN 10). See process description for additional details.

Short-term VOC Emissions – Stain Line and Clear Line Spray Booth Overspray/Belt Cleaning (EPN 10)

Short-term VOC Emissions = Usage Rate (gal/hr) × Max VOC Content (lbs/gal) × (1 – Captured as Waste) = lbs VOC/hr

Short-term ES Emissions – Stain Line and Clear Line Spray Booth Overspray/Belt Cleaning (EPN 10)

Short-term ES Emissions = Usage Rate (gal/hr) × Max ES Content (lbs/gal) × (1 – Captured as Waste) = lbs ES/hr

Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology

Annual VOC Emissions – Stain Line and Clear Line Spray Booth Overspray/Belt Cleaning (EPN 10)

Annual VOC Emissions = Usage Rate (gal/yr) × Max VOC Content (lbs/gal) × (1 – Captured as Waste) / 2,000 (lb/ton) = tons VOC/yr

Annual ES Emissions – Stain Line and Clear Line Spray Booth Overspray/Belt Cleaning (EPN 10)

Annual ES Emissions = Usage Rate (gal/yr) × Max ES Content (lbs/gal) × (1 – Captured as Waste) / 2,000 (lb/ton) = tons ES/yr

VOC, NO_x, CO, SO₂ and PM Emissions – Sources of Natural Gas Combustion

EPNs RTO, 5, 6, and 8 are sources of emissions from natural gas combustion.

Emission factors for natural gas combustion for these sources have been obtained from AP-42, Section 1.4, 5th Edition, Supplement E and are summarized below. Additionally, the fuel higher heat value (HHV) has been obtained from the same reference (1,020 BTU/SCF).

NO _x Emission Factor (LB/MMSCF)	CO Emission Factor (LB/MMSCF)	TOC Emission Factor (LB/MMSCF)	PM Emission Factor (LB/MMSCF)	SO ₂ Emission Factor (LB/MMSCF)
100	84	11	7.6	0.6

Short-term Emissions

Short-term Emissions (lb/hr) = Firing Rate (MMBtu/hr) / Fuel HHV (Btu/scf) * Emission Factor (lb/MMscf)

Annual Emissions

Annual Emissions (tpy) = Short-term Emissions (lb/hr) * Operating Schedule (hr/yr) / 2,000 (lb/ton)

**Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology**

PM Emissions – Baghouse

Baghouse PM emissions calculations and methodology can be found in the emissions calculations section of this application in Table 11 – EPN 7 – Baghouse Emissions Calculations.

VOC Emissions – Wood Shop Glue

Wood Shop Glue VOC emissions calculations and methodology can be found in the emissions calculations section of this application in Table 12 – EPN 8 – Wood Shop Glue Emissions Calculations.

VOC Emissions – Natural Gas Valve, Connection, and Flange Fugitives

Natural Gas Valve, Connection, and Flange Fugitive VOC emissions calculations and methodology can be found in the emissions calculations section of this application in Table 13 – EPN 9 – Natural Gas Valve, Connection, and Flange Fugitives.

Speciated VOC, ES, and PM Emissions

Short-term VOC, ES, and PM emissions have been speciated in order to facilitate a TCEQ health effects review. Speciated emission rate calculations for the coating and thinning products used at the facility are based on a “Superpaint” and “Superthinner” formulation for each coating line (stain, clear, and paint). A sitewide “Supercleaner” formulation has been developed but has not been utilized as each coating line utilizes specific products for cleaning operations and have been speciated accordingly in Table 6 – Application Equipment Cleanup found in the emissions calculation section of this application.

Speciated data for the formulations have been submitted under separate cover and marked CONFIDENTIAL.

The “Superpaint” and “Superthinner” formulations represent current ingredients that could be contained in an applied coating mixture at the maximum weight percent of that ingredient. As mixed coatings with thinning ratios (which includes addition of catalysts where applicable) have been calculated. Flash-off of volatile emissions for as mixed speciation following the same emissions distribution as previously discussed (distribution between spray booths, open conveyors, and ovens). Refer to Table 18 – Emissions Distributions for Conveyorized Painting Operations, Tables 5A, 5B, and 5C,

Nations Cabinetry, LLC – US 90, San Antonio
Emissions Calculation Notes and Methodology

and Tables 8A, 8B, and 8C in the emissions calculation section of this application for more details.

Additionally, speciated PM emissions are based on PM10 factors (e.g. transfer efficiency, filter efficiency, and fallout).

The speciated emission rates for the as mixed “Superpaint” ingredients are based on assumed maximum application spray rates, maximum ingredient weight percentages, and maximum product densities.

It should be noted that the weight percentages and spray rates used in these calculations are not intended to be enforceable limits. Only the resulting emission rates are intended to be enforceable, and there is intent to vary the weight percentages and application rates as needed to maintain compliance with the emission rates represented in this application.

The short-term speciated VOC, ES, and PM emission rates associated with the coating operations at the facility have been utilized to conduct a site-wide health effects review.

Nations Cabinetry, LLC – US 90, San Antonio Modeling Methodology and Summary

Generic SCREEN3 modeling exercises have been conducted for emission sources and then summed together to conservatively evaluate the total predicted maximum Ground Level Concentrations (GLC_{max}) for simultaneous operations.

The GLC_{max} values have been utilized to evaluate compliance with the National Ambient Air Quality Standards (NAAQS) for criteria Pollutants. The GLC_{max} values have also been utilized to evaluate health effects for each emitting constituent identified in the as mixed “Superpaint” formulations.

Source modeling parameters are summarized in Table 14 – Modeling Input Parameters found in the emissions calculation section of this application.

SCREEN3 modeling results are summarized in Table 15 - Unit Impact Multipliers Using SCREEN3 also found in the emissions calculation section of this application. SCREEN3 runs are also attached to this application.

The worst case estimated short-term emission rate estimated for each species in the as mixed “Superpaint” formulations for the respective emission sources have been multiplied by their respective generic GLC_{max} to determine the predicted short-term GLC_{max} for each species for each EPN/operations. The individual predicted short-term GLC_{max} value for each species has then been summed together and compared to its respective short-term Effects Screening Level (ESL). A summary of review scenarios are as follows:

For simultaneous use of coatings and conveyor belt cleaning (no spray equipment cleanup):

- EPN RTO
- EPN 10
- EPN 11
- EPN Misc.SprayBooth

For simultaneous spray equipment cleanup:

- EPN RTO
- EPN 11.

For simultaneous operations that emit natural gas products of combustion and other criteria pollutants (e.g. PM10 and PM2.5):

Nations Cabinetry, LLC – US 90, San Antonio
Modeling Methodology and Summary

- EPN RTO
- EPN 5
- EPN 6
- EPN 7
- EPN 8
- EPN 11.

Speciated results can be found in Tables 9A and 9B located in the emissions calculation section of this application. For species that have an ESL of “Must Meet NAAQS”, refer to the NAAQS analysis for results. Refer to Table 16 – NAAQS SIL Analysis and Impacts Analysis found in the emissions calculation section of this application. Additionally, refer to Table 17 – Background NAAQS Monitor Values for PM_{2.5} 24-hr and annual, and NO_x 1-hr background concentrations. Background monitor justification can be found in the Emissions Modeling Evaluation Workbook (EMEW).

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
General Information

Date: _____
Permit #: _____

Company Name: _____

EMEW Version No.: Version 2.2

Purpose Statement:

This workbook is completed by the applicant and submitted to the Texas Commission on Environmental Quality (TCEQ), specifically, the Air Dispersion Modeling Team (ADMT) for review. This workbook is a tool available for all projects using SCREEN3 for an impacts review and its use is required starting June 1, 2019. Provide the workbook with the permit application submittal for any Minor New Source Review project requiring a modeling impacts demonstration.

This workbook follows the guidance outlined in the Air Quality Modeling Guidelines (APDG 6232, September 2018) which can be found here:

<https://www.tceq.texas.gov/assets/public/permitting/air/Modeling/guidance/airquality-mod-guidelines6232.pdf>

Workbook Instructions:

1. Save a copy of the workbook to your computer or desktop prior to entering data.
2. Complete all required sections leaving no blanks. You may use the "tab" button or the arrow keys to move to the next available cell. Use "enter" to move down a line. Note: drop-downs are case-sensitive.
3. Fill in the workbook in order, do not skip around as this will cause errors. Use caution if changing a previously entered entry.
4. Not applicable sections of this workbook will be hidden as data is entered. For example, answering "No" to "Is downwash applicable?" will hide these sections of the workbook required only for downwash entry.
5. Email the workbook electronic file (EMEW) and any attachments to the Air Permits Initial Review Team. The subject line should read "Company Name - Permit Number (if known) - NSR Permit Application". Email address:
apirt@tceq.texas.gov
6. If printing the EMEW, follow the directions below to create a workbook header.
7. Printing the EMEW is not required for submitting to the Air Permits Division (APD); however, you may need to print it for sending to the regional offices, local programs, and for public access if notice is required. To print the workbook, follow the instructions below. Please be aware, several sheets contain large amounts of data and caution should be taken if printing, such as the Speciated Emissions sheet.
8. Updates may be necessary throughout the review process. Updated workbooks must be submitted in electronic format to APD. For submittal to regional offices, local programs, or public places you only have to print sheets that had updates. Be sure to change the headers accordingly.

Note: Since this will be part of the permit application, follow the instructions in the Form PI-1 General Application on where to send copies of your EMEW and permit application. The NSR Application Workbook can <https://www.tceq.texas.gov/permitting/air/guidance/newsourcereview/nsrapp-tools.html>

Create Headers Before Printing:

1. Right-click one of the workbook's sheet tabs and "Select All Sheets."
2. Enter the "Page Layout View" by using the navigation ribbon's View > Workbook Views > Page Layout, or by clicking the page layout icon in the lower-right corner of Excel.
3. Add the date, company name, and permit number (if known) to the upper-right header. Note that this may take up to a minute to update your spreadsheet. Select any tab to continue working on the spreadsheet.

Printing Tips:

While APD does not need a hard copy of the full workbook, you may need to print it for sending to the regional offices, local programs, and for public access if notice is required.

1. The default printing setup for each sheet in the workbook is set for the TCEQ preferred format. The print areas are set up to not include the instructions on each sheet.
2. You have access to change all printing settings to fit your needs and printed font size. Some common options include:
 - Change what area you are printing (whole active sheet or a selection);
 - Change the orientation (portrait or landscape);
 - Change the margin size; and
 - Change the scaling (all columns on one sheet, full size, your own custom selection, etc.).

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
General Information

Date: _____

Permit #: _____

Company Name: _____

Acknowledgement:		Select from the drop down:
I acknowledge that I am submitting an authorized TCEQ Electronic Modeling Evaluation Workbook and any necessary attachments. Except for inputting the requested data, I have not changed the TCEQ Electronic Modeling Evaluation Workbook in any way, including but not limited to changing formulas, formatting, content, or protections.		Choose an item
Administrative Information:		
Data Type:	Facility Information:	
Project Number (6 Digits):	307885	
Permit Number:	43104	
Regulated Entity ID (9 Digits):	100542828	
Facility Name:	Nations Cabinetry US90	
Facility Address:	4600 W US Highway 90	
Facility County (select one):	Bexar	
Company Name:	Nations Cabinetry LLC	
Company Contact Name:	Oscar Rodrigez	
Company Contact Number:	210-307-9133	
Company Contact Email:	o.rodriguez@nationscabinetry.com	
Modeling Contact Name:	Natalia Rojas	
Modeling Company Name, as applicable:	BSI EHS Services and Solutions	
Modeling Contact Number:	512-717-9410	
Modeling Contact Email:	natalia.rojas@bsigroup.com	
New/Existing Site (select one):	Existing Site	
Modeling Date (MM/DD/YYYY):	6/30/2020	
UTM Zone (select one):	14	
Sheet Instructions: Indicate in the Table of Contents which sections are applicable and included for this modeling demonstration. Select "X" from the drop down if the item below is included in the workbook. Note: This workbook is only for SCREEN3 analyses. Please use the separate Electronic Modeling Evaluation Workbook (EMEW) for the following air dispersion models: AERSCREEN, ISC/ISCPrime, and/or AERMOD.		
Table of Contents		
Section:	Sheet Title <i>(Click to jump to specific sheet):</i>	Select an X from the dropdown menu if included:
1	General	X
2	Model Options	X
3	Building Downwash	X
4	Flare Source Parameters	
5	Point Source Parameters	X
6	Area Source Parameters	X
7	Volume Source Calculations	X
8	Volume Source Parameters	X
9	Point and Flare Source Emissions	
10	Area Source Emissions	
11	Volume Source Emissions	
12	Speciated Emissions	
13	Intermittent Sources	
14	Modeling Scenarios	X
15	Monitor Calculations	X
16	Background Justification	X
17	Secondary PM2.5 Analysis (MERPs calculations)	
18	NAAQS/State Property Line (SPL) Modeling Results	
19	Unit Impact Multipliers	
20	Health Effects Modeling Results	
21	Modeling File Names	
22	Speciated Chemicals	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
General Information

Date: _____

Permit #: _____

Company Name: _____

Included Attachments Instructions: The following are attachments that must be included with any modeling analysis. If providing the plot plan and area map with the permit application, ensure there is also a copy with the EMEW. The copy can be electronic.	Select an X from the dropdown menu if included:
Plot Plan:	
Instructions: Mark all that apply in the attached plot plan. For larger properties or dense source areas, provide multiple zoomed in plot plans that are legible.	
Property/Fence Lines all visible and marked.	X
North arrow included.	X
Clearly marked scale.	X
All sources and buildings are clearly labeled.	X
Area Map:	
Instructions: Mark all that apply in the attached area map.	
Annotate schools within 3,000ft of source's nearest property line.	X
All property lines are included.	X
Non-industrial receptors are identified.	X
Additional Attachments (as applicable): <i>Note: These are just a few examples of attachments that may need to be included. There may be others depending on the scope of the modeling analysis.</i>	Select an X from the dropdown menu if included:
Single Property Line Designation	
Include Agreement, Order, and map defining each petitioner.	Choose an item
Post Processing using Unit Impact Multipliers (UIMs)	
Include documentation on any calculations used with the UIMs (i.e., Step 3 of the MERA).	X
Modeling Techniques	
Provide documentation on modeling techniques indicated in the workbook.	X
Other Attachments Provide a list in the box below of additional attachments being provided that are not listed above:	
See coatings calculations workbook	X

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Model Options

Date: _____

Permit #: _____

Company Name: _____

I. Project Information

A. Project Overview: In the box below, give a brief Project Overview. To type or insert text in box, double click in the box below. *Please limit your response to 2000 characters.*

This application is proposing to renew and amend NSR amendment 43104. The amendment will cover addition of a coating line (Paint Line) as well as other items. An extended summary of changes is included within the application package.

II. Air Dispersion Modeling Preliminary Information

Instructions: Fill in the information below based on your modeling setup. The selections chosen in this sheet will carry throughout the sheet and workbook. Based on selections below, only portions of the sheet and workbook will be available. Therefore, it is vital the sheet and workbook are filled out in order, do NOT skip around.

For larger text boxes, double click to type or insert text.

A. Building Downwash

Yes ☐ Is downwash applicable? (Select "Yes" or "No")

B. Type of Analyses: (Select "X" in all that apply)

X ☐ Minor NSR NAAQS ☐ State Property Line

X ☐ Health Effects

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Model Options

Date: _____

Permit #: _____

Company Name: _____

C. Constituents Evaluating: (Select "X" in all that apply)

NAAQS: List all pollutants that require an modeling review. (Select "X" in all that apply)

<input checked="" type="checkbox"/>	SO ₂	<input checked="" type="checkbox"/>	PM ₁₀
<input checked="" type="checkbox"/>	CO	<input checked="" type="checkbox"/>	PM _{2.5}
<input type="checkbox"/>	Pb	<input checked="" type="checkbox"/>	NO ₂

Both	Identify which averaging periods are being evaluated for NO ₂ .
------	--

Tier 1: Full Conversion	Identify the 1-hr NO ₂ tier used for SCREEN3.
-------------------------	--

Tier 1: Full Conversion	Identify the annual NO ₂ tier used for SCREEN3.
-------------------------	--

Health Effects: Fill in the Speciated Emissions sheet with all applicable pollutants, CAS numbers, and ESLs.

D. Dispersion Options: Select "X" in the box to select an option. Note: if selecting both options, be sure to explain the reasoning for this in the box below.

<input type="checkbox"/>	Urban
<input checked="" type="checkbox"/>	Rural

Provide justification on the dispersion option selected above in the following box:

The project site is located approximately 7.1 miles west between the interception of I10 and US90 Highway in Bexar County. The building is located in the north section of the property boundary. The areas located in west and south are undeveloped. East site of the property there is an industrial facility. North site of the property is the highway US 90.

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Model Options

Date: _____

Permit #: _____

Company Name: _____

E. Meteorological Data:

Select Meteorological Dataset Modeled:

F. Receptor Grid:

Describe the receptor grid being modeled in the following text box:

Screen 3 was utilized in this modeling exercise. The distance of the receptor grid begins at the property line respective to each emission sources and ranges from 14 meters (m) to 5000 m. The receptor grid starts at 14 m as this is the nearest distance between the property line and an emitting piece of equipment.

G. Terrain:

Select the terrain option being modeled:

For justification on terrain selection, fill in the box below:

There are no significant changes in elevation or thick vegetation surrounding the site.

H. Modeling Techniques: *Briefly describe any modeling techniques used for the SCREEN3 analyses. Provide additional attachments, if needed, to support the analyses.*

The SCREEN 3 modeling techniques include a generic 1 lb/hr emission rate that is adjusted for various factors including: wind speed adjustment factor, fugitive source adjustment factor, proposed emissions rates, 24-hour adjustment factor and annual hours of operation. SCREEN3 was run at stability class Full for each area source.

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Building Downwash

Date: _____

Permit #: _____

Company Name: _____

Facility:[illegible]

Texas Commission on Environmental Quality

Electronic Modeling Evaluation Workbook for SCREEN3

Point Source Parameters

Date: _____

Permit #: _____

Company Name: _____

Facility:[illegible]

Date: _____
Permit #: _____

Company Name: _____

[illegible]

Date: _____
Permit #: _____

Facility:

Page 1

Date: _____
Permit #: _____

Company Name: _____

[illegible]

Texas Commission on Environmental Quality

Permit #: _____

Company Name: _____

[illegible]

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Monitor Calculations

Date: _____
 Permit #: _____

Company Name: _____

Pollutant:	PM_{2.5}			
AQS ID:	480290032	Street Address and City:	6655 Bluebird Lane	
Link to Data Source:	https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors	County:	Bexar	
Select metric for short term averaging time below:	1st Year Concentration (µg/m³)	2nd Year Concentration (µg/m³)	3rd Year (most recent) Concentration (µg/m³)	Calculated Background Concentration (µg/m³)
24-hr 98 percentile	25.00000	18.00000	17.00000	20
Annual Average	8.60000	7.70000	8.20000	8.2

Pollutant:	NO₂			
AQS ID:	480290032	Street Address and City:	6655 Bluebird Lane	
Link to Data Source:	https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors	County:	Bexar	
Select metric for short term averaging time below:	1st Year Concentration (µg/m³)	2nd Year Concentration (µg/m³)	3rd Year (most recent) Concentration (µg/m³)	Calculated Background Concentration (µg/m³)
1-hr 98 percentile	75.20000	75.20000	75.20000	75
Annual Average			11.05000	11

Pollutant:	SO₂			
AQS ID:		Address:		
Link to Data Source:		County:		
Select metric for short term averaging time below:	1st Year Concentration (µg/m³)	2nd Year Concentration (µg/m³)	3rd Year (most recent) Concentration (µg/m³)	Calculated Background Concentration (µg/m³)
Choose an item				0
Choose an item				0
Choose an item				0
Annual Average				0

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Monitor Calculations

Date: _____
 Permit #: _____

Company Name: _____

Pollutant:	PM₁₀			
AQS ID:		Address:		
Link to Data Source:		County:		
<i>Select metric for short term averaging time below:</i>	1st Year Concentration (µg/m³)	2nd Year Concentration (µg/m³)	3rd Year (most recent) Concentration (µg/m³)	Calculated Background Concentration (µg/m³)
<i>Choose an item</i>				0

Pollutant:	CO			
AQS ID:		Address:		
Link to Data Source:		County:		
<i>Select metric for short term averaging time below:</i>	1st Year Concentration (µg/m³)	2nd Year Concentration (µg/m³)	3rd Year (most recent) Concentration (µg/m³)	Calculated Background Concentration (µg/m³)
<i>Choose an item</i>				0
<i>Choose an item</i>				0

Pollutant:	Pb		
AQS ID:		Address:	
Link to Data Source:		County:	
<i>Select metric for short term averaging time below:</i>	Concentration (µg/m³) from 38 Month Sample Period		Calculated Background Concentration (µg/m³)
<i>Choose an item</i>			0

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Background Justification

Date: _____

Permit #: _____

Company Name: _____

Pollutant:	PM_{2.5}
AQS ID:	480290032
County:	Bexar
Distance to Project Site (km):	12.5

Monitor Justification Data

Category:	10 Kilometer PM _{2.5} Emissions Comparison	Types of Nearby Sources	County PM _{2.5} Emissions Comparison	County Population Comparison	Land Use Comparison	Regional Considerations
Project:		Residential neighborhoods, airport			mixed industrial/residential	Rural
Monitor:		Residential neighborhoods			Residential neighborhoods	Rural
Data Source:	TCEQ ADMT					

Additional Information

How are off-property sources accounted for?	
Monitoring data set year(s)/Additional Justification:	

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Background Justification

Date: _____

Permit #: _____

Company Name: _____

Pollutant:	NO₂
AQS ID:	480290032
County:	Bexar
Distance to Project Site (km):	12.5

Monitor Justification Data						
Category:	10 Kilometer NO ₂ Emissions Comparison	Types of Nearby Sources	County NO ₂ Emissions Comparison	County Population Comparison	Land Use Comparison	Regional Considerations
Project:						
Monitor:						
Data Source:						
Additional Information						
How are off-property sources accounted for?						
Monitoring data set year(s)/Additional Justification:						

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Background Justification

Date: _____
 Permit #: _____

Company Name: _____

Pollutant:	SO ₂
AQS ID:	
County:	
Distance to Project Site (km):	

Monitor Justification Data						
Category:	10 Kilometer SO ₂ Emissions Comparison	Types of Nearby Sources	County SO ₂ Emissions Comparison	County Population Comparison	Land Use Comparison	Regional Considerations
Project:						
Monitor:						
Data Source:						
Additional Information						
How are off-property sources accounted for?						
Monitoring data set year(s)/Additional Justification:						

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Background Justification

Date: _____
 Permit #: _____

Company Name: _____

Pollutant:	PM₁₀
AQS ID:	
County:	
Distance to Project Site (km):	

Monitor Justification Data						
Category:	10 Kilometer PM ₁₀ Emissions Comparison	Types of Nearby Sources	County PM ₁₀ Emissions Comparison	County Population Comparison	Land Use Comparison	Regional Considerations
Project:						
Monitor:						
Data Source:						
Additional Information						
How are off-property sources accounted for?						
Monitoring data set year(s)/Additional Justification:						

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Background Justification

Date: _____
 Permit #: _____

Company Name: _____

Pollutant:	CO
AQS ID:	
County:	
Distance to Project Site (km):	

Monitor Justification Data						
Category:	10 Kilometer CO Emissions Comparison	Types of Nearby Sources	County CO Emissions Comparison	County Population Comparison	Land Use Comparison	Regional Considerations
Project:						
Monitor:						
Data Source:						
Additional Information						
How are off-property sources accounted for?						
Monitoring data set year(s)/Additional Justification:						

Texas Commission on Environmental Quality
Electronic Modeling Evaluation Workbook for SCREEN3
Background Justification

Date: _____
 Permit #: _____

Company Name: _____

Pollutant:	Pb
AQS ID:	
County:	
Distance to Project Site (km):	

Monitor Justification Data						
Category:	10 Kilometer Pb Emissions Comparison	Types of Nearby Sources	County Pb Emissions Comparison	County Population Comparison	Land Use Comparison	Regional Considerations
Project:						
Monitor:						
Data Source:						
Additional Information						
How are off-property sources accounted for?						
Monitoring data set year(s)/Additional Justification:						

EPN - RTO

06/29/20
14:12:19

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EPN RTO

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	0.126000
STACK HEIGHT (M)	=	10.6680
STK INSIDE DIAM (M)	=	1.1049
STK EXIT VELOCITY (M/S)	=	10.0066
STK GAS EXIT TEMP (K)	=	326.4278
AMBIENT AIR TEMP (K)	=	293.1500
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	7.6200
MIN HORIZ BLDG DIM (M)	=	93.5736
MAX HORIZ BLDG DIM (M)	=	205.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 3.053 M**4/S**3; MOM. FLUX = 27.445 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
17.	0.6243E-13	6	1.0	1.0	10000.0	46.03	5.33	5.31	NO
100.	19.89	4	8.0	8.1	2560.0	11.73	8.20	6.76	SS
200.	16.26	4	8.0	8.1	2560.0	11.73	15.56	10.46	SS
300.	14.07	4	5.0	5.0	1600.0	14.79	22.61	12.77	SS
400.	11.37	4	4.0	4.0	1280.0	17.64	29.45	15.42	SS
500.	9.530	4	3.5	3.5	1120.0	19.84	36.15	18.30	SS
600.	8.165	4	3.0	3.0	960.0	22.88	42.72	21.21	SS
700.	7.118	4	3.0	3.0	960.0	22.88	49.19	24.03	SS
800.	6.451	4	2.0	2.0	640.0	32.29	55.57	26.78	SS
900.	5.975	4	2.0	2.0	640.0	32.29	61.88	29.47	SS

EPN - RTO

1000.	5.476	4	2.0	2.0	640.0	32.29	68.13	32.09	SS
1100.	5.005	4	2.0	2.0	640.0	32.29	74.31	34.12	SS
1200.	4.585	4	2.0	2.0	640.0	32.29	80.44	36.09	SS
1300.	4.211	4	1.5	1.5	480.0	43.34	87.02	39.13	NO
1400.	3.970	4	1.5	1.5	480.0	43.34	93.02	40.94	NO
1500.	3.755	6	4.0	4.1	10000.0	26.82	49.03	18.62	SS
1600.	3.739	5	1.0	1.0	10000.0	53.47	79.10	31.56	NO
1700.	3.755	5	1.0	1.0	10000.0	53.47	83.48	32.61	NO
1800.	3.752	5	1.0	1.0	10000.0	53.47	87.83	33.64	NO
1900.	3.805	6	1.0	1.0	10000.0	46.03	61.61	23.25	NO
2000.	3.918	6	1.0	1.0	10000.0	46.03	64.47	23.87	NO
2100.	3.975	6	1.0	1.0	10000.0	46.03	67.32	24.40	NO
2200.	4.020	6	1.0	1.0	10000.0	46.03	70.16	24.92	NO
2300.	4.053	6	1.0	1.0	10000.0	46.03	72.98	25.43	NO
2400.	4.075	6	1.0	1.0	10000.0	46.03	75.80	25.94	NO
2500.	4.089	6	1.0	1.0	10000.0	46.03	78.60	26.43	NO
2600.	4.094	6	1.0	1.0	10000.0	46.03	81.39	26.92	NO
2700.	4.092	6	1.0	1.0	10000.0	46.03	84.18	27.40	NO
2800.	4.084	6	1.0	1.0	10000.0	46.03	86.95	27.88	NO
2900.	4.071	6	1.0	1.0	10000.0	46.03	89.72	28.34	NO
3000.	4.053	6	1.0	1.0	10000.0	46.03	92.48	28.81	NO
3500.	3.858	6	1.0	1.0	10000.0	46.03	106.13	30.69	NO
4000.	3.646	6	1.0	1.0	10000.0	46.03	119.60	32.45	NO
4500.	3.434	6	1.0	1.0	10000.0	46.03	132.89	34.10	NO
5000.	3.231	6	1.0	1.0	10000.0	46.03	146.02	35.67	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 17. M:

77.	20.72	4	10.0	10.1	3200.0	11.00	6.51	6.25	SS
-----	-------	---	------	------	--------	-------	------	------	----

DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
281.	14.64	4	5.0	5.0	1600.0	14.79	21.28	12.15	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

EPN - RTO

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, $X < 3 \times LB$

*** REGULATORY (Default) ***

PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 46.45
ALONGWIND DIM (M) = 93.57

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 40.23
ALONGWIND DIM (M) = 205.50

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

END OF CAVITY CALCULATIONS

*** INVERSION BREAK-UP FUMIGATION CALC. ***

CONC (UG/M**3) = 0.000
DIST TO MAX (M) = 776.61

DIST TO MAX IS < 2000. M. CONC SET = 0.0

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
-----	-----	-----	-----
SIMPLE TERRAIN	20.72	77.	0.

EPN - 5 Boiler

06/29/20
14:10:18

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EPN5 - Boiler

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = 0.126000
STACK HEIGHT (M) = 8.4582
STK INSIDE DIAM (M) = 1.0668
STK EXIT VELOCITY (M/S) = 9.9792
STK GAS EXIT TEMP (K) = 293.1500
AMBIENT AIR TEMP (K) = 293.1500
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = RURAL
BUILDING HEIGHT (M) = 7.6200
MIN HORIZ BLDG DIM (M) = 93.5736
MAX HORIZ BLDG DIM (M) = 205.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 28.333 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
25.	70.36	4	8.0	8.0	2560.0	8.55	2.26	4.28	SS
100.	77.07	6	4.0	4.0	10000.0	10.72	4.07	5.80	SS
200.	59.62	6	4.0	4.0	10000.0	10.72	7.73	7.22	SS
300.	47.58	6	4.0	4.0	10000.0	10.72	11.23	8.56	SS
400.	38.45	6	4.0	4.0	10000.0	10.72	14.64	9.84	SS
500.	32.23	6	3.5	3.5	10000.0	11.87	17.97	10.70	SS
600.	27.54	6	3.5	3.5	10000.0	11.87	21.24	11.42	SS
700.	23.90	6	3.5	3.5	10000.0	11.87	24.46	12.45	SS
800.	23.14	6	1.0	1.0	10000.0	22.54	27.93	12.63	NO
900.	24.02	6	1.0	1.0	10000.0	22.54	31.04	13.59	NO

EPN - 5 Boiler

1000.	24.26	6	1.0	1.0	10000.0	22.54	34.12	14.52	NO
1100.	23.91	6	1.0	1.0	10000.0	22.54	37.18	15.36	NO
1200.	23.33	6	1.0	1.0	10000.0	22.54	40.22	16.17	NO
1300.	22.61	6	1.0	1.0	10000.0	22.54	43.23	16.96	NO
1400.	21.80	6	1.0	1.0	10000.0	22.54	46.22	17.72	NO
1500.	20.96	6	1.0	1.0	10000.0	22.54	49.20	18.47	NO
1600.	20.11	6	1.0	1.0	10000.0	22.54	52.15	19.21	NO
1700.	19.27	6	1.0	1.0	10000.0	22.54	55.09	19.93	NO
1800.	18.45	6	1.0	1.0	10000.0	22.54	58.01	20.63	NO
1900.	17.66	6	1.0	1.0	10000.0	22.54	60.91	21.32	NO
2000.	16.90	6	1.0	1.0	10000.0	22.54	63.80	22.00	NO
2100.	16.18	6	1.0	1.0	10000.0	22.54	66.68	22.57	NO
2200.	15.51	6	1.0	1.0	10000.0	22.54	69.54	23.13	NO
2300.	14.87	6	1.0	1.0	10000.0	22.54	72.39	23.68	NO
2400.	14.27	6	1.0	1.0	10000.0	22.54	75.23	24.22	NO
2500.	13.71	6	1.0	1.0	10000.0	22.54	78.05	24.75	NO
2600.	13.18	6	1.0	1.0	10000.0	22.54	80.86	25.27	NO
2700.	12.69	6	1.0	1.0	10000.0	22.54	83.67	25.79	NO
2800.	12.22	6	1.0	1.0	10000.0	22.54	86.46	26.29	NO
2900.	11.77	6	1.0	1.0	10000.0	22.54	89.24	26.79	NO
3000.	11.36	6	1.0	1.0	10000.0	22.54	92.01	27.27	NO
3500.	9.635	6	1.0	1.0	10000.0	22.54	105.73	29.26	NO
4000.	8.317	6	1.0	1.0	10000.0	22.54	119.24	31.10	NO
4500.	7.281	6	1.0	1.0	10000.0	22.54	132.56	32.82	NO
5000.	6.450	6	1.0	1.0	10000.0	22.54	145.73	34.44	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 25. M:

74.	78.57	5	5.0	5.0	10000.0	9.54	4.69	5.91	SS
-----	-------	---	-----	-----	---------	------	------	------	----

DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
857.	23.73	6	1.0	1.0	10000.0	22.54	29.70	13.18	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

EPN - 5 Boiler

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, $X < 3 \times LB$

*** REGULATORY (Default) ***

PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3) = 6.483
CRIT WS @10M (M/S) = 16.55
CRIT WS @ HS (M/S) = 16.55
DILUTION WS (M/S) = 8.27
CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 46.45
ALONGWIND DIM (M) = 93.57

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3) = 14.24
CRIT WS @10M (M/S) = 16.55
CRIT WS @ HS (M/S) = 16.55
DILUTION WS (M/S) = 8.27
CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 40.23
ALONGWIND DIM (M) = 205.50

END OF CAVITY CALCULATIONS

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
-----	-----	-----	-----
SIMPLE TERRAIN	78.57	74.	0.
BLDG. CAVITY-1	6.483	46.	-- (DIST = CAVITY LENGTH)
BLDG. CAVITY-2	14.24	40.	-- (DIST = CAVITY LENGTH)

EPN 7 - Baghouse

06/29/20
14:13:25

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EPN 7 - Baghouse

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = 0.126000
STACK HEIGHT (M) = 10.6680
STK INSIDE DIAM (M) = 1.5240
STK EXIT VELOCITY (M/S) = 18.1051
STK GAS EXIT TEMP (K) = 299.8167
AMBIENT AIR TEMP (K) = 293.1500
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = RURAL
BUILDING HEIGHT (M) = 7.6200
MIN HORIZ BLDG DIM (M) = 93.5736
MAX HORIZ BLDG DIM (M) = 205.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 2.292 M**4/S**3; MOM. FLUX = 186.100 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
14.	0.8996E-02	6	1.0	1.0	10000.0	42.81	9.21	9.20	NO
100.	10.18	4	15.0	15.1	4800.0	11.50	8.20	6.44	SS
200.	9.209	4	10.0	10.1	3200.0	13.68	15.56	9.22	SS
300.	7.719	4	10.0	10.1	3200.0	13.68	22.61	12.48	SS
400.	6.317	4	8.0	8.1	2560.0	16.13	29.45	15.27	SS
500.	5.104	4	5.0	5.0	1600.0	23.94	36.15	18.30	SS
600.	4.665	4	4.5	4.5	1440.0	25.74	42.72	21.21	SS
700.	4.262	4	4.0	4.0	1280.0	27.99	49.19	24.03	SS
800.	3.864	4	4.0	4.0	1280.0	27.99	55.57	26.78	SS
900.	3.468	4	4.0	4.0	1280.0	27.99	61.88	29.47	SS

EPN 7 - Baghouse

1000.	3.872	5	1.0	1.0	10000.0	49.57	52.14	24.32	NO
1100.	4.109	5	1.0	1.0	10000.0	49.57	56.67	25.52	NO
1200.	4.280	5	1.0	1.0	10000.0	49.57	61.17	26.69	NO
1300.	4.395	5	1.0	1.0	10000.0	49.57	65.65	27.84	NO
1400.	4.463	5	1.0	1.0	10000.0	49.57	70.10	28.96	NO
1500.	4.494	5	1.0	1.0	10000.0	49.57	74.53	30.06	NO
1600.	4.494	5	1.0	1.0	10000.0	49.57	78.94	31.14	NO
1700.	4.493	6	1.0	1.0	10000.0	42.81	55.70	21.57	NO
1800.	4.646	6	1.0	1.0	10000.0	42.81	58.59	22.22	NO
1900.	4.771	6	1.0	1.0	10000.0	42.81	61.47	22.86	NO
2000.	4.869	6	1.0	1.0	10000.0	42.81	64.33	23.50	NO
2100.	4.905	6	1.0	1.0	10000.0	42.81	67.19	24.03	NO
2200.	4.927	6	1.0	1.0	10000.0	42.81	70.03	24.56	NO
2300.	4.935	6	1.0	1.0	10000.0	42.81	72.86	25.08	NO
2400.	4.932	6	1.0	1.0	10000.0	42.81	75.68	25.59	NO
2500.	4.920	6	1.0	1.0	10000.0	42.81	78.49	26.09	NO
2600.	4.899	6	1.0	1.0	10000.0	42.81	81.29	26.59	NO
2700.	4.871	6	1.0	1.0	10000.0	42.81	84.07	27.08	NO
2800.	4.838	6	1.0	1.0	10000.0	42.81	86.85	27.56	NO
2900.	4.799	6	1.0	1.0	10000.0	42.81	89.62	28.03	NO
3000.	4.757	6	1.0	1.0	10000.0	42.81	92.38	28.50	NO
3500.	4.454	6	1.0	1.0	10000.0	42.81	106.05	30.40	NO
4000.	4.153	6	1.0	1.0	10000.0	42.81	119.52	32.17	NO
4500.	3.869	6	1.0	1.0	10000.0	42.81	132.82	33.84	NO
5000.	3.606	6	1.0	1.0	10000.0	42.81	145.96	35.42	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 14. M:

124.	10.60	4	15.0	15.1	4800.0	11.50	10.08	7.39	SS
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DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
840.	3.703	4	4.0	4.0	1280.0	27.99	58.11	27.86	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

EPN 7 - Baghouse

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, $X < 3 \times LB$

*** REGULATORY (Default) ***

PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 46.45
ALONGWIND DIM (M) = 93.57

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 40.23
ALONGWIND DIM (M) = 205.50

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

END OF CAVITY CALCULATIONS

*** INVERSION BREAK-UP FUMIGATION CALC. ***

CONC (UG/M**3) = 0.000
DIST TO MAX (M) = 644.71

DIST TO MAX IS < 2000. M. CONC SET = 0.0

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
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SIMPLE TERRAIN	10.60	124.	0.

EPN6 - Makeup air heater Area

06/29/20
21:42:31

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EPN 6 - Makeup Air Heater

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.762710E-02
SOURCE HEIGHT (M) = 3.8100
LENGTH OF LARGER SIDE (M) = 5.6754
LENGTH OF SMALLER SIDE (M) = 2.9108
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = RURAL

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
19.	958.8	1	1.0	1.0	320.0	3.81	1.
100.	1083.	6	1.0	1.0	10000.0	3.81	0.
200.	817.3	6	1.0	1.0	10000.0	3.81	0.
300.	502.6	6	1.0	1.0	10000.0	3.81	0.
400.	335.1	6	1.0	1.0	10000.0	3.81	0.
500.	239.3	6	1.0	1.0	10000.0	3.81	0.
600.	180.1	6	1.0	1.0	10000.0	3.81	0.
700.	140.9	6	1.0	1.0	10000.0	3.81	0.
800.	114.9	6	1.0	1.0	10000.0	3.81	0.
900.	95.93	6	1.0	1.0	10000.0	3.81	0.
1000.	81.54	6	1.0	1.0	10000.0	3.81	0.
1100.	70.67	6	1.0	1.0	10000.0	3.81	0.
1200.	62.00	6	1.0	1.0	10000.0	3.81	0.
1300.	54.95	6	1.0	1.0	10000.0	3.81	0.

EPN6 - Makeup air heater Area

1400.	49.13	6	1.0	1.0	10000.0	3.81	0.
1500.	44.26	6	1.0	1.0	10000.0	3.81	0.
1600.	40.14	6	1.0	1.0	10000.0	3.81	0.
1700.	36.61	6	1.0	1.0	10000.0	3.81	0.
1800.	33.57	6	1.0	1.0	10000.0	3.81	0.
1900.	30.93	6	1.0	1.0	10000.0	3.81	0.
2000.	28.61	6	1.0	1.0	10000.0	3.81	0.
2100.	26.67	6	1.0	1.0	10000.0	3.81	0.
2200.	24.95	6	1.0	1.0	10000.0	3.81	0.
2300.	23.40	6	1.0	1.0	10000.0	3.81	0.
2400.	22.02	6	1.0	1.0	10000.0	3.81	0.
2500.	20.76	6	1.0	1.0	10000.0	3.81	0.
2600.	19.62	6	1.0	1.0	10000.0	3.81	0.
2700.	18.59	6	1.0	1.0	10000.0	3.81	0.
2800.	17.64	6	1.0	1.0	10000.0	3.81	0.
2900.	16.77	6	1.0	1.0	10000.0	3.81	0.
3000.	15.98	6	1.0	1.0	10000.0	3.81	0.
3500.	12.96	6	1.0	1.0	10000.0	3.81	0.
4000.	10.81	6	1.0	1.0	10000.0	3.81	0.
4500.	9.208	6	1.0	1.0	10000.0	3.81	0.
5000.	7.980	6	1.0	1.0	10000.0	3.81	0.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 19. M:

71.	1188.	5	1.0	1.0	10000.0	3.81	1.
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*** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
290.	525.6	6	1.0	1.0	10000.0	3.81	0.

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1188.	71.	0.

EPN8 - Space Heater Volume

06/30/20
20:58:54

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EPN8 - Space Heaters Volume

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	VOLUME
EMISSION RATE (G/S)	=	0.126000
SOURCE HEIGHT (M)	=	3.8100
INIT. LATERAL DIMEN (M)	=	11.4800
INIT. VERTICAL DIMEN (M)	=	3.5400
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
21.	0.000	0	0.0	0.0	0.0	0.00	0.00	0.00	
100.	398.7	6	1.0	1.0	10000.0	3.81	14.89	5.12	NO
200.	283.0	6	1.0	1.0	10000.0	3.81	18.22	6.58	NO
300.	209.4	6	1.0	1.0	10000.0	3.81	21.48	7.95	NO
400.	161.2	6	1.0	1.0	10000.0	3.81	24.70	9.26	NO
500.	128.1	6	1.0	1.0	10000.0	3.81	27.88	10.51	NO
600.	108.1	6	1.0	1.0	10000.0	3.81	31.01	11.30	NO
700.	90.88	6	1.0	1.0	10000.0	3.81	34.12	12.33	NO
800.	77.68	6	1.0	1.0	10000.0	3.81	37.20	13.32	NO
900.	68.24	6	1.0	1.0	10000.0	3.81	40.25	14.08	NO
1000.	60.05	6	1.0	1.0	10000.0	3.81	43.27	14.94	NO
1100.	53.36	6	1.0	1.0	10000.0	3.81	46.27	15.78	NO
1200.	47.82	6	1.0	1.0	10000.0	3.81	49.26	16.58	NO
1300.	43.16	6	1.0	1.0	10000.0	3.81	52.22	17.37	NO
1400.	39.21	6	1.0	1.0	10000.0	3.81	55.16	18.14	NO

EPN8 - Space Heater Volume

1500.	35.82	6	1.0	1.0	10000.0	3.81	58.09	18.89	NO
1600.	32.89	6	1.0	1.0	10000.0	3.81	61.00	19.62	NO
1700.	30.33	6	1.0	1.0	10000.0	3.81	63.90	20.33	NO
1800.	28.09	6	1.0	1.0	10000.0	3.81	66.78	21.04	NO
1900.	26.44	6	1.0	1.0	10000.0	3.81	69.64	21.44	NO
2000.	24.72	6	1.0	1.0	10000.0	3.81	72.49	22.05	NO
2100.	23.20	6	1.0	1.0	10000.0	3.81	75.33	22.62	NO
2200.	21.83	6	1.0	1.0	10000.0	3.81	78.16	23.19	NO
2300.	20.60	6	1.0	1.0	10000.0	3.81	80.98	23.74	NO
2400.	19.48	6	1.0	1.0	10000.0	3.81	83.78	24.28	NO
2500.	18.46	6	1.0	1.0	10000.0	3.81	86.58	24.81	NO
2600.	17.52	6	1.0	1.0	10000.0	3.81	89.36	25.33	NO
2700.	16.66	6	1.0	1.0	10000.0	3.81	92.13	25.84	NO
2800.	15.88	6	1.0	1.0	10000.0	3.81	94.90	26.34	NO
2900.	15.15	6	1.0	1.0	10000.0	3.81	97.65	26.84	NO
3000.	14.58	6	1.0	1.0	10000.0	3.81	100.40	27.13	NO
3500.	11.98	6	1.0	1.0	10000.0	3.81	113.99	29.13	NO
4000.	10.09	6	1.0	1.0	10000.0	3.81	127.39	30.97	NO
4500.	8.663	6	1.0	1.0	10000.0	3.81	140.62	32.70	NO
5000.	7.555	6	1.0	1.0	10000.0	3.81	153.70	34.33	NO
5500.	6.672	6	1.0	1.0	10000.0	3.81	166.64	35.87	NO
6000.	5.954	6	1.0	1.0	10000.0	3.81	179.45	37.34	NO
6500.	5.361	6	1.0	1.0	10000.0	3.81	192.14	38.75	NO
7000.	4.870	6	1.0	1.0	10000.0	3.81	204.72	40.05	NO
7500.	4.462	6	1.0	1.0	10000.0	3.81	217.21	41.21	NO
8000.	4.111	6	1.0	1.0	10000.0	3.81	229.60	42.33	NO
8500.	3.806	6	1.0	1.0	10000.0	3.81	241.90	43.40	NO
9000.	3.538	6	1.0	1.0	10000.0	3.81	254.11	44.44	NO
9500.	3.303	6	1.0	1.0	10000.0	3.81	266.25	45.45	NO
10000.	3.094	6	1.0	1.0	10000.0	3.81	278.32	46.42	NO
15000.	1.843	6	1.0	1.0	10000.0	3.81	395.48	54.89	NO
20000.	1.307	6	1.0	1.0	10000.0	3.81	507.74	60.30	NO
25000.	1.002	6	1.0	1.0	10000.0	3.81	616.34	64.86	NO
30000.	0.8057	6	1.0	1.0	10000.0	3.81	722.01	68.84	NO
40000.	0.5804	6	1.0	1.0	10000.0	3.81	926.39	74.49	NO
50000.	0.4503	6	1.0	1.0	10000.0	3.81	1123.39	79.19	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 21. M:

26.	514.5	6	1.0	1.0	10000.0	3.81	12.42	4.00	NO
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DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SCREEN DISCRETE DISTANCES ***

EPN8 - Space Heater Volume

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
271.	227.6	6	1.0	1.0	10000.0	3.81	20.54	7.55	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	514.5	26.	0.

EPN 10 - Spray Room Finish Department Fugitives Volume

06/30/20
20:59:44

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EPN10 - Paint Fugitive Volume

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	VOLUME
EMISSION RATE (G/S)	=	0.126000
SOURCE HEIGHT (M)	=	3.8100
INIT. LATERAL DIMEN (M)	=	12.7600
INIT. VERTICAL DIMEN (M)	=	3.5400
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	RURAL

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BOUY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
44.	443.0	6	1.0	1.0	10000.0	3.81	14.25	4.25	NO
100.	367.8	6	1.0	1.0	10000.0	3.81	16.15	5.12	NO
200.	265.1	6	1.0	1.0	10000.0	3.81	19.45	6.58	NO
300.	198.2	6	1.0	1.0	10000.0	3.81	22.69	7.95	NO
400.	153.7	6	1.0	1.0	10000.0	3.81	25.90	9.26	NO
500.	122.9	6	1.0	1.0	10000.0	3.81	29.06	10.51	NO
600.	104.2	6	1.0	1.0	10000.0	3.81	32.18	11.30	NO
700.	87.90	6	1.0	1.0	10000.0	3.81	35.28	12.33	NO
800.	75.36	6	1.0	1.0	10000.0	3.81	38.34	13.32	NO
900.	66.36	6	1.0	1.0	10000.0	3.81	41.38	14.08	NO
1000.	58.52	6	1.0	1.0	10000.0	3.81	44.40	14.94	NO
1100.	52.10	6	1.0	1.0	10000.0	3.81	47.40	15.78	NO
1200.	46.76	6	1.0	1.0	10000.0	3.81	50.37	16.58	NO
1300.	42.27	6	1.0	1.0	10000.0	3.81	53.33	17.37	NO
1400.	38.44	6	1.0	1.0	10000.0	3.81	56.26	18.14	NO

EPN 10 - Spray Room Finish Department Fugitives Volume

1500.	35.16	6	1.0	1.0	10000.0	3.81	59.18	18.89	NO
1600.	32.31	6	1.0	1.0	10000.0	3.81	62.09	19.62	NO
1700.	29.83	6	1.0	1.0	10000.0	3.81	64.98	20.33	NO
1800.	27.64	6	1.0	1.0	10000.0	3.81	67.85	21.04	NO
1900.	26.04	6	1.0	1.0	10000.0	3.81	70.71	21.44	NO
2000.	24.36	6	1.0	1.0	10000.0	3.81	73.56	22.05	NO
2100.	22.88	6	1.0	1.0	10000.0	3.81	76.40	22.62	NO
2200.	21.54	6	1.0	1.0	10000.0	3.81	79.22	23.19	NO
2300.	20.33	6	1.0	1.0	10000.0	3.81	82.03	23.74	NO
2400.	19.24	6	1.0	1.0	10000.0	3.81	84.83	24.28	NO
2500.	18.24	6	1.0	1.0	10000.0	3.81	87.62	24.81	NO
2600.	17.32	6	1.0	1.0	10000.0	3.81	90.40	25.33	NO
2700.	16.48	6	1.0	1.0	10000.0	3.81	93.17	25.84	NO
2800.	15.70	6	1.0	1.0	10000.0	3.81	95.93	26.34	NO
2900.	14.99	6	1.0	1.0	10000.0	3.81	98.68	26.84	NO
3000.	14.43	6	1.0	1.0	10000.0	3.81	101.42	27.13	NO
3500.	11.87	6	1.0	1.0	10000.0	3.81	115.00	29.13	NO
4000.	10.01	6	1.0	1.0	10000.0	3.81	128.39	30.97	NO
4500.	8.603	6	1.0	1.0	10000.0	3.81	141.61	32.70	NO
5000.	7.507	6	1.0	1.0	10000.0	3.81	154.67	34.33	NO
5500.	6.634	6	1.0	1.0	10000.0	3.81	167.60	35.87	NO
6000.	5.923	6	1.0	1.0	10000.0	3.81	180.40	37.34	NO
6500.	5.335	6	1.0	1.0	10000.0	3.81	193.09	38.75	NO
7000.	4.847	6	1.0	1.0	10000.0	3.81	205.66	40.05	NO
7500.	4.443	6	1.0	1.0	10000.0	3.81	218.14	41.21	NO
8000.	4.094	6	1.0	1.0	10000.0	3.81	230.52	42.33	NO
8500.	3.791	6	1.0	1.0	10000.0	3.81	242.82	43.40	NO
9000.	3.526	6	1.0	1.0	10000.0	3.81	255.03	44.44	NO
9500.	3.292	6	1.0	1.0	10000.0	3.81	267.16	45.45	NO
10000.	3.084	6	1.0	1.0	10000.0	3.81	279.22	46.42	NO
15000.	1.839	6	1.0	1.0	10000.0	3.81	396.34	54.89	NO
20000.	1.305	6	1.0	1.0	10000.0	3.81	508.57	60.30	NO
25000.	1.000	6	1.0	1.0	10000.0	3.81	617.14	64.86	NO
30000.	0.8049	6	1.0	1.0	10000.0	3.81	722.80	68.84	NO
40000.	0.5800	6	1.0	1.0	10000.0	3.81	927.14	74.49	NO
50000.	0.4500	6	1.0	1.0	10000.0	3.81	1124.12	79.19	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 44. M:

44.	443.0	6	1.0	1.0	10000.0	3.81	14.25	4.25	NO
-----	-------	---	-----	-----	---------	------	-------	------	----

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SCREEN DISCRETE DISTANCES ***

EPN 10 - Spray Room Finish Department Fugitives Volume

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
575.	109.1	6	1.0	1.0	10000.0	3.81	31.39	11.03	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	443.0	44.	0.

EPN 11 - Paint Line

06/30/20
13:50:22

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EPN 11 - Paint Line

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = 0.126000
STACK HEIGHT (M) = 14.3256
STK INSIDE DIAM (M) = 0.6401
STK EXIT VELOCITY (M/S) = 19.8599
STK GAS EXIT TEMP (K) = 338.7056
AMBIENT AIR TEMP (K) = 293.1500
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = RURAL
BUILDING HEIGHT (M) = 7.6200
MIN HORIZ BLDG DIM (M) = 93.5736
MAX HORIZ BLDG DIM (M) = 205.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BOUY. FLUX = 2.683 M**4/S**3; MOM. FLUX = 34.967 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
40.	5.143	4	20.0	21.1	6400.0	15.30	3.51	6.48	HS
100.	8.558	4	8.0	8.4	2560.0	19.65	8.34	10.12	HS
200.	7.708	4	8.0	8.4	2560.0	19.65	15.64	13.35	HS
300.	6.880	3	3.0	3.1	960.0	28.77	34.54	20.74	NO
400.	6.568	3	2.0	2.1	640.0	35.99	45.08	27.16	NO
500.	6.046	3	1.5	1.6	480.0	43.21	55.39	33.47	NO
600.	5.756	4	2.5	2.6	800.0	31.35	42.99	21.76	NO
700.	5.539	4	2.5	2.6	800.0	31.35	49.43	24.52	NO
800.	5.341	4	2.0	2.1	640.0	35.60	55.90	27.46	NO
900.	5.042	4	2.0	2.1	640.0	35.60	62.18	30.09	NO

EPN 11 - Paint Line

1000.	4.855	4	1.5	1.6	480.0	42.70	68.61	33.10	NO
1100.	4.606	4	1.5	1.6	480.0	42.70	74.75	35.07	NO
1200.	4.352	4	1.5	1.6	480.0	42.70	80.85	36.99	NO
1300.	4.102	4	1.5	1.6	480.0	42.70	86.90	38.86	NO
1400.	3.864	4	1.5	1.6	480.0	42.70	92.91	40.67	NO
1500.	3.736	4	1.0	1.1	320.0	56.88	99.29	43.41	NO
1600.	3.616	4	1.0	1.1	320.0	56.88	105.20	45.11	NO
1700.	3.492	4	1.0	1.1	320.0	56.88	111.07	46.78	NO
1800.	3.367	4	1.0	1.1	320.0	56.88	116.92	48.41	NO
1900.	3.259	5	1.0	1.1	10000.0	53.94	92.05	34.34	NO
2000.	3.241	5	1.0	1.1	10000.0	53.94	96.37	35.35	NO
2100.	3.203	5	1.0	1.1	10000.0	53.94	100.67	36.25	NO
2200.	3.207	6	1.0	1.2	10000.0	46.42	70.03	24.56	NO
2300.	3.248	6	1.0	1.2	10000.0	46.42	72.86	25.08	NO
2400.	3.279	6	1.0	1.2	10000.0	46.42	75.68	25.59	NO
2500.	3.301	6	1.0	1.2	10000.0	46.42	78.49	26.09	NO
2600.	3.316	6	1.0	1.2	10000.0	46.42	81.28	26.58	NO
2700.	3.325	6	1.0	1.2	10000.0	46.42	84.07	27.07	NO
2800.	3.327	6	1.0	1.2	10000.0	46.42	86.85	27.55	NO
2900.	3.324	6	1.0	1.2	10000.0	46.42	89.62	28.02	NO
3000.	3.317	6	1.0	1.2	10000.0	46.42	92.38	28.49	NO
3500.	3.182	6	1.0	1.2	10000.0	46.42	106.05	30.40	NO
4000.	3.023	6	1.0	1.2	10000.0	46.42	119.52	32.17	NO
4500.	2.858	6	1.0	1.2	10000.0	46.42	132.82	33.84	NO
5000.	2.697	6	1.0	1.2	10000.0	46.42	145.96	35.41	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 40. M:

77.	9.354	4	8.0	8.4	2560.0	19.13	6.66	9.31	HS
-----	-------	---	-----	-----	--------	-------	------	------	----

DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1022.	4.800	4	1.5	1.6	480.0	42.70	69.99	33.55	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)

DWASH=NO MEANS NO BUILDING DOWNWASH USED

EPN 11 - Paint Line

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** REGULATORY (Default) ***

PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 46.45
ALONGWIND DIM (M) = 93.57

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 40.23
ALONGWIND DIM (M) = 205.50

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

END OF CAVITY CALCULATIONS

*** INVERSION BREAK-UP FUMIGATION CALC. ***

CONC (UG/M**3) = 0.000
DIST TO MAX (M) = 846.16

DIST TO MAX IS < 2000. M. CONC SET = 0.0

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
-----	-----	-----	-----
SIMPLE TERRAIN	9.354	77.	0.

*** SCREEN3 MODEL RUN ***
 *** VERSION DATED 13043 ***

EPN Miscellaneous Spray Booth

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
 EMISSION RATE (G/S) = 0.126000
 STACK HEIGHT (M) = 9.4488
 STK INSIDE DIAM (M) = 0.6096
 STK EXIT VELOCITY (M/S) = 9.8269
 STK GAS EXIT TEMP (K) = 299.8167
 AMBIENT AIR TEMP (K) = 293.1500
 RECEPTOR HEIGHT (M) = 0.0000
 URBAN/RURAL OPTION = RURAL
 BUILDING HEIGHT (M) = 7.6200
 MIN HORIZ BLDG DIM (M) = 93.5736
 MAX HORIZ BLDG DIM (M) = 205.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 0.199 M**4/S**3; MOM. FLUX = 8.772 M**4/S**2.

*** FULL METEOROLOGY ***

 *** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
24.	52.01	6	4.0	4.0	10000.0	9.79	1.07	3.49	SS
100.	107.9	6	4.0	4.0	10000.0	10.06	4.07	6.25	SS
200.	54.57	6	4.0	4.0	10000.0	11.51	7.73	7.63	SS
300.	41.14	6	3.5	3.5	10000.0	12.57	11.23	8.68	SS
400.	36.72	6	3.0	3.0	10000.0	13.25	14.64	9.61	SS
500.	33.64	6	2.5	2.5	10000.0	14.25	17.97	10.41	SS
600.	30.01	6	2.5	2.5	10000.0	14.25	21.24	11.18	SS
700.	28.30	6	2.0	2.0	10000.0	15.77	24.46	11.73	SS
800.	26.47	6	2.0	2.0	10000.0	15.77	27.63	12.74	SS
900.	24.95	6	1.5	1.5	10000.0	18.31	30.78	13.09	SS

EPN Misc.SprayBooth									
1000.	23.91	6	1.5	1.5	10000.0	18.31	33.88	13.95	SS
1100.	22.76	6	1.5	1.5	10000.0	18.31	36.96	14.82	SS
1200.	21.54	6	1.5	1.5	10000.0	18.31	40.01	15.66	SS
1300.	20.33	6	1.5	1.5	10000.0	18.31	43.04	16.47	SS
1400.	19.56	6	1.0	1.0	10000.0	23.77	46.05	17.26	SS
1500.	19.03	6	1.0	1.0	10000.0	23.77	49.03	18.03	SS
1600.	18.44	6	1.0	1.0	10000.0	23.77	51.99	18.78	SS
1700.	17.82	6	1.0	1.0	10000.0	23.77	54.94	19.52	SS
1800.	17.18	6	1.0	1.0	10000.0	23.77	57.87	20.23	SS
1900.	16.55	6	1.0	1.0	10000.0	23.77	60.78	20.94	SS
2000.	15.92	6	1.0	1.0	10000.0	23.77	63.68	21.63	SS
2100.	15.31	6	1.0	1.0	10000.0	23.77	66.56	22.21	SS
2200.	14.72	6	1.0	1.0	10000.0	23.77	69.42	22.78	SS
2300.	14.16	6	1.0	1.0	10000.0	23.77	72.28	23.34	SS
2400.	13.63	6	1.0	1.0	10000.0	23.77	75.12	23.89	SS
2500.	13.12	6	1.0	1.0	10000.0	23.77	77.95	24.42	SS
2600.	12.64	6	1.0	1.0	10000.0	23.77	80.76	24.95	SS
2700.	12.19	6	1.0	1.0	10000.0	23.77	83.57	25.47	SS
2800.	11.76	6	1.0	1.0	10000.0	23.77	86.37	25.98	SS
2900.	11.36	6	1.0	1.0	10000.0	23.77	89.15	26.48	SS
3000.	10.97	6	1.0	1.0	10000.0	23.77	91.92	26.98	SS
3500.	9.358	6	1.0	1.0	10000.0	23.77	105.65	28.98	SS
4000.	8.110	6	1.0	1.0	10000.0	23.77	119.17	30.84	SS
4500.	7.121	6	1.0	1.0	10000.0	23.77	132.50	32.57	SS
5000.	6.323	6	1.0	1.0	10000.0	23.77	145.67	34.21	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 24. M:
77. 131.8 6 4.0 4.0 10000.0 9.87 3.23 5.93 SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0.0 M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
320.	39.98	6	3.5	3.5	10000.0	12.57	11.92	8.94	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED

EPN Misc.SprayBooth

DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED

DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** REGULATORY (Default) ***

PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 46.45
ALONGWIND DIM (M) = 93.57

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 40.23
ALONGWIND DIM (M) = 205.50

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

END OF CAVITY CALCULATIONS

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	131.8	77.	0.

Texas Commission on Environmental Quality
Table 6
Boilers and Heaters

Equipment Information			
Type of Device: 4.5MMBTU Boiler			
Manufacturer: Teledyne Laars		Model Number: HH4500	
Emission Point Number (EPN) (from Flow Diagram): EPN5			
Fuel Characteristics (choose applicable fuel characteristics, or revise from typical values shown)			
Fuel Type	Hours Use Per Year	Fuel Sulfur Content and Units	Higher Heating Value and Units
<input checked="" type="checkbox"/> Natural Gas	8760	2 gr / 100 dscf	1020 Btu/scf
<input type="checkbox"/> No. 2 Fuel Oil			
<input type="checkbox"/> Propane			
<input type="checkbox"/> Plant Fuel Gas			
<input type="checkbox"/> Landfill Gas			
<input type="checkbox"/> Other: _____			
Fuel Firing Rate			
Design Maximum: 73.53 scfm		Units (MMBtu/hr is preferred): 4.5	
Stack Parameters (not required if represented on page 2 of Table 1(a))			
Stack Diameter (ft):1.0		Stack Height (ft):18	
Stack gas velocity at maximum fuel flow rate (ft/second): 26.53			
Stack Gas Temperature (°F): 120		Exhaust (scfm*): 1250	
Exhaust Air Flow and Excess Air			
Exhaust Air Flow (scfm*):			
Percentage of Excess Air:			
Control Device (if present)			
Add on Control Device (type, description):			

Texas Commission on Environmental Quality
Table 6
Boilers and Heaters

Characteristics of Output: Outlet Concentrations to be used as Emission Factors (confirm applicable fuel characteristics, revise from typical values shown, or enter applicable value)	
Material	Chemical Composition of Exit Gas Released (% by volume)
<input checked="" type="checkbox"/> NO _x	3.5 ppmv corrected to 3% O ₂ **
<input checked="" type="checkbox"/> CO	88 ppmv corrected to 3% O ₂ **
<input checked="" type="checkbox"/> VOC	
<input type="checkbox"/> Formaldehyde (should be subset of VOC)	
<input checked="" type="checkbox"/> SO ₂	Assume 100% conversion of fuel sulfur to SO ₂ **
<input checked="" type="checkbox"/> PM/PM ₁₀ /PM _{2.5}	
<input type="checkbox"/> Others (such as Ammonia): _____	10 ppmvd at 3% O ₂ **

Attach an explanation on how temperature, air flow rate, excess air or other operating variables are controlled.

* Standard Conditions: 68°F, 14.7 psia

** Values shown are typical for natural gas fired boilers; confirm with your vendor.

Texas Commission on Environmental Quality
Table 6
Boilers and Heaters

Equipment Information			
Type of Device: 5.5 MMBTU Air Makeup Unit			
Manufacturer: Applied Air		Model Number: DFC230	
Emission Point Number (EPN) (from Flow Diagram): EPN6			
Fuel Characteristics (choose applicable fuel characteristics, or revise from typical values shown)			
Fuel Type	Hours Use Per Year	Fuel Sulfur Content and Units	Higher Heating Value and Units
<input checked="" type="checkbox"/> Natural Gas	8760	2 gr / 100 dscf	1020 Btu/scf
<input type="checkbox"/> No. 2 Fuel Oil			
<input type="checkbox"/> Propane			
<input type="checkbox"/> Plant Fuel Gas			
<input type="checkbox"/> Landfill Gas			
<input type="checkbox"/> Other: _____			
Fuel Firing Rate			
Design Maximum: 89.87 scfm		Units (MMBtu/hr is preferred): 5.5	
Stack Parameters (not required if represented on page 2 of Table 1(a))			
Stack Diameter (ft):1.0		Stack Height (ft):18	
Stack gas velocity at maximum fuel flow rate (ft/second): 26.53			
Stack Gas Temperature (°F): 120		Exhaust (scfm*): 1250	
Exhaust Air Flow and Excess Air			
Exhaust Air Flow (scfm*):			
Percentage of Excess Air:			
Control Device (if present)			
Add on Control Device (type, description):			

Texas Commission on Environmental Quality
Table 6
Boilers and Heaters

Characteristics of Output: Outlet Concentrations to be used as Emission Factors (confirm applicable fuel characteristics, revise from typical values shown, or enter applicable value)	
Material	Chemical Composition of Exit Gas Released (% by volume)
<input checked="" type="checkbox"/> NO _x	3.5 ppmv corrected to 3% O ₂ **
<input checked="" type="checkbox"/> CO	88 ppmv corrected to 3% O ₂ **
<input checked="" type="checkbox"/> VOC	
<input type="checkbox"/> Formaldehyde (should be subset of VOC)	
<input checked="" type="checkbox"/> SO ₂	Assume 100% conversion of fuel sulfur to SO ₂ **
<input checked="" type="checkbox"/> PM/PM ₁₀ /PM _{2.5}	
<input type="checkbox"/> Others (such as Ammonia): _____	10 ppmvd at 3% O ₂ **

Attach an explanation on how temperature, air flow rate, excess air or other operating variables are controlled.

* Standard Conditions: 68°F, 14.7 psia

** Values shown are typical for natural gas fired boilers; confirm with your vendor.

Texas Commission on Environmental Quality
Table 6
Boilers and Heaters

Equipment Information			
Type of Device: 0.96 MMBtu/hr Space Heaters (30 x 32k Btu)			
Manufacturer:		Model Number:	
Emission Point Number (EPN) (from Flow Diagram): EPN8			
Fuel Characteristics (choose applicable fuel characteristics, or revise from typical values shown)			
Fuel Type	Hours Use Per Year	Fuel Sulfur Content and Units	Higher Heating Value and Units
<input checked="" type="checkbox"/> Natural Gas	8760	2 gr / 100 dscf	1020 Btu/scf
<input type="checkbox"/> No. 2 Fuel Oil			
<input type="checkbox"/> Propane			
<input type="checkbox"/> Plant Fuel Gas			
<input type="checkbox"/> Landfill Gas			
<input type="checkbox"/> Other: _____			
Fuel Firing Rate			
Design Maximum: 15.7 scfm		Units (MMBtu/hr is preferred): 0.96	
Stack Parameters (not required if represented on page 2 of Table 1(a))			
Stack Diameter (ft):		Stack Height (ft):	
Stack gas velocity at maximum fuel flow rate (ft/second):			
Stack Gas Temperature (°F):		Exhaust (scfm*):	
Exhaust Air Flow and Excess Air			
Exhaust Air Flow (scfm*):			
Percentage of Excess Air:			
Control Device (if present)			
Add on Control Device (type, description):			

Texas Commission on Environmental Quality
Table 6
Boilers and Heaters

Characteristics of Output: Outlet Concentrations to be used as Emission Factors (confirm applicable fuel characteristics, revise from typical values shown, or enter applicable value)	
Material	Chemical Composition of Exit Gas Released (% by volume)
<input checked="" type="checkbox"/> NO _x	3.5 ppmv corrected to 3% O ₂ **
<input checked="" type="checkbox"/> CO	88 ppmv corrected to 3% O ₂ **
<input checked="" type="checkbox"/> VOC	
<input type="checkbox"/> Formaldehyde (should be subset of VOC)	
<input checked="" type="checkbox"/> SO ₂	Assume 100% conversion of fuel sulfur to SO ₂ **
<input checked="" type="checkbox"/> PM/PM ₁₀ /PM _{2.5}	
<input type="checkbox"/> Others (such as Ammonia): _____	10 ppmvd at 3% O ₂ **

Attach an explanation on how temperature, air flow rate, excess air or other operating variables are controlled.

* Standard Conditions: 68°F, 14.7 psia

** Values shown are typical for natural gas fired boilers; confirm with your vendor.

Texas Commission on Environmental Quality

**Table 11
Fabric Filters**

Tables, checklists, and guidance documents pertaining to air quality permits are available from the Texas Commission on Environmental Quality (TCEQ) Air Permits Division (APD) website at www.tceq.texas.gov/permitting/air.

A. Emission Point Number (EPN) and Emission Point Name				
EPN: 7		Emission Point Name: Baghouse		
B. Manufacturer and Model Numbers (No.)				
Manufacturer No.: Pneumafil		Model No.: 13.5-448-12		
C Name of Source(s) or Equipment Being Controlled				
Name	EPN	FIN		
Cutting Department	Assembly / Door and Drawer Department	Stain Line - Dust collector		
Clear Line - Dust Extrtactor	Paint Line - Dust Extractor			
D. Type of Particulate Controlled				
PM	PM10	PM2.5		
E. Gas Stream Characteristics				
Design Maximum	Average Expected Flow Rate (acfm)	Gas Stream Temperature (°F)	Particulate Grain Loading (grain/scf)	
	67,200		Inlet: 5	Outlet: 0.0012
Pressure Drop (inches of H ₂ O)	Water Vapor Content of Effluent Stream (lb water/lb dry air)	Fan Requirements		
2-4" wc	0.0	hp: 15	ft ³ /min.: 67,200	
F. Particulate Distribution (By Weight)				
Micron Range	Inlet %	Outlet %		
0.0-0.5				
0.5-1.0				
1.0-5.0				
5-10				
10-20				
over 20				
G. Filter Characteristics				
Filtering Velocity (acfm/ft ² of Cloth)	Bag Diameter (inches)	Bag Length (feet)	Total Number of Bags	
10	6	12	448	

Texas Commission on Environmental Quality

**Table 11
Fabric Filters**

H. Bag Rows	
Indicate the arrangement of the baghouse bag filter rows.	<input checked="" type="checkbox"/> Staggered <input type="checkbox"/> Straight
I. Walkways	
Will walkways be provided between banks of bags?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
J. Filtering Material	
Identify the filtering media: 16 oz. polyester with rated efficiency of 99.96% with outlet dust concentration of	
2.75 mg/cu.m.	
Any additional coating or treatment of the baghouse material:	
K. Cleaning of the Filter(s)	
Describe Bag Cleaning Method and Cycle: Reversed air	
L. Cost	
Capital Installed Cost: \$85,000	
Annual Operating Cost:	

Note: Attach the details regarding the principle of operation and an assembly drawing (front and top view) of the abatement device drawn to scale clearly showing the design, size and shape.

If the device has bypasses, safety valves, etc., include in the drawing and specify when such bypasses are to be used and under what conditions.

Bryan W. Shaw, Ph.D., *Chairman*
Buddy Garcia, *Commissioner*
Carlos Rubinstein, *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



Craig.R

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Protecting Texas by Reducing and Preventing Pollution

July 1, 2010

MR DONNIE ZAPARA
VICE PRESIDENT
ZEE MANUFACTURING LTD
4600 W US HWY 90
SAN ANTONIO TX 78237-4002

Re: Permit Renewal
Permit Number: 43104
Wood Cabinet Manufacturing Facilities
San Antonio, Bexar County
Regulated Entity Number: RN100542828
Customer Reference Number: CN601490808
Account Number: BG-1199-P

Dear Mr. Zapara:

This is in response to your application Form PI-1R (General Application for Air Permit Renewals) concerning the proposed renewal of Permit Number 43104.

As indicated in Title 30 Texas Administrative Code § 116.314(a) [30 TAC § 116.314(a)], and based on our review, Permit Number 43104 is hereby renewed. Enclosed is a new permit for your facility. It contains special conditions and a maximum allowable emission rates table (MAERT). We appreciate your careful review of the special conditions of the permit and assuring that all requirements are consistently met. This permit will be in effect for ten years from the date of approval (Commission's final decision). If this permit is appealed and the permittee does not commence any action authorized by this permit during judicial review, the term will not begin until judicial review is concluded.

Planned maintenance, startup, and shutdown emissions have been previously reviewed, authorized, and included in the MAERT. Any other maintenance activities are not authorized by this permit and will need to obtain a separate authorization.

As of July 1, 2008, all analytical data generated by a mobile or stationary laboratory in support of compliance with air permits must be obtained from a NELAC (National Environmental Laboratory Accreditation Conference) accredited laboratory under the Texas Laboratory Accreditation Program or meet one of several exemptions. Specific information concerning which laboratories must be accredited and which are exempt may be found in 30 TAC § 25.4 and § 25.6.

Mr. Donnie Zapara

Page 2

July 1, 2010

Re: Permit Number 43104

For additional information regarding the laboratory accreditation program and a list of accredited laboratories and their fields of accreditation, please see the following Web site:

http://www.tceq.state.tx.us/compliance/compliance_support/qa/env_lab_accreditation.html

For questions regarding the accreditation program, you may contact the Texas Laboratory Accreditation Program at (512) 239-3754 or by e-mail at labprgms@tceq.state.tx.us.

You may file a **motion to overturn** with the Chief Clerk. A motion to overturn is a request for the commission to review the executive director's decision. Any motion must explain why the commission should review the executive director's decision. According to 30 TAC § 50.139, an action by the executive director is not affected by a motion to overturn filed under this section unless expressly ordered by the commission.

A motion to overturn must be received by the Chief Clerk within 23 days after the date of this letter. An original and 11 copies of a motion must be filed with the Chief Clerk in person, or by mail to the Chief Clerk's address on the attached mailing list. On the same day the motion is transmitted to the Chief Clerk, please provide copies to the applicant, the executive director's attorney, and the Public Interest Counsel at the addresses listed on the attached mailing list. If a motion to overturn is not acted on by the commission within 45 days after the date of this letter, then the motion shall be deemed overruled.

You may also request **judicial review** of the executive director's approval. According to Texas Health and Safety Code § 382.032, a person affected by the executive director's approval must file a petition appealing the executive director's approval in Travis County district court within 30 days after the effective date of the approval. Even if you request judicial review, you still must exhaust your administrative remedies, which includes filing a motion to overturn in accordance with the previous paragraphs.

Thank you for your cooperation in sending us the information necessary to evaluate your operations and for your commitment to air pollution control. If you need information or have any questions, please contact Mr. Craig Richardson at (512) 239-1309 or write to the Texas Commission on Environmental Quality, Office of Permitting and Registration, Air Permits Division, MC-163, P.O. Box 13087, Austin, Texas 78711-3087.

Mr. Donnie Zapara

Page 3

July 1, 2010

Re: Permit Number 43104

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality.

Sincerely,

A handwritten signature in black ink, appearing to read 'Steve Hagle', is written over the typed name.

Steve Hagle, P.E., Director
Air Permits Division
Office of Permitting and Registration
Texas Commission on Environmental Quality

SH/CR/pg

Enclosures

cc: Air Section Manager, Region 13, San Antonio
Sanitarian Services Manager, Food and Environment Division, San Antonio Metropolitan
Health District, San Antonio
Mr. Robert Osborn, Consultant, Source Environmental Sciences, Inc., Houston

Project Number: 154419



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY AIR QUALITY PERMIT



A PERMIT IS HEREBY ISSUED TO
Zee Manufacturing, Ltd.
AUTHORIZING THE CONTINUED OPERATION OF
Wood Cabinet Manufacturing Facilities
LOCATED AT San Antonio, Bexar County, Texas
LATITUDE 29° 38' 35" LONGITUDE 098° 35' 38"

1. **Facilities covered by this permit** shall be constructed and operated as specified in the application for the permit. All representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued. Variations from these representations shall be unlawful unless the permit holder first makes application to the Texas Commission on Environmental Quality (commission) Executive Director to amend this permit in that regard and such amendment is approved. [Title 30 Texas Administrative Code § 116.116 (30 TAC § 116.116)]
2. **Voiding of Permit.** A permit or permit amendment is automatically void if the holder fails to begin construction within 18 months of the date of issuance, discontinues construction for more than 18 months prior to completion, or fails to complete construction within a reasonable time. Upon request, the executive director may grant an 18-month extension. Before the extension is granted the permit may be subject to revision based on best available control technology, lowest achievable emission rate, and netting or offsets as applicable. One additional extension of up to 18 months may be granted if the permit holder demonstrates that emissions from the facility will comply with all rules and regulations of the commission, the intent of the Texas Clean Air Act (TCAA), including protection of the public's health and physical property; and (b)(1) the permit holder is a party to litigation not of the permit holder's initiation regarding the issuance of the permit; or (b)(2) the permit holder has spent, or committed to spend, at least 10 percent of the estimated total cost of the project up to a maximum of \$5 million. A permit holder granted an extension under subsection (b)(1) of this section may receive one subsequent extension if the permit holder meets the conditions of subsection (b)(2) of this section. [30 TAC § 116.120(a), (b) and (c)]
3. **Construction Progress.** Start of construction, construction interruptions exceeding 45 days, and completion of construction shall be reported to the appropriate regional office of the commission not later than 15 working days after occurrence of the event. [30 TAC § 116.115(b)(2)(A)]
4. **Start-up Notification.** The appropriate air program regional office shall be notified prior to the commencement of operations of the facilities authorized by the permit in such a manner that a representative of the commission may be present. The permit holder shall provide a separate notification for the commencement of operations for each unit of phased construction, which may involve a series of units commencing operations at different times. Prior to operation of the facilities authorized by the permit, the permit holder shall identify to the Office of Permitting and Registration the source or sources of allowances to be utilized for compliance with Chapter 101, Subchapter H, Division 3 of this title (relating to Mass Emissions Cap and Trade Program). [30 TAC § 116.115(b)(2)(B)]
5. **Sampling Requirements.** If sampling is required, the permit holder shall contact the commission's Office of Compliance and Enforcement prior to sampling to obtain the proper data forms and procedures. All sampling and testing procedures must be approved by the executive director and coordinated with the regional representatives of the commission. The permit holder is also responsible for providing sampling facilities and conducting the sampling operations or contracting with an independent sampling consultant. [30 TAC § 116.115(b)(2)(C)]
6. **Equivalency of Methods.** The permit holder must demonstrate or otherwise justify the equivalency of emission control methods, sampling or other emission testing methods, and monitoring methods proposed as alternatives to methods indicated in the conditions of the permit. Alternative methods shall be applied for in writing and must be reviewed and approved by the executive director prior to their use in fulfilling any requirements of the permit. [30 TAC § 116.115(b)(2)(D)]
7. **Recordkeeping.** The permit holder shall maintain a copy of the permit along with records containing the information and data sufficient to demonstrate compliance with the permit, including production records and operating hours; keep all required records in a file at the plant site. If, however, the facility normally operates unattended, records shall be maintained at the nearest staffed location within Texas specified in the application; make the records available at the request of personnel from the commission or any air pollution control program having jurisdiction; comply with any additional recordkeeping requirements specified in special conditions attached to the permit; and retain information in the file for at least two years following the date that the information or data is obtained. [30 TAC § 116.115(b)(2)(E)]
8. **Maximum Allowable Emission Rates.** The total emissions of air contaminants from any of the sources of emissions must not exceed the values stated on the table attached to the permit entitled "Emission Sources--Maximum Allowable Emission Rates." [30 TAC § 116.115(b)(2)(F)]
9. **Maintenance of Emission Control.** The permitted facilities shall not be operated unless all air pollution emission capture and abatement equipment is maintained in good working order and operating properly during normal facility operations. The permit holder shall provide notification for upsets and maintenance in accordance with §§ 101.201, 101.211, and 101.221 of this title (relating to Emissions Event Reporting and Recordkeeping Requirements; Scheduled Maintenance, Startup, and Shutdown Reporting and Recordkeeping Requirements; and Operational Requirements). [30 TAC § 116.115(b)(2)(G)]
10. **Compliance with Rules.** Acceptance of a permit by an applicant constitutes an acknowledgment and agreement that the permit holder will comply with all rules, regulations, and orders of the commission issued in conformity with the TCAA and the conditions precedent to the granting of the permit. If more than one state or federal rule or regulation or permit condition is applicable, the most stringent limit or condition shall govern and be the standard by which compliance shall be demonstrated. Acceptance includes consent to the entrance of commission employees and agents into the permitted premises at reasonable times to investigate conditions relating to the emission or concentration of air contaminants, including compliance with the permit. [30 TAC § 116.115(b)(2)(H)]
11. This permit may be appealed pursuant to 30 TAC § 50.139.
12. This permit may not be transferred, assigned, or conveyed by the holder except as provided by rule. [30 TAC § 116.110(e)]
13. There may be additional special conditions attached to a permit upon issuance or modification of the permit. Such conditions in a permit may be more restrictive than the requirements of Title 30 of the Texas Administrative Code. [30 TAC § 116.115(c)]
14. **Emissions from this facility** must not cause or contribute to a condition of "air pollution" as defined in TCAA § 382.003(3) or violate TCAA § 382.085, as codified in the Texas Health and Safety Code. If the executive director determines that such a condition or violation occurs, the holder shall implement additional abatement measures as necessary to control or prevent the condition or violation.

PERMIT 43104

Date: July 1, 2010

Ma F. Wiley
For the Commission

SPECIAL CONDITIONS

Permit Number 43104

1. This permit authorizes facilities associated with wood cabinet manufacturing at 4600 U.S. Highway 90 West in San Antonio. It does not cover permits by rule for machinery and equipment cleanup (Registration No. 53421), and the miscellaneous item/touch-up spray coating booth (Registration Number 74161).

EMISSION LIMITATIONS

2. Opacity of particulate matter (PM) emissions shall not exceed 5 percent from the exhaust stacks. This determination shall be made first by observing for visible emissions. Observations shall be made during normal operations at least 15 feet and no more than 0.25 mile from each of the stacks. If visible emissions are observed from the stacks, then opacity shall be determined by Title 40 Code of Federal Regulations Part 60 (40 CFR Part 60), Appendix A, Test Method 9. Contributions from uncombined water shall not be included in determining compliance with this condition. If opacity exceeds 5 percent, corrective action to reduce the opacity shall be taken promptly. Observations shall be performed and recorded quarterly.
3. Title 40 CFR Part 63, Subpart JJ applies to the wood cabinet manufacturing facilities.

OPERATIONAL LIMITATIONS

4. Coating lines shall be fully automated to include automatic high-efficiency spray application equipment.
5. The stain and topcoat/sealer booths shall be exhausted only through dry filters and a water scrubber, respectively, each with minimum 95 percent efficiency in the removal of total PM from the exhaust streams. The stain booth filters shall be replaced with new filters at the end of every work shift and the water scrubber shall be inspected for proper operation each work shift. The filter changes and water scrubber inspections shall be documented.
6. The emissions from the coating lines shall be controlled by a regenerative thermal oxidizer (RTO) with 100 percent collection and a minimum 95 percent destruction efficiency, except during periods of oxidizer bypass for maintenance and other activities.

SPECIAL CONDITIONS

Permit Number 43104

Page 2

- A. The RTO combustion chamber temperature shall be maintained at a three-hour average temperature of at least 1500 degrees Fahrenheit. It shall be equipped with a monitor that continuously measures and records the combustion chamber temperature. The three hour average temperature shall be calculated over four equally spaced measurement points per hour. The thermocouples used to measure temperature in the RTO combustion chamber shall be replaced at least once annually.
 - B. The RTO shall not be operated in bypass mode during coating application in the miscellaneous item/touch-up spray booth. The bypass shall be inspected at least once a month to ensure the valves are operating properly.
- 7. The wood shop shall be exhausted only through a baghouse with a loading efficiency of a nominal 0.0012 grain of wood dust per cubic foot of air in the exhaust stream. A maximum pressure drop of 4.5 inches shall be maintained as measured by a manometer.
 - 8. Exhaust stacks shall have no restrictions or obstructions to their vertical discharge. Minimum stack heights above ground-level shall be:

<u>EPN</u>	<u>Height (ft.)</u>
RTO	25
1 and 2	45
3 and 4	35

- 9. New/different coating materials may be used provided that all of the following criteria are satisfied:
 - A. The new material shall serve the same basic function as the current material, and the emissions shall be emitted from the same EPN as the current material.
 - B. The total makeup of the new material is known (weight percentages of the ingredients in material add to 100 percent or more).
 - C. There is no increase in the annual emission rates from EPNs RTO and 1, 2, 3, and 4.
 - D. Each new air contaminant ingredient meets the following criteria:
 - (1) It is emitted at a rate and has short-term and annual Effects Screening Levels (ESL) as stated in the following table:

SPECIAL CONDITIONS

Permit Number 43104

Page 3

Emission Rate (lbs/hr)	Short-term ESL ($\mu\text{g}/\text{m}^3$)	Annual ESL ($\mu\text{g}/\text{m}^3$)
≤ 0.04	≥ 2 and < 500	≥ 0.2 and < 50
≤ 0.10	≥ 500 and $< 3,500$	≥ 50 and < 350
≤ 0.40	$\geq 3,500$	≥ 350

AND/OR

- (2) The following criteria are satisfied (new glue air contaminants shall not be allowed to be evaluated using the criteria):

$$E_i \times 11.36 \text{ ug}/\text{m}^3/\text{lb}/\text{hr} \leq \text{ESL}_i, \text{ and}$$

$$E_i \times 11.36 \text{ ug}/\text{m}^3/\text{lb}/\text{hr} \times 0.08 \times (T/8760) \leq \text{Annual ESL}$$

where:

E_i = The ER in lb/hr of a single air contaminant ingredient in a new material is proposed to be used on either or both coating lines.

ESL_i = The short-term ESL in $\mu\text{g}/\text{m}^3$ in effect at the time the new single aircontaminant ingredient is introduced as listed in the most current Texas Commission on Environmental Quality (TCEQ) ESL list or as specifically derived by the TCEQ Toxicology Division.

T = The number of hours per year a single air contaminant ingredient in a new material is proposed to be used on either or both coating lines.

Annual ESL = The long-term ESL in $\mu\text{g}/\text{m}^3$ in effect at the time the new single air contaminant ingredient is introduced as listed in the most current Texas Commission on Environmental Quality (TCEQ) ESL list or as specifically derived by the TCEQ Toxicology Division.

SPECIAL CONDITIONS

Permit Number 43104

Page 4

RECORDKEEPING

10. General Condition No. 7 regarding information and data to be maintained on file is supplemented as follows and shall be used to demonstrate compliance with Special Condition Nos. 2, 5, 6, and 9 and the maximum allowable emission rates table:
 - A. Environmental Data Sheets or Material Safety Data Sheets for coatings and associated materials in use.
 - B. Volatile hazardous air pollutant content of coatings and related materials in kg/kg solids.
 - C. Actual daily hours of coatings operations, daily usage of coatings and associated materials in gallons each for controlled and uncontrolled operations, and monthly usage of glue in gallons.
 - D. Monthly record of:
 - (1) The VOC and PM emissions from EPN RTO and EPN 1, 2, 3, and 4 in lb/hr as a daily average and from EPN RTO and 1, 2, 3, and 4 in tons per year (tpy) for the rolling 12 previous months.
 - (2) The VOC emissions from EPN 8 in lb/hr as a monthly average and in tpy for the rolling previous 12 months.
 - (3) Hazardous air pollutant (HAP) emissions from all sources for each individual HAP and for all HAPs in tpy for the rolling 12 previous months.
 - E. Records of visible emissions/opacity observations.
 - F. Records of stain booth filter changes and water scrubber inspections.
 - G. RTO temperature recordings, 3-hour averages, and thermocouple replacement documentation.
 - H. Records of RTO bypass inspections.
 - I. Records of substitution/addition of new materials showing how Special Condition No. 9 is satisfied to include:

SPECIAL CONDITIONS

Permit Number 43104

Page 5

- (1) Identification of each air contaminant, its hourly emission rate, its short and long-term ESLs, the number of hours per year it will be used, and the date it was introduced, and
- (2) From the date the air contaminant was introduced forward, a monthly report shall be prepared that shows the hours per year it has been used on a rolling 12-month basis to demonstrate compliance with the hours per year used in demonstrating the annual ESL was not exceeded.

J. Report of successful thermal oxidizer testing conducted in November 2006.

POLLUTION PREVENTION

11. All coatings spills shall be cleaned up immediately.
12. All coatings waste material shall be stored in sealed containers until removed from the site in accordance with applicable regulations.
13. Towels, rags, or other absorbent materials used for coating cleanup operations shall be placed into sealed containers immediately after use and shall be kept in storage until removed from the site by an authorized disposal service.
14. Residue collected in the dust collector shall be handled, stored, and disposed of in such a manner which will minimize the amount becoming airborne.

Dated July 1, 2010

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Number 43104

This table lists the maximum allowable emission rates for all sources of air contaminants covered by this permit. The emission rates shown are those derived from information submitted in the application for permit renewal and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name	Air Contaminant Name (2)	<u>Emission Rates</u>	
			lb/hr	TPY (3)
RTO	Stain Booth with Dryer and Topcoat/Sealer Booth with Dryers vented through a 6.0 MMBtu/hr Thermal Oxidizer	VOC and ES	8.46	
		VOC (4)	0.03	0.02
		PM/PM ₁₀ (4)	0.05	0.02
		NO _x	0.59	0.21
		CO	0.50	0.18
		SO ₂	<0.01	0.02
1, 2, 3, and 4	Stain Booth with Dryer and Topcoat/Sealer Booth with Dryers vented uncontrolled	VOC and ES	167.00	
		PM/PM ₁₀	0.65	
RTO 1, 2, 3, and 4	Booths and Dryers Controlled and Uncontrolled	VOC and ES		40.00
		PM/PM ₁₀		2.85
5	3.5 MMBtu/Hr Boiler	VOC	0.02	0.09
		PM/PM ₁₀	0.03	0.11
		NO _x	0.34	1.50
		CO	0.29	1.27
		SO ₂	<0.01	0.01
6	5.5 MMBtu/Hr Makeup Air Heater	VOC	0.03	0.13
		PM/PM ₁₀	0.04	0.18
		NO _x	0.54	2.37
		CO	0.45	1.99
		SO ₂	<0.01	0.01
7	Wood Shop and Coating Preparation vented through a Baghouse	PM/PM ₁₀	0.69	3.03

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name	Air Contaminant Name (2)	<u>Emission Rates</u>	
			lb/hr	TPY (3)
8	Wood Shop Glue and Space Heater Fugitives	VOC	3.64	1.82
		VOC (4)	0.01	0.02
		PM/PM ₁₀	0.01	0.03
		NO _x	0.09	0.41
		CO	0.04	0.18
		SO ₂	<0.01	<0.01
9	Valve, Connection, and Flange Fugitives	VOC	0.02	0.06
RTO, 1, 2, 3, 4, 5, 6, 7, 8, and 9	All Sources	Each HAP		3.92
		All HAP		13.03

(1) Emission point identification from plot plan.

(2) VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1

ES - exempt solvent as defined in Title 30 Texas Administrative Code § 101.1

PM - total particulate matter, suspended in the atmosphere, including PM₁₀

PM₁₀ - particulate matter, equal to or less than a nominal 10 microns in aerodynamic diameter, including PM_{2.5}

PM_{2.5} - particulate matter, equal to or less than a nominal 2.5 microns in aerodynamic diameter

NO_x - oxides of nitrogen

SO₂ - sulfur dioxide

CO - carbon monoxide

HAP - hazardous air pollutant as identified in Title 40 Code of Federal Regulations Part 63, Subpart C

(3) Rate is for a rolling 12-consecutive months.

(4) Product of combustion.

Dated July 1, 2010

Cefla Group Spray System (Stain)

Production Control

This line will provide the best quantity/quality results, if parts (workpieces) which are not suitable for processing are rejected prior to finishing.

Parts are generally considered suitable for finishing if they are free of bow, warp, twist, marks, splits and color variations. It is also assumed that such suitable and properly prepared parts have been cleaned prior to finishing.

Production Capacity

To be determined by the production requirements and the various coating process parameters. Laboratory testing is most valuable in ascertaining and confirming these variables.

Mechanical speed range from 2 to 10 mt/min (6.5 to 32.8 fpm)

Note: *Appropriate working speed is subject to the requirements of customer's specific coating.*

Maximum speed range is not necessarily the appropriate working speed.

Component Dimension

Parts having the following approximate maximum and minimum dimensions can be processed through the line:

Length	maximum	2438 mm	(96")
	minimum	330 mm	(13")
Width	maximum	1220 mm	(48")
	minimum	101 mm	(4")
Thickness	maximum	40 mm	(1-9/16")
	minimum	10 mm	(13/32")

Substrates within the following warpage or bow specifications can be processed through the equipment offered:

Substrates 10 to 19 mm thick	10 mm over 1000 mm	13/32" over 3' 3"
Substrates 19 to 40 mm thick	See note	

Note: *Testing by Stiles/Cefla required to determine acceptability of any warpage or bow within this thickness range.*

Labor

Supervisor(s) to monitor, adjust, and control all line components.
 Personnel for loading and unloading (as required).
 People for hand wiping stain and hand sealer sanding as required.

Thermal Consumption

Heat source is hot water (unless specified otherwise by customer). Flow control valves and automatic thermostats are supplied.

Air Replacement

Air is exhausted from the room by the various processing, curing, and cleaning machines throughout the line.
 Air make-up system is not included.

Compressed Air

Compressed air to be supplied to various machines.

Electrical Power

460 volt, 3-phase, 60 cycle motors are supplied (unless specified otherwise by customer). All control circuits are 24 volt DC.
 Electrical main supply must be surge protected and voltage fluctuations limited to $\pm 5\%$ from customer specified voltage.

Explosion Safety

All fan blades are made of non-ferrous materials.
 Electrics are designed to comply with normal explosion-proof regulations. If specific (or) unusual local requirements are imposed, they are to be satisfied at the owner's expense.

Dimensions and Technical Descriptions

Machine dimensions, technical description and data subject to change or modification. The information provided herein is preliminary and is not to be used for installation purposes.

Notes: *"Certified Engineering Drawings" are provided by Cefla after receipt of order, down payment and clarification of all technical details.*

Specific requirements for Btu/hr, exhaust air, dust extraction, compressed air, electrical power and machine dimensions will be accurately stated on the above referenced drawings

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Item 1

Equipment Supplied

Belt Transfer Conveyor

Model TN 2500/SIT

- transfer conveyor for manual loading of product into finishing system
- a rotary blower and ionization bar with extraction hood provides light cleaning of workpiece prior to coating application
- photocell and timer control actuation only when workpiece is present
- unit mounted over belt transfer conveyor

Note: *Dust extraction and connecting ducts by customer*

Item 2

Rotary Spray Machine for Stains

Cefla Model RotoStain ROT 10+10

This spray machine is utilized for automatic application of stain material.

The *RotoStain ROT 10+10* represents a new generation spray machine from Cefla; the leader in technology development for spraying applications.

The electronic rotary spraying system provides consistent quality and high volume production in an automated environment while minimizing environmental contaminates.

The *RotoStain ROT 10+10* incorporates Ceflas' previous innovative developments (which are now industry standards) into a machine with maximum capabilities (line speed and production output) for stain application.

Ecological and economical features

- A solid continuous 65" width carbon fiber belt enables the recovery of over sprayed coating material for reuse. Many coatings can be reused which results in an increased transfer efficiency and economy of paint usage.
- A uniform coating application is achieved utilizing the "back spray" technique.
- Complete edge coating is achieved when oversprayed coating is diverted (a bounce effect) from the carbon fibre belt to the panel edges.
- Exhaust air filtration system reduces solid particulate matter from air exhausted stream.
- Use of dry filters in exhaust air filtration system limit operational maintenance costs versus water filtration systems for certain coating materials. No water treatment system, chemicals or disposal are required. This is the ideal system of air filtration when spraying conventional solvent based coating materials or materials that can be dried quickly by air.

Machine features

- A Programmable Logic Control (PLC) with display is utilized to set program parameters, control machine functions, and provides self-diagnostics and production data.
- Cefla's patented conveyor belt system for coating recovery and belt cleaning is controlled by the PLC. This system recovers approximately 98% of the coating material deposited on the belt. The conveyor belt is then automatically cleaned, with coating appropriate solvents, for continued use. This system operates only when necessary (machine in operation) to minimize solvent usage and belt wear.
- Automatic air flow system monitors and maintains consistent air flow through spray booth, when filters become too plugged to maintain sufficient air flow, system operation is ceased for safety.
- PLC utilizes a sixty (60) cell photodiode bar to monitor and regulate spray application, further maximizing application transfer efficiency.
- Spraying is performed through a rotary system designed for the installation of ten plus ten (10 + 10) guns in two (2) coating supply circuits with recycle.
- Vertical positioning of the spray guns is manually set by hand wheel.

Note: Spraying equipment to be provided by Zee Manufacturing

Options included

- automatic air flow system
- stainless steel fittings and distribution block for coating supply system
- machine equipped with a second coating supply circuit with recycle
- Plexiglas cover on outfeed conveyor section minimizes substrate contamination

Item 3

Belt Transfer Conveyor

Cefla Model TN 1904

- this spacing conveyor is provided with an appropriate length to enable future installation of a *Stain Wiping Machine* in its place

Item 4

Belt Conveyor for Manual Hand Wiping

Cefla Model TN 4000/W

- manual wiping station for reinforcement, highlighting and special parts
- PVC belt conveyor with raised rubber pattern for hand operation

Item 5

Progressive Oven System

Models FEV EU 2/8, FEV UR 2/6, and TT 16350/SCR

- two different oven types provide environments of high velocity hot air movement and infrared radiation for drying of applied stain materials
- at maximum speed range this oven will provide ~84 seconds dwell time
- longer dwell times achieved with slower line speeds

- independent oven section provides high velocity hot air movement
- total oven length 12,000 mm (39' 4")

- oven provides infrared radiation for the final conversion of coating material
- oven equipped with six (6), height adjustable IRM type lamps
- oven length 2,000 mm (6' 7")

- oven units are supported by a through feed bar type conveyors
- total bar conveyor length 16,350 mm (53' 8")
- unloading section for personnel safety in unloading operations

Note: Exact oven length to be determined based on coating requirements and/or testing results

System Notes:

Supplied heat exchanger(s) can receive a minimum input air temperature of 23 °F

Supplied heat exchanger(s) can provide a maximum Delta T of 86°F up to a maximum output air temperature of 150°F.

Ovens systems include valve for temperature adjustment and pneumatic thermostat only

All remaining manual valves and connection to heat exchanger(s) by customer

Total Price

of equipment as described above,

F.O.B. United States Port of Entry

\$ 302,657.00

Price quoted includes importation and installation.

Price quoted excludes all state and local taxes.

Notes: Above price includes two (2) days of instruction.

Additional instruction is available at normal service technicians' rates in effect at that time.

Option 1

Optional Equipment

Stain Brushing/Wiping Machine

Sorbini Model VS/26-2C'

- this option will replace the spacing transfer conveyor, item #3 to provide automatic stain wiping following stain application
- two (2) horse hair stain wiping brushes
- wiping brushes are adjustable in angle from perpendicular to 10 degrees
- brushes are also designed to permit movement toward or away from the point of application to accommodate a variance of stain flash/dry times prior to wiping
- vacuum hold down fan mounted in sound reduction enclosure

PRICE \$ 20,388.00

Items Not Covered by This Proposal

- Surge protected electrical services to the site with no more than $\pm 5\%$ variance in input voltage
- Electrical trays, wire, conduit, supports, etc.
- Balanced dust extraction system and connecting ducts
- Air inlet/outlet ducts - roof penetrations (open/close/weatherproof) (flow control valves provided)
- Heat source (boiler) and connections between heat source and points of use (temperature controls provided)
- Compressed air lines to connecting points at 6 kg/cm² (90 psi) (dry filters and pressure regulators provided)
- Application or material feed equipment (guns, pumps, tanks, hoses, fittings, regulators, etc.)
- Sprinkling system or other fire protection equipment required by insurance or local code
- Air make-up system
- Building alterations
- Floor or masonry work
- Moving of existing machinery or site preparation
- Equipment to assist in installation (i.e. forklifts, cranes, scissors lifts, etc.)
- Permits to install and operate (when required)

Dimensions

All equipment offered is made to metric standards. Dimensions shown in English measure are approximate and for comparison purposes only.

Delivery

Shipment from factory in Italy approximately 4 months (excluding August) after receipt of order and clarification of all technical details.

Terms of Payment

- 30% Down payment with order
- 30% Due upon shipment from the factory
- 30% Due upon arrival to Port of Entry
- 5% Due upon completion of installation
- 5% Due upon completion of commissioning

If for any reason Shipment, Installation and/or Commissioning are delayed by the customer, the payment(s) shall become due in full sixty (60) days after equipment is available for shipment from the factory.

Completion of Installation

Installation is considered complete when the system is assembled and electricians are connected to the main control console.

Completion of Commissioning

Commissioning is considered complete when the system is available to produce finished panels in accordance with the order confirmation.

Installation and Commissioning

By Cefla and/or Stiles Machinery service technicians are included with the price quoted above with the following agreed terms.

Installation does not include any preparation of the site/floor, masonry work, the running of electrical, pneumatic or dust extraction services to the site.

Cefla/Stiles is not responsible for the off-loading and positioning by crane, forklift or other means. A service technician can be present during the off-loading and positioning if requested and at additional charge in order to act in an advisory capacity, but this is to be understood as fully at the customer's own risk. Moving or modifying existing machinery or plant is not included in the installation.

Once the system is in the 'ready-to-run' state, and the necessary services have been provided, the service technician will "commission" the line by testing, adjusting, and running the line in a production mode.

Customer will make available during the entire installation two (2) mechanics and one (1) electrician to assist as necessary, or the customer may contract to have additional Stiles Machinery, Inc. technicians to assist in the assembly of the finishing system. In the event the customer has not contracted for additional Stiles Machinery, Inc. technicians and the customer finds it necessary to use their aforementioned personnel for purposes other than full dedication to the installation of the finishing system, Stiles Machinery, Inc. will assess a \$450.00 per day charge or a \$56.25 per hour charge for such time.

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Terms and Conditions

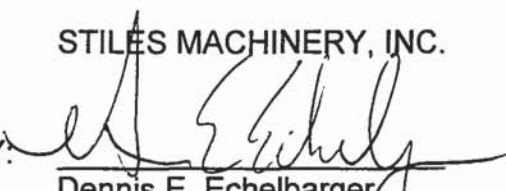
All equipment listed is offered subject to our General Conditions of Sale. Equipment to be wired according to UL standards. If specific or unusual local regulations require inspection and/or modification, those costs are the responsibility of the buyer. Terms of payment offered herewith, or any terms agreed upon, are subject to proper credit approval. Due to currency fluctuations, all prices are subject to confirmation or revision at time of order. Procurement of all permits by customer.

The price quoted is to be understood for delivery F.O.B. U.S. Port of Entry, U. S. Customs duty paid. Price of additional equipment, if any, valid only when installed at the factory during construction of the machine(s), and/or shipped with the original equipment order. Technical description and data subject to change or modifications without notice. Our offers are contingent upon strikes, accidents to the system by carriers, ocean vessels or any other cause beyond our control.

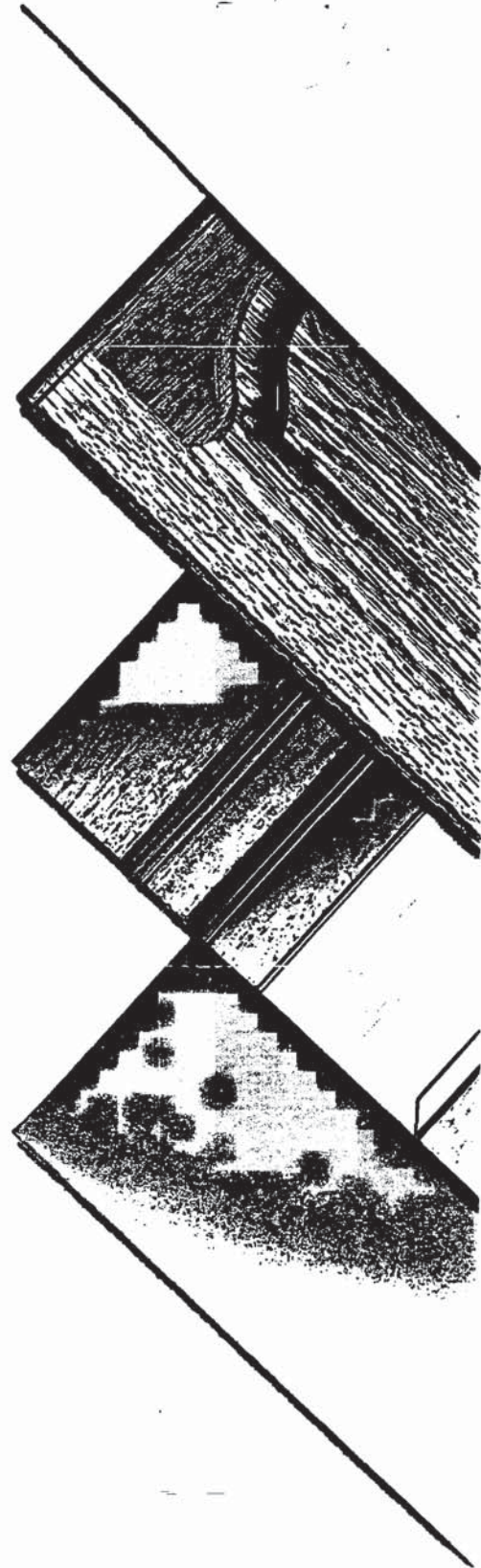
This offer is valid for thirty (30) days.

STILES MACHINERY, INC.

BY:


Dennis E. Echelbarger
Product Specialist - Finishing

Finishing Technology



L'azienda The company

CEFLA, Società fondata nel 1932, è oggi un importante aggregato industriale che opera in 4 diversi settori:

- impianti di verniciatura per l'industria del legno;
- sistemi completi di arredamento per i punti di vendita e per la media e grande distribuzione;
- impianti tecnologici di servizio per grandi complessi ad uso civile ed industriale;
- impianti robotizzati di imballaggio per beni di largo consumo.

Ogni settore opera in maniera autonoma, ma può utilizzare le grandi potenzialità di integrazione della Società, disponendo di servizi comuni dimensionati alle esigenze di un'industria a tecnologia avanzata. CEFLA oggi opera con 5 stabilimenti, su un'area complessiva di 165.000 m², di cui 72.500 coperti e 650 dipendenti.

CEFLA was founded in 1932, and has since grown into a company of world wide renown.

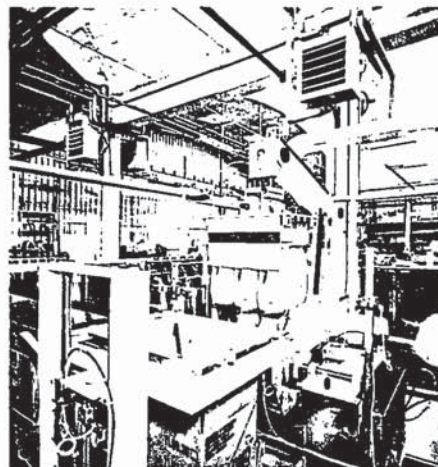
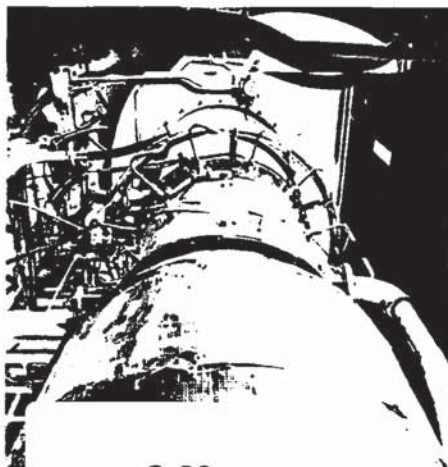
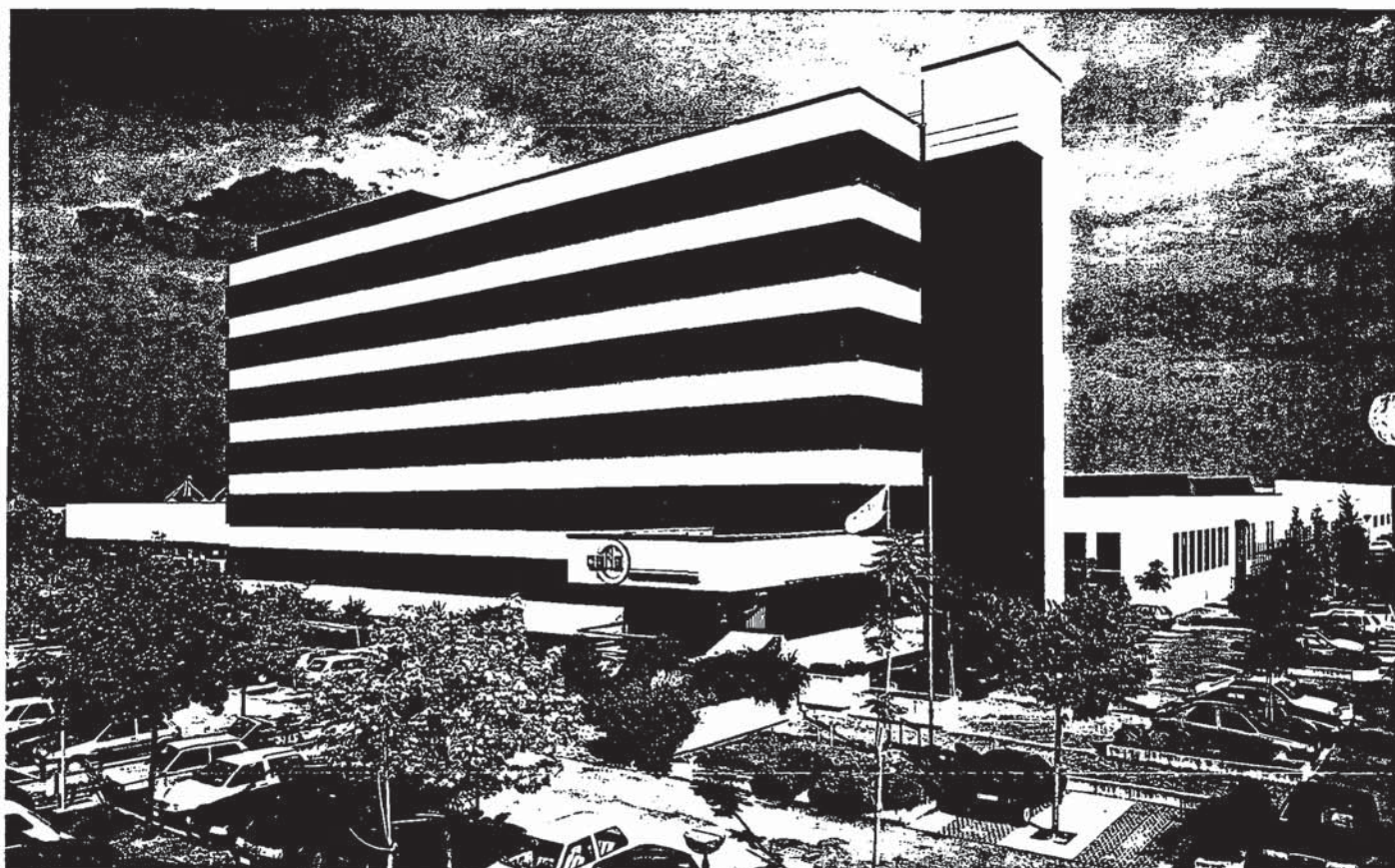
It is comprised of four division:

- Finishing
- Manufacturing of store fixtures
- Industrial electrical, heating and cooling systems
- Robotic packaging systems for consumer goods industry

Each division is independent, but can use the great integration capabilities of the Company through common services suitable to respond to the needs of an advanced technology industry.

CEFLA's five manufacturing facilities incorporate 72.500 m² (780.000 sq. ft.) of floor space on a total area of 165.000 m² (780.000 sq. ft.).

It has 650 employees.



Divisione impianti di verniciatura Finishing Division

CEFLA è presente nel settore della verniciatura del legno da oltre 30 anni e progetta, produce ed installa impianti completi in ogni parte del Mondo.

Attualmente circa l'80% della produzione è destinata all'estero.

CEFLA è, quindi, in grado di proporre all'industria del legno sistemi di verniciatura completi ed integrati (applicazione, essiccazione, controllo degli scarichi) che nascono da una costante osservazione del mercato e dalla risposta personalizzata alle esigenze del Cliente.

na di Cella in due importanti Aziende produttrici di macchine di verniciatura e levigatura:

● SORBINI leader mondiale nella produzione di macchine a rullo e a velo

● DIMA importante produttore di levigatrici e impianti di verniciatura del profilo.

L'obiettivo è quello di puntare sulla forza e la sinergia del Gruppo per risolvere ogni problema di verniciatura del legno. Il marchio di qualità ISO 9001 riconosciuto a Cella Divisione Impianti di Verniciatura nel 1996, garantisce l'elevato e costante livello di qualità raggiunto dall'Azienda.

CEFLA has been in the field of wood finishing for 30 years and designs, manufactures and installs complete systems throughout the world.

Presently CEFLA exports approximately 80% of its production volume.

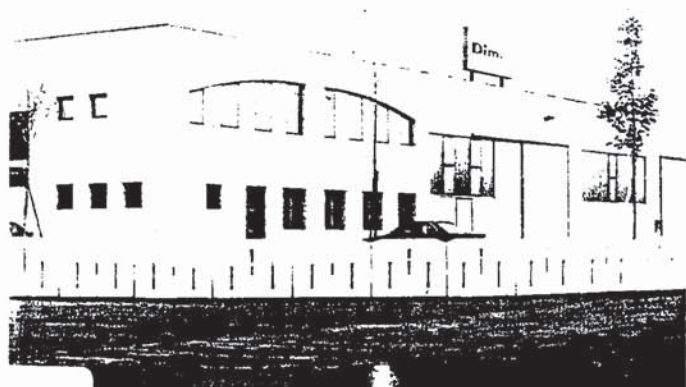
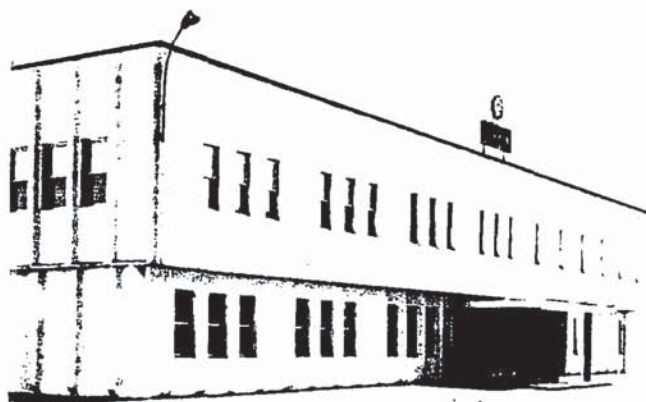
grated finishing lines that incorporate and satisfy the various requirements of the customer such as application material, air and water handling and treatment. Cella has recently invested in two leading companies, manufacturing coating and sanding equipment:

● SORBINI a world wide renown company manufacturing roller and curtain coaters.

● DIMA a very important manufacturer of sanding machines and moulding coating systems.

The target is to use the capabilities and the synergy of the Group to address any need in wood finishing.

In 1996 Cella Finishing Division has obtained the ISO 9001 Certification which guarantees the high and constant level of quality achieved by our Company.



Conoscenza e mercato per anticipare la
evoluzione significa disporre di adeguati
apparati di ricerca e sviluppo come il
CENTRO RICERCHE CEFLA.
In costante contatto con le industrie chi-
miche del settore, il centro collabora con
enti universitari ed istituti di ricerca; esso
è indispensabile ai progettisti per i quali
elabora dati, indirizzi nella ricerca dei
componenti, aggiornamenti sulle tenden-
ze e gli sviluppi del mercato.
Le prove pratiche sono eseguite in un
ampio laboratorio (1000 m²) che dispone
di tutte le macchine ed attrezzature più
moderne.
Il laboratorio è il punto di incontro dei tec-
nici CEFLA con quelli delle industrie chi-
miche e con i Clienti per trasformare i
risultati della ricerca in impianti produttivi.

CEFLA is provided with an insight to the
market, to anticipate and provide for
clients' future needs and requirements.
CEFLA interfaces several universities
and various engineering research institu-
tes to ascertain and disseminate informa-
tion as to the current trends and develop-
ment in the industry and marketplace.
The modern 11,000 square foot-labora-
tory (1000 m²) is equipped with the late-
st sophisticated computerized "state-of-
the-art" machinery.
Application and coating tests are conduc-
ted on a continuing basis to provide
accurate and important information for
current future use.

CEFLA Finishing division has been recog-
nized by Italian Government as unique
company in the wood finishing having a
"research laboratory"

Prot. n° 1048-Ric.

VISTO l'art. 4 della legge 17 febbraio 1982, n. 46, pubblicato nella
Gazzetta Ufficiale n. 57 del 27 febbraio 1982, che prevede l'inclusione in
apposito albo dei laboratori di ricerca di
qualificati e debitamente autorizzati da
ricerca scientifica e tecnologica, sent
commercio e dell'artigianato, delle risorse
ai quali devono rivolgersi le piccole e m
ciare del contributo dello Stato per lo
applicativo;

VISTO il proprio decreto 14 mar
Ufficiale n. 202 del 24 luglio 1982, co
mento di attuazione delle disposizioni
l'aggiornamento annuale dell'Albo dei l

VISTI il decreto ministeriale 16
Ufficiale n. 183 del 6 luglio 1983, c
laboratori e i successivi decreti m
1987, 23 novembre 1988, 25 maggio 19
dicembre 1994, rispettivamente pubb
22 ottobre 1985, n. 50 del 2 marzo 1
31 maggio 1990, n. 31 del 7 febbraio
22 dicembre 1994 con i quali è stat
mento del medesimo;

RAVVISATA l'esigenza di proc
rapporto alle domande di iscrizio
laboratori inseriti in Albo, in
cambio della sede ed alla modifi

VISTE le conclusioni alle
esperti, costituita con decre
all'esame delle domande di iscr

VISTI i prescritti pare
dell'artigianato e delle risorse

VISTA l'istanza dell'UNI
in Albo avviene "de iure" - u
consiglio dei Ministri - u
ricerca scientifica e tecnolo
di istituzioni di alta quali
vo è garantito dalle norme
universitarie;

MOD. 210
P. M. 1984



Il Ministro dell'Università e della Ricerca Scientifica e Tecnologica

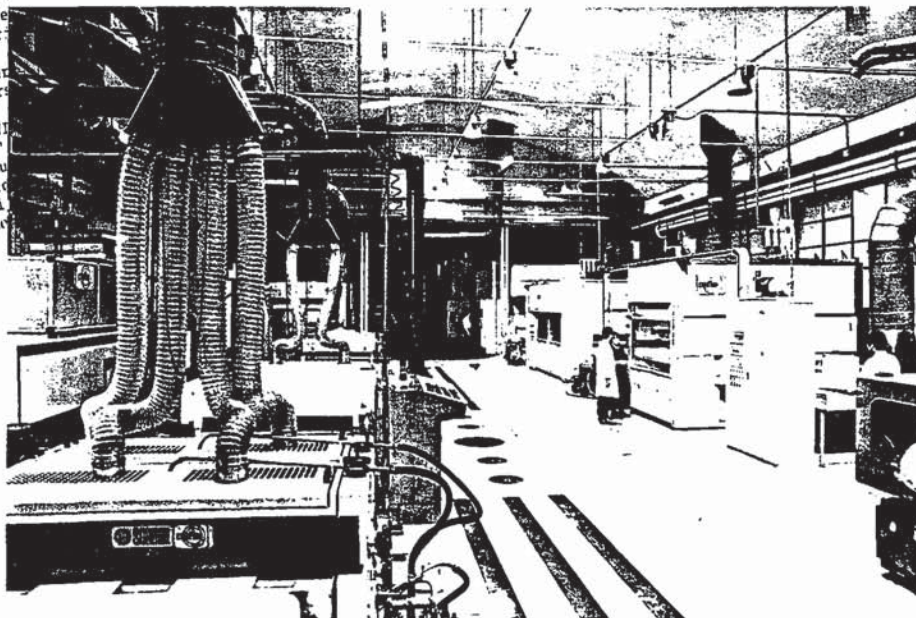
DECRETA

ART. 1

E' approvato il nono elenco integrativo dell'Albo dei laboratori di ricerca
esterni pubblici e privati che vengono inseriti nell'Albo di cui in premessa :

EMILIA ROMAGNA

23) CEFLA S.c.a r.l.
Via Selice Provinciale, 23/A
40026 I M O L A (BO)



Orientamento al Cliente Customers relations

Un'impresa CEFLA nasce con un'attenta analisi delle esigenze qualitative e quantitative della produzione, dalla necessità di razionalizzare cicli e tempi di lavorazione, dalle opportunità offerte dalle nuove tecnologie.

Quest'analisi inizia già dal primo contatto con il Cliente attraverso la "qualità" dei suoi tecnici di vendita, la loro continua presenza e conoscenza specifica delle differenti aree del mercato mondiale, la consulenza tecnica e commerciale che sono capaci di garantire.

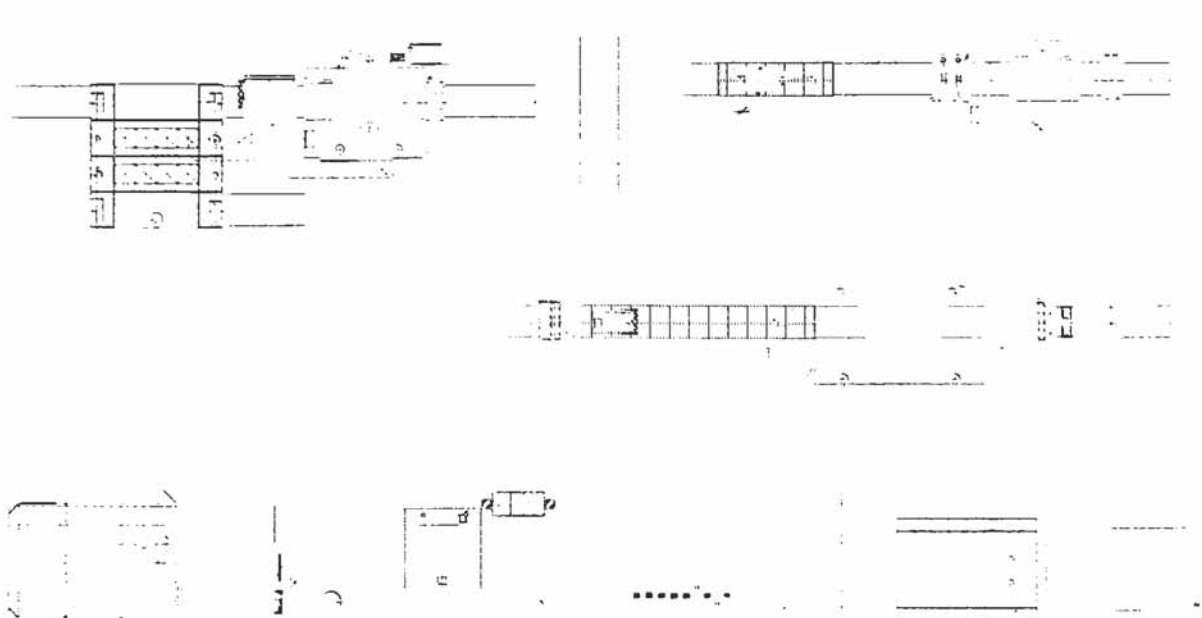
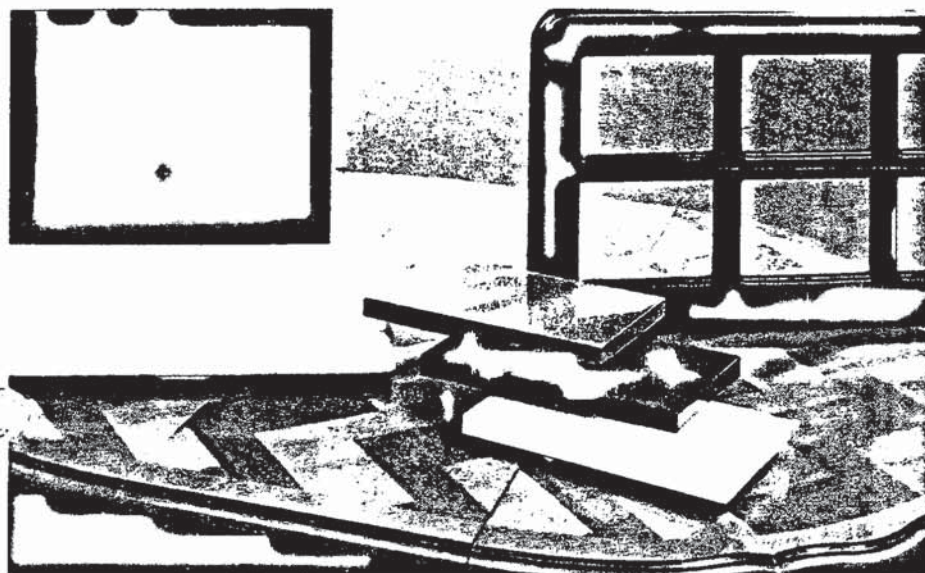
L'utilizzazione di tecnici altamente specializzati e dei più moderni sistemi di progettazione computerizzata (CAD) fanno della CEFLA un insostituibile consulente in grado di proporre soluzioni calibrate ed innovative.

CEFLA is committed to the task of providing innovative solutions for Clients' needs and requirements.

Equipment supplied by CEFLA is the result of extensive research and analysis and is purposely intended to fulfill the quality and production quantities required.

This analysis begins already on the first contact with the Customer through the "quality" of Cella's technical personnel, their presence and knowledge of the different world market areas and the technical and commercial assistance they can grant.

The use of highly skilled technicians and the most modern design systems (CAD) make Cella a "partner" able to propose innovative and customized solutions.

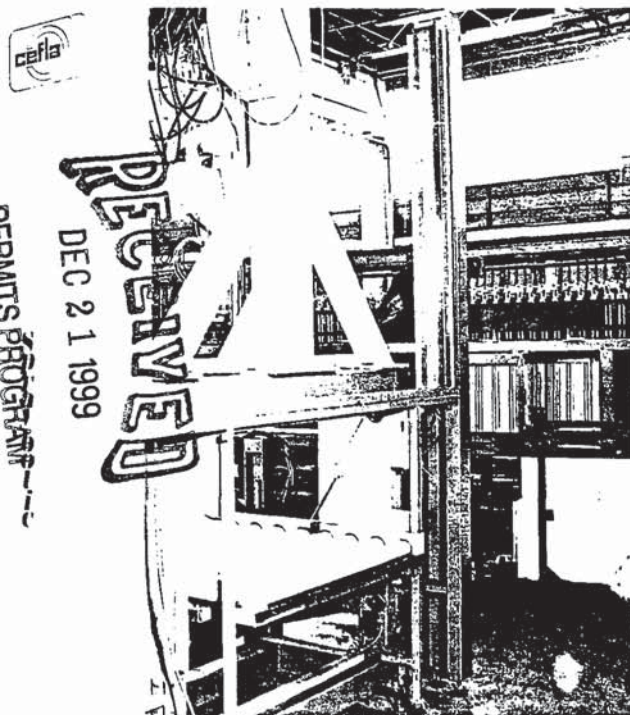
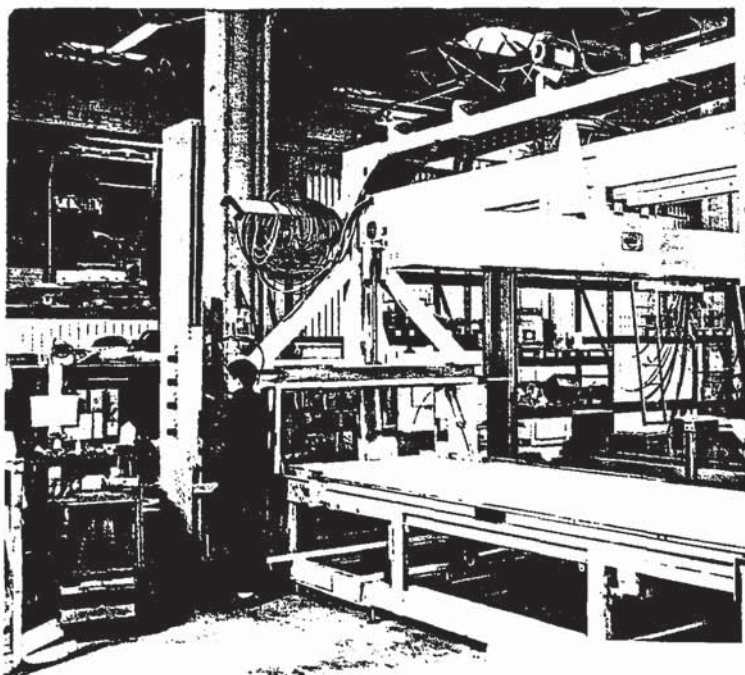


Il prodotto finale Product

La realizzazione di un impianto industriale passa attraverso uno studio attento di tutte le macchine ed i particolari che lo compongono.

Gli uffici tecnici della CEFLA completano questo studio da differenti punti di vista (tecnologico, meccanico, elettronico) operando in stretta connessione ed utilizzando le tecnologie più avanzate. Particolare attenzione viene posta all'inserimento della linea di verniciatura nell'organizzazione produttiva del Cliente.

Careful thought and coordination of various departments go into the finalization of product design and fabrication. Only the most advanced mechanical and electrical technology is considered. Requirement satisfaction and flexibility is the keynote. Reliability of continued production capability is essential and maximum effort is directed to that end.



Servizio dopo vendita After sale service

L'affermazione sul mercato dipende dalla qualità dei prodotti, ma anche dalla qualità del servizio.

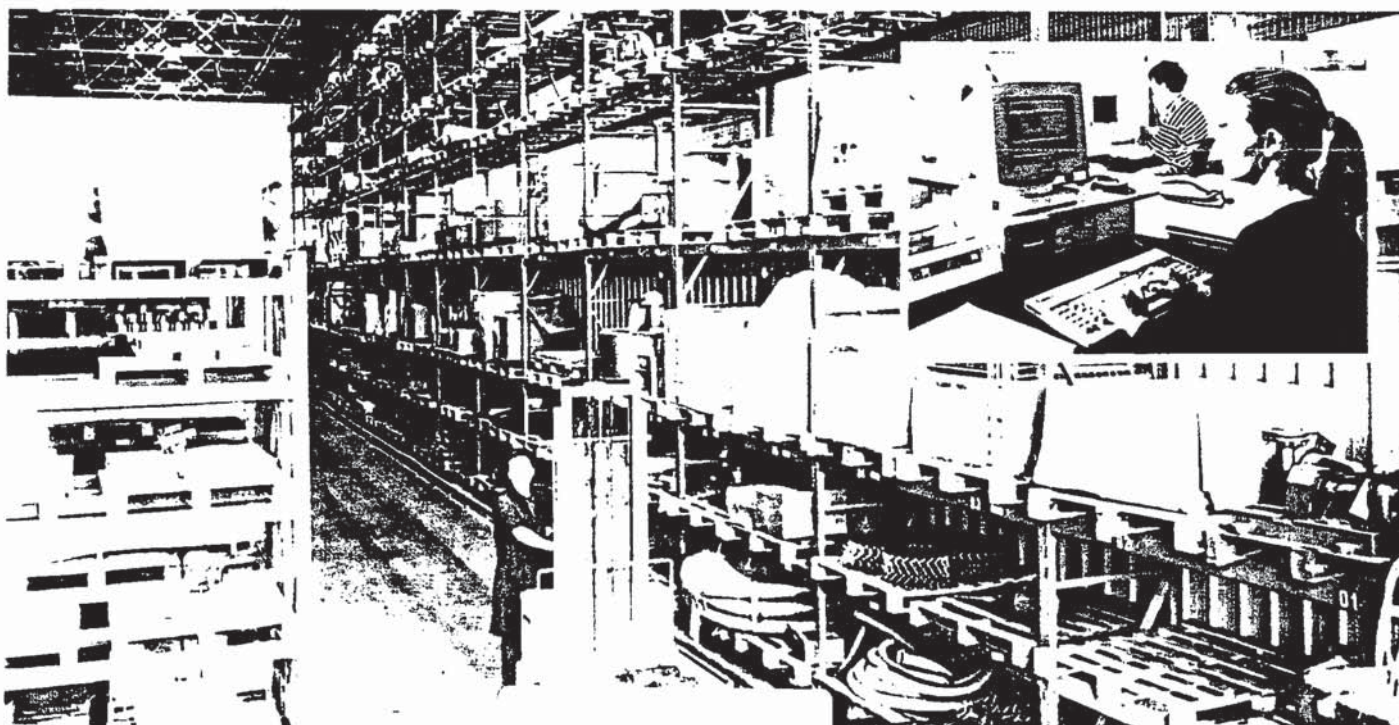
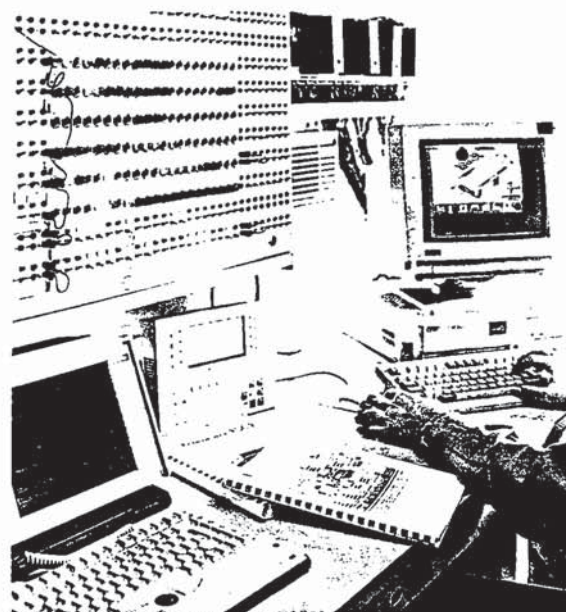
Il servizio post vendita CEFLA garantisce:

- installazione "chiavi in mano" dell'impianto
- collaudo da parte di tecnici altamente specializzati
- training "personalizzato" per la formazione del personale del Cliente sia prima che dopo l'avviamento dell'impianto
- fornitura di documentazione tecnica completa per l'uso e la manutenzione delle macchine
- programma di manutenzione in base alle esigenze di produzione
- servizio ricambi computerizzato con centri di distribuzione in tutto il Mondo.

Continued Client satisfaction is dependent on the quality of the products supplied by CEFLA and on its service rendered to the Customer.

CEFLA's after sale service assures:

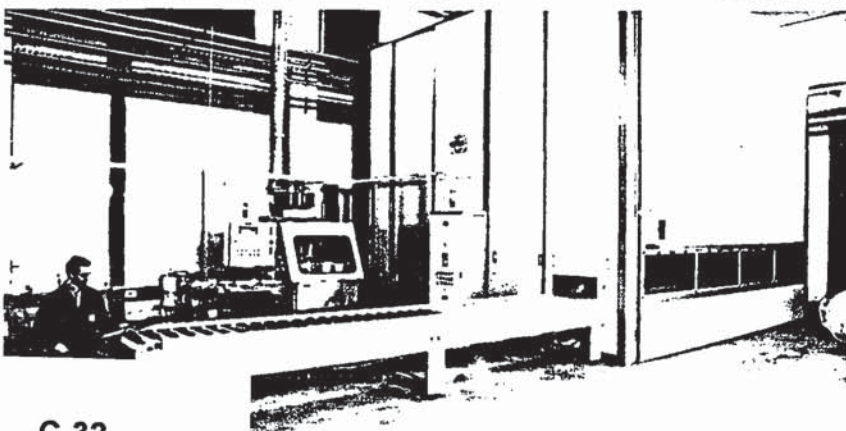
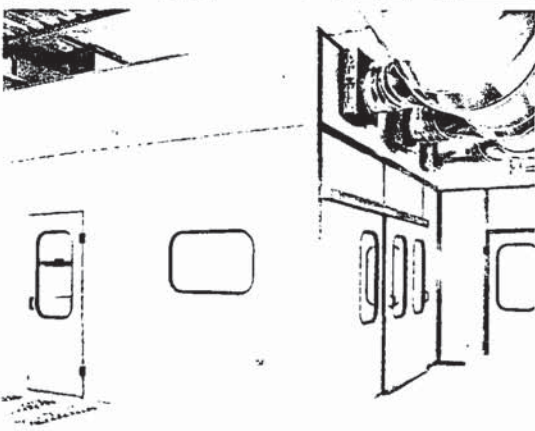
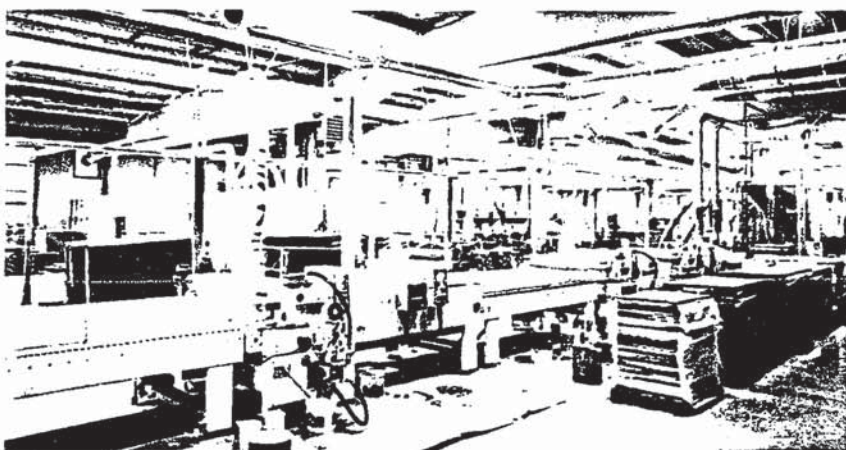
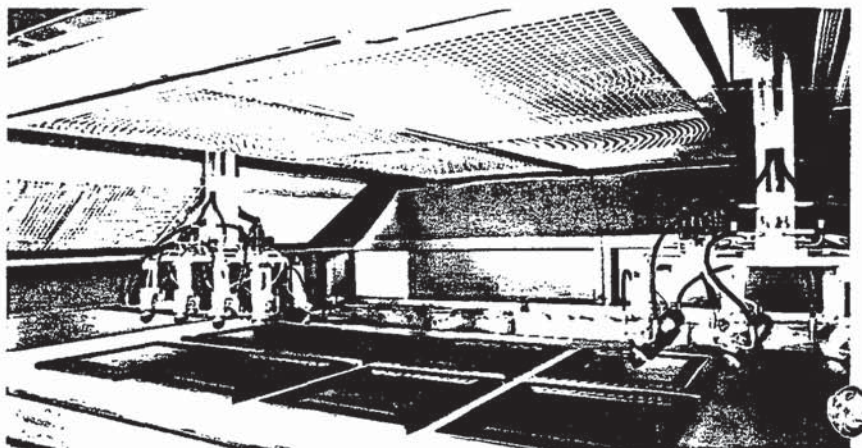
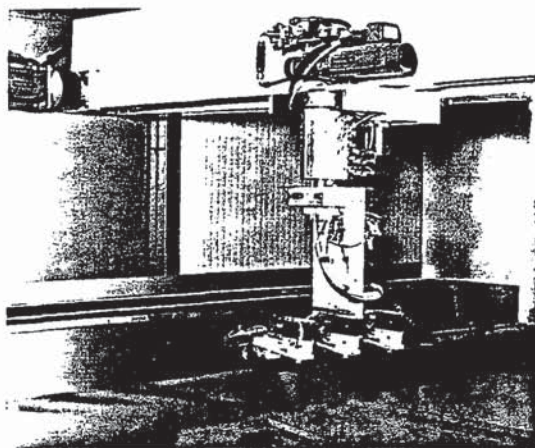
- On time "complete" installation
- Commissioning by qualified technicians
- Training for Client personnel before and after the start-up of the line
- Supply of technical manuals for use and maintenance of the machines
- Customized maintenance service
- Computerized spare parts service with distribution centers throughout the world.



L'impianto "chiavi in mano" Single source responsability

La tecnologia e l'esperienza CEFLA consentono di realizzare impianti completi "chiavi in mano". La CEFLA, infatti, progetta e costruisce nei propri stabilimenti tutte le principali macchine adatte a comporre un impianto di verniciatura: macchine di applicazione, movimentazione, forni di essiccazione in aria calda, a lampade ultraviolette, infrarosse, nonché i più moderni sistemi di trattamento dell'aria, di controllo e gestione delle linee. Tutto questo garantisce al Cliente finale l'assoluta compatibilità delle diverse macchine e la massima affidabilità dell'impianto. I sistemi CEFLA risolvono i problemi di verniciatura per antine da cucina, pannelli piani a rullo o a spruzzo, profili, finestre e numerosi altri fino alle più avanzate tecnologie di verniciatura robotizzata a lucido diretto.

Years of engineering experience has given CEFLA the ability to design and manufacture "turn-key" complete systems to provide technological solutions to satisfy the most difficult problems in the wood finishing industry. CEFLA, in fact, manufactures all the equipment supplied for a finishing system in its factory, thus, providing for the strictest of control and supervision over fabrication, wiring, mechanical and assembly operations. Supplying all of the components necessary for a given finishing system assures that all units are integrated and will function with the highest degree of compatibility and reliability. The Cefla systems are suitable to finish kitchen cabinet doors, spray or roller coated panels, mouldings, windows and many other up to the most advanced robotic and high gloss technologies.



Automazione e flessibilità Automation and flexibility

Automatizzazione dei processi produttivi e flessibilità nella risposta al mercato sono esigenze primarie dello sviluppo industriale di oggi.

La vasta esperienza CEFLA nella progettazione ed installazione di impianti altamente automatizzati permette di individuare e realizzare la soluzione più adeguata ad ogni singolo impianto ed alle specifiche esigenze del Cliente, dall'impianto più semplice a quello più sofisticato e dotato delle tecnologie più avanzate con computer di controllo e sistemi automatici di diagnostica.

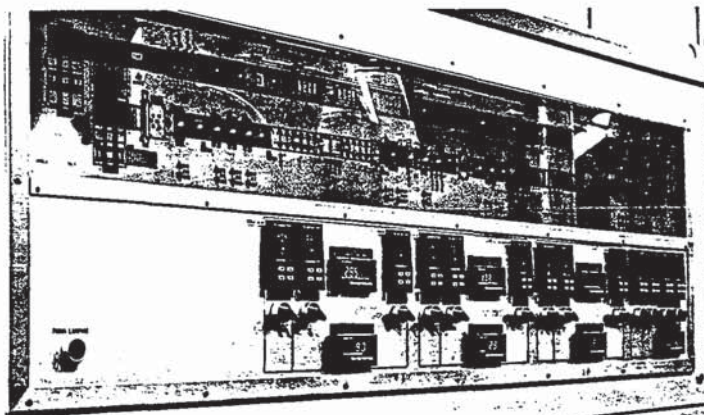
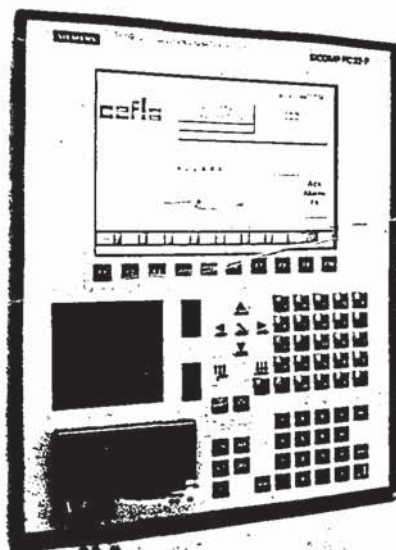
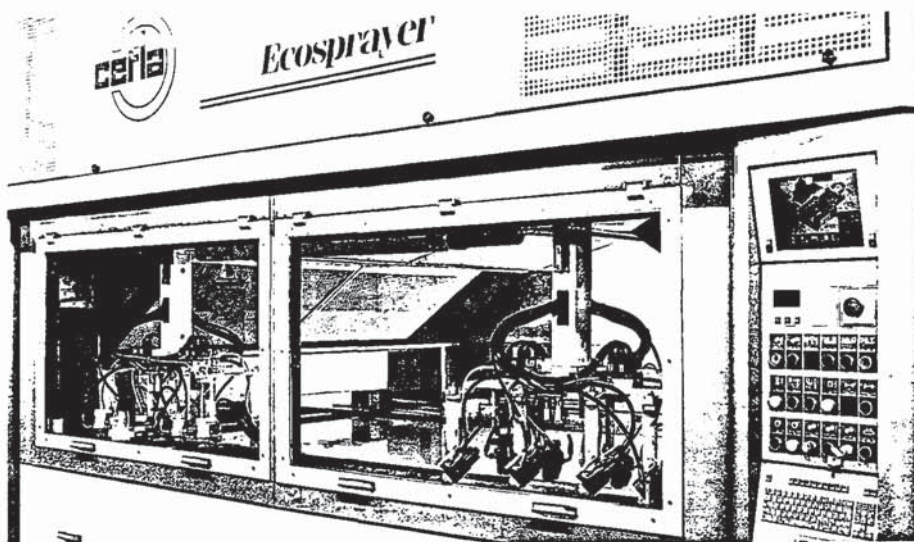
Il nuovissimo servizio "teleservice", inoltre, permette ai Clienti che utilizzano un impianto computerizzato di collegarsi, via modem tramite linea telefonica, direttamente con il centro di programmazione CEFLA, dove si possono eseguire controlli sullo stato del sistema ed eventuali modifiche di programma.

Automated production capability offering the maximum flexibility is the keynote in supplying finishing systems to industry today.

CEFLA's world-wide experience places them as a leader in offering the most specific need or problem.

Offering the most advanced computerized equipment available permits the highest degree of production diagnostics and control to be implemented into the system.

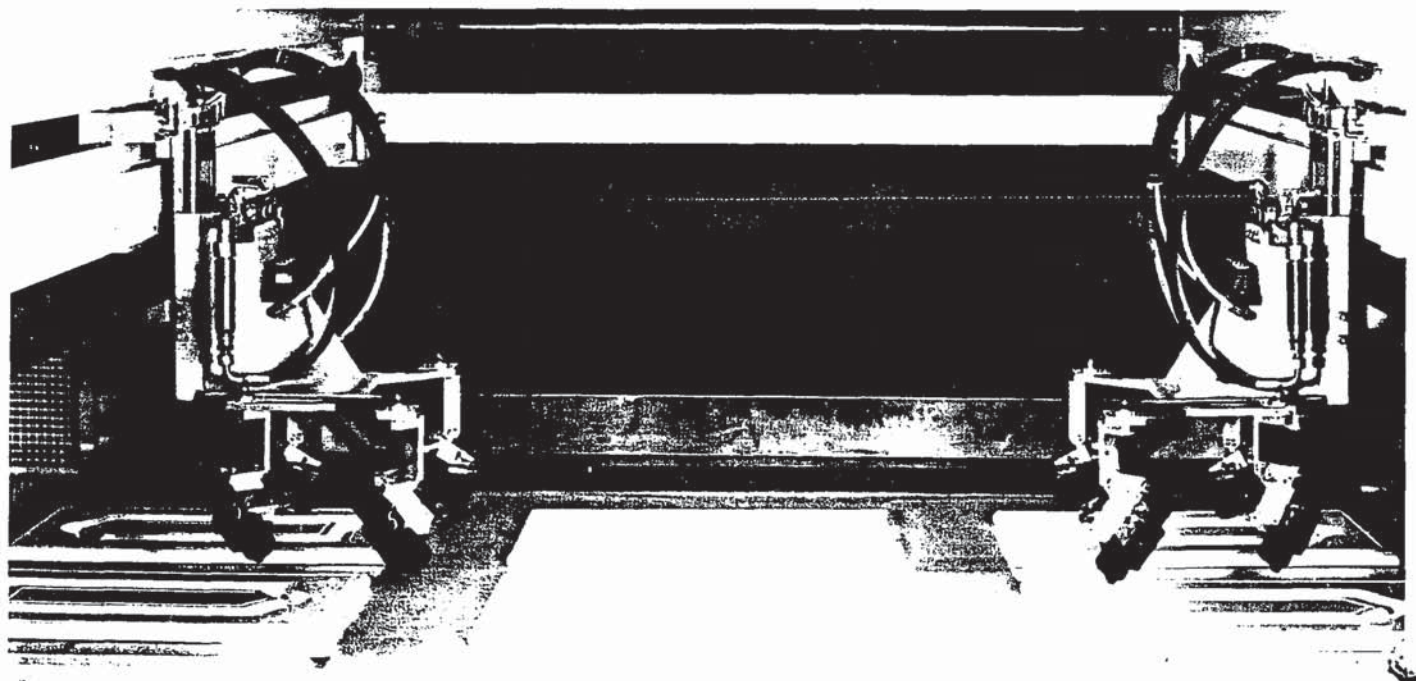
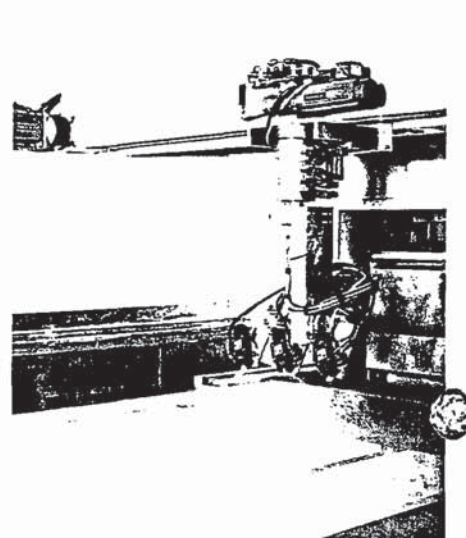
CEFLA's "teleservice" assures, through a computerized modem hookup directly to CEFLA's electronic center, that an immediate problem definition and resolution is possible.



Qualità Quality

Nella filosofia di sviluppo CEFLA "qualità" è un termine di vitale importanza. Esso significa non solo fornitura di macchine tecnologicamente avanzate, ad alte prestazioni e di facile manutenzione, ma anche di macchine in grado di assicurare la più alta qualità del prodotto finito con la massima affidabilità e ripetitività nel tempo. Tipici esempi di questa filosofia sono: lo Spraybotic, nuovo robot di spruzzatura e le spruzzatrici Ecosprayer (Tre e Easy) che rappresentano l'espressione più avanzata oggi esistente sul mercato delle nuove tecnologie di verniciatura a spruzzo, nonché le linee di finitura UV poliestere e all'acqua, dotate di efficienti sistemi di trattamento dell'aria e controllo automatico dei relativi parametri tecnologici (velocità, temperatura, umidità). Il conseguimento del marchio di qualità ISO 9001 per la Divisione Impianti di Verniciatura, premia lo sforzo intrapreso da CEFLA per portare il proprio prodotto ad un livello qualitativo estremamente elevato.

In CEFLA's philosophy "quality" is a vital word. This means not only to supply high technology, performance and easy to maintain machines, but also systems to assure the highest quality of the finished product with maximum repeatability and reliability. Typical examples of this philosophy are the Spraybotic spraying robot, the Ecosprayer spraying machines (Tre and Easy) that represent the most advanced expression of today's spraying technology and the polyester and water based UV finishing lines equipped with efficient air treatment systems to control air speed, temperature and humidity. The ISO 9001 certification obtained by Cefla Finishing Division is the recognition of the efforts of whole company in the direction of the total quality.

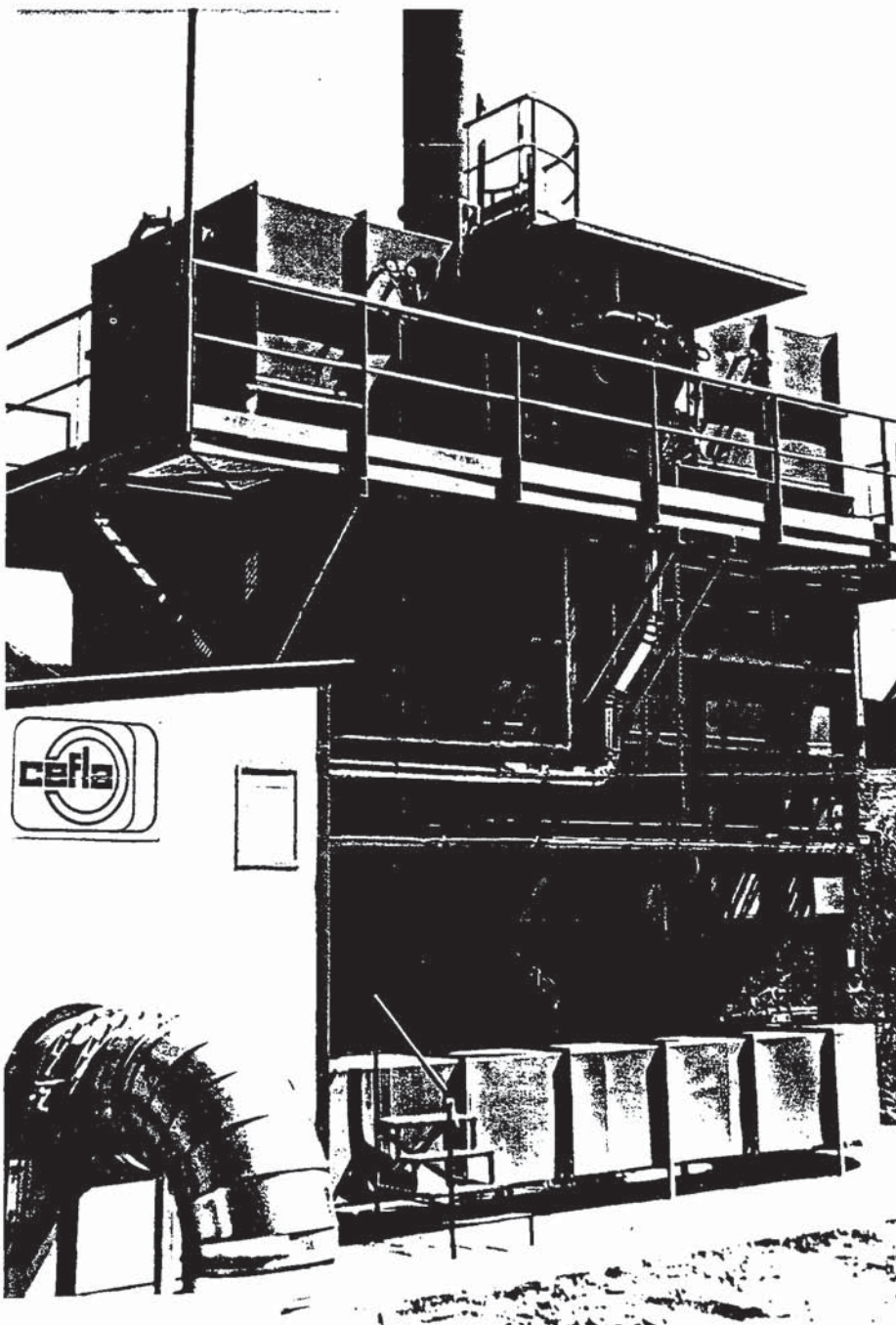
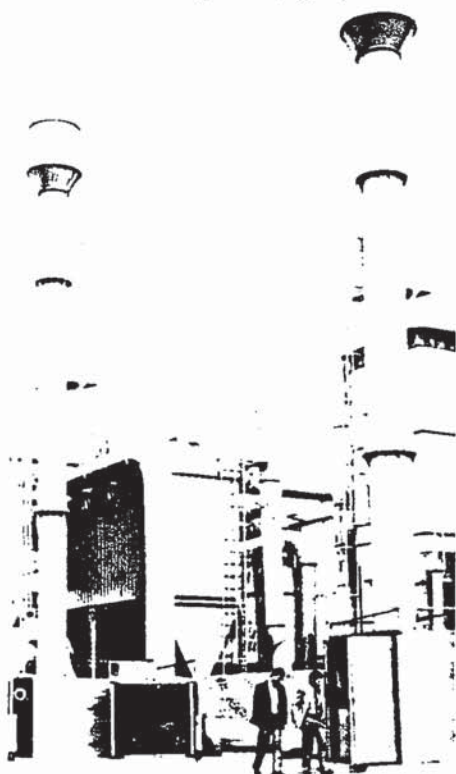
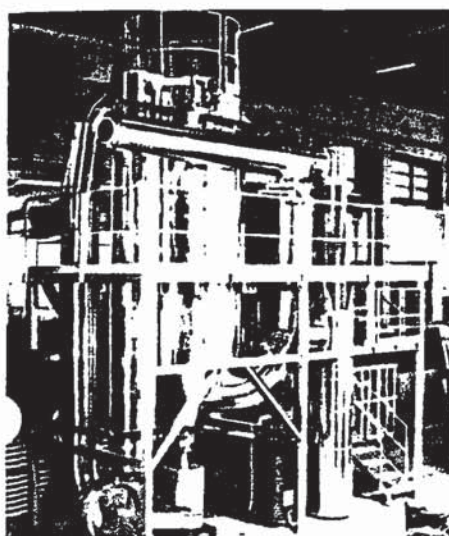


Ambiente Environment

CEFLA è da sempre attenta ai problemi di inquinamento ambientale, progettando e realizzando le proprie macchine in modo da ridurre al minimo gli scarichi nocivi.

Il settore depurazione e ambiente, che opera nell'ambito della Divisione Impianti di Verniciatura, progetta e costruisce impianti completi e personalizzati per il trattamento di solventi dell'industria del legno (T.I.F.) basandosi su una tecnologia assolutamente innovativa messa a punto dai reparti di ricerca dell'Azienda.

CEFLA is deeply and sincerely concerned in the pollution that V.O.C. emissions create throughout the world. Water and waste too must be reckoned with. CEFLA, through its environment engineering Group that operates in the Finishing Division, can offer a "global" solution approach to the treatment of solvents for the wood processing industry based on a new technology developed by its research departments.





Stiles Machinery • Altendorf America • Holzmas U.S.

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CLASSIFICATION



DNV

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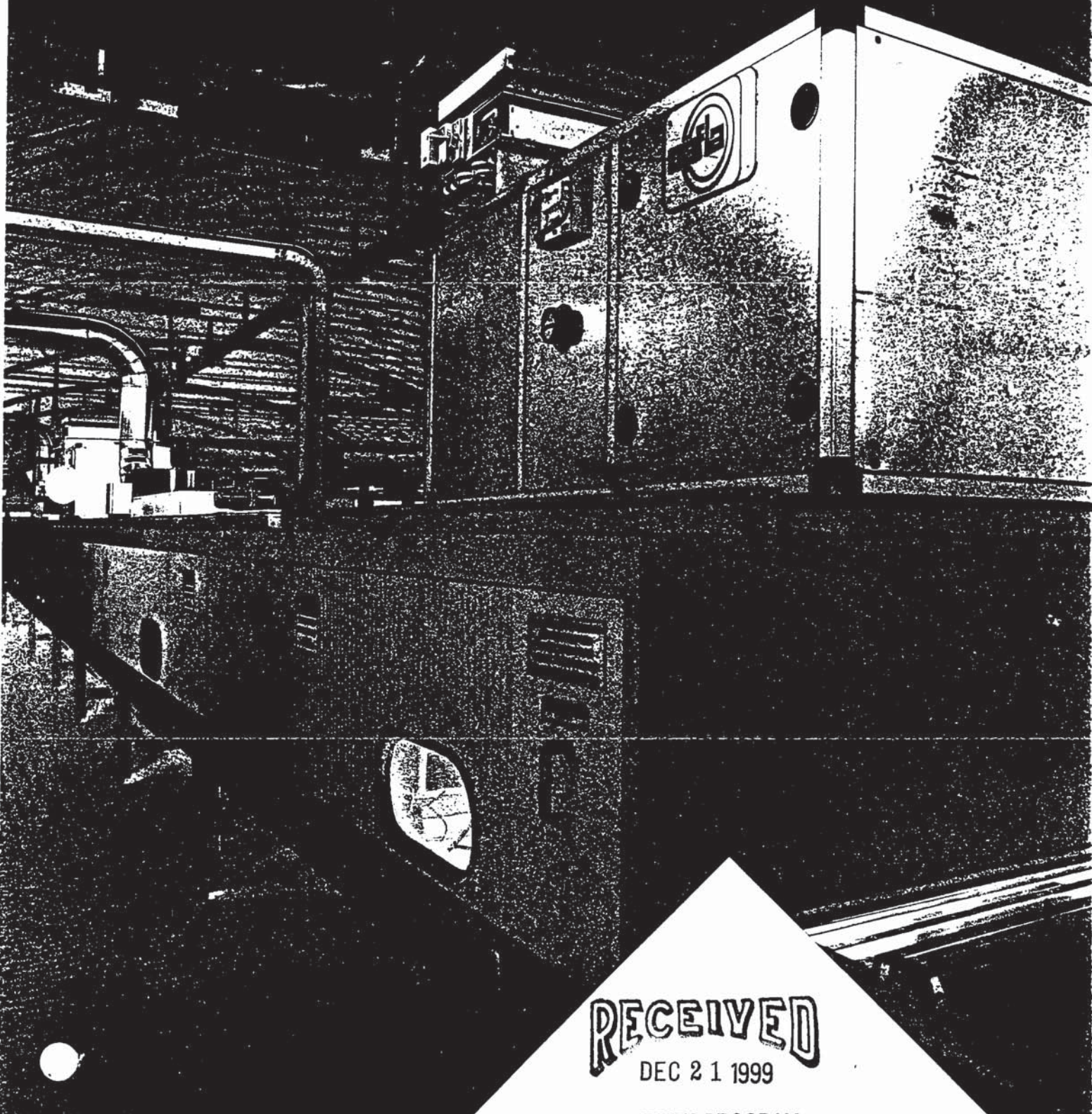
CEFLA Srl - IMPIANTI DI VERNICATURA - FINISHING DIVISION - OBERFLÄCHENANLAGEN - LIGNES DE TRAITEMENT DE SURFACES DU BOIS - INSTALACIONES DE BARNIZADO

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CEFLA Srl - IMPIANTI DI VERNICATURA - FINISHING DIVISION - OBERFLÄCHENANLAGEN - LIGNES DE TRAITEMENT DE SURFACES DU BOIS - INSTALACIONES DE BARNIZADO

Sistemi lineari di essiccazione

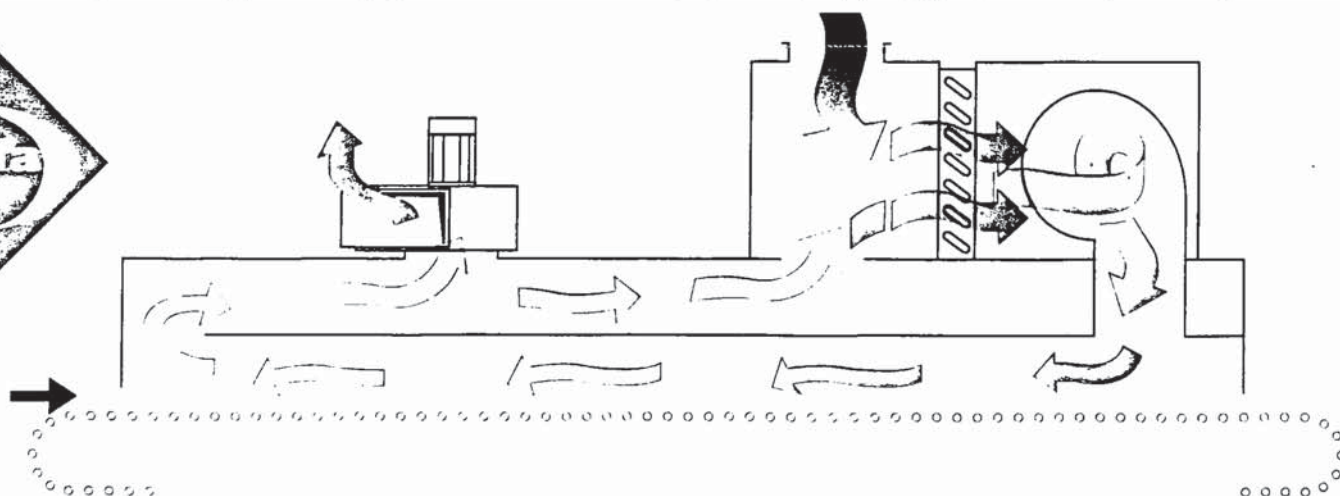
In-Line Drying Systems . Durchlauf-Trockenanlagen
Systèmes Linéaires de Séchage . Sistemas Lineales de Secado



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PERMITS PROGRAM

cefla



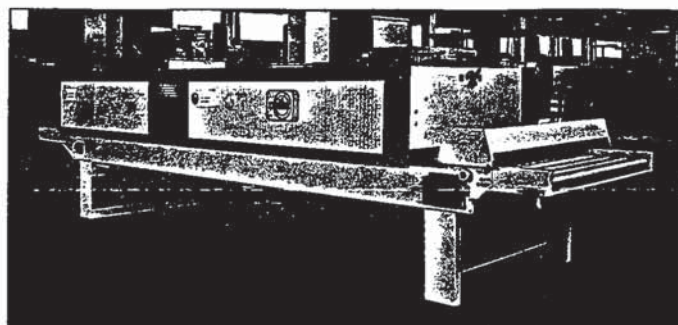
◀ **Q**uesto forno di appassimento - essiccazione ad aria calda, realizzato con un sistema modulare per rispondere alle esigenze dei cicli di essiccazione delle vernici, permette di ottenere alte prestazioni grazie al flusso laminare dell'aria. L'efficace sistema di ricircolo dell'aria e la possibilità di regolare la quantità di aria espulsa (automaticamente se richiesta) permettono un considerevole risparmio di energia. Il riscaldamento dell'aria avviene tramite uno scambiatore di calore con regolazione automatica della temperatura alimentabile ad acqua, vapore, con olio diatermico o elettricamente.

◀ **M**odular hot air flash-off / drying oven designed to satisfy every requirement in lacquer drying; high performances are assured through the air laminar flow. The efficient air recycle system and the possibility to control the exhausted air flow (automatically, on request) allows a considerable energy saving. The air heating is achieved through a heating exchanger (running with water, steam, diathermic oil or electricity) complete of automatic temperature adjusting unit.

◀ **D**ieser Heißluft-Abdunsttrockner, der mit einem Modulsystem realisiert ist, um den Anforderungen der Lacktrocknungszyklen zu begegnen, ist hochleistungsfähig dank des laminaren Luftflusses. Das effiziente Umluftsystem und die Möglichkeit, die Abluftmengen zu regulieren (automatisch auf Wunsch) ermöglichen eine beachtliche Energieersparnis. Die Lufterwärmung erfolgt durch einen Wärmetauscher mit automatischer Temperaturregelung, der mit Wasser, Dampf, Thermoöl oder elektrisch versorgt werden kann.

◀ **C**e type de tunnel de débouillage-séchage à air chaud, réalisé avec un système modulaire qui répond aux exigences des cycles de séchage vernis, permet d'obtenir des performances très élevées grâce au flux d'air laminaire. L'efficacité du système de recirculation de l'air et la possibilité de régler la quantité d'air éjecté (sur demande on peut fournir la version automatique) permettent une considérable économie d'énergie. Le réchauffage de l'air est obtenu par un échangeur calorifique avec réglage automatique de la température, alimenté par eau, vapeur, huile thermique ou électricité.

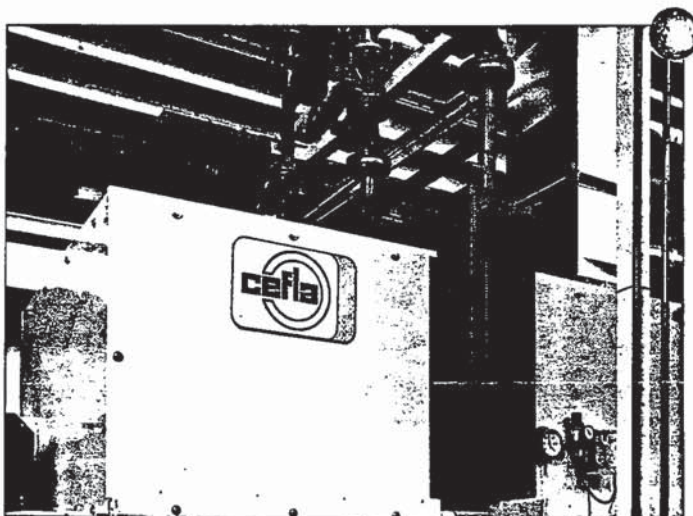
◀ **E**ste horno de evaporación-secado con aire caliente, realizado con un sistema modular para responder a las exigencias del ciclo de secado del barniz permite unas altas prestaciones gracias al flujo laminar del aire. Un sistema eficaz de recirculación del aire y la posibilidad de regular la cantidad de aire expulsada (automaticamente sobre pedido) consiente un considerable ahorro energético. La calefacción del aire se realiza por medio de un intercambiador de calor con regulación automática de la temperatura aumentada con agua, vapor, aceite o electricamente.



◀ Forno in linea
◀ In-line oven

◀ Trockner in Linie

◀ Tunnel en ligne
◀ Horno en línea



◀ Gruppo di trattamento aria
◀ Air treatment unit

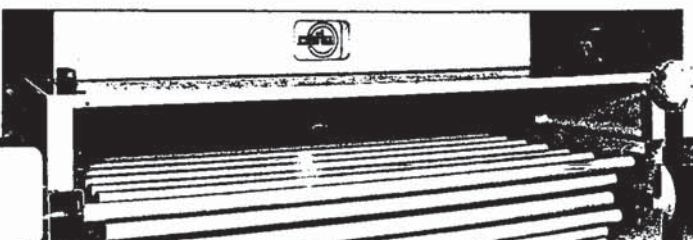
◀ Luftbehandlungseinheit

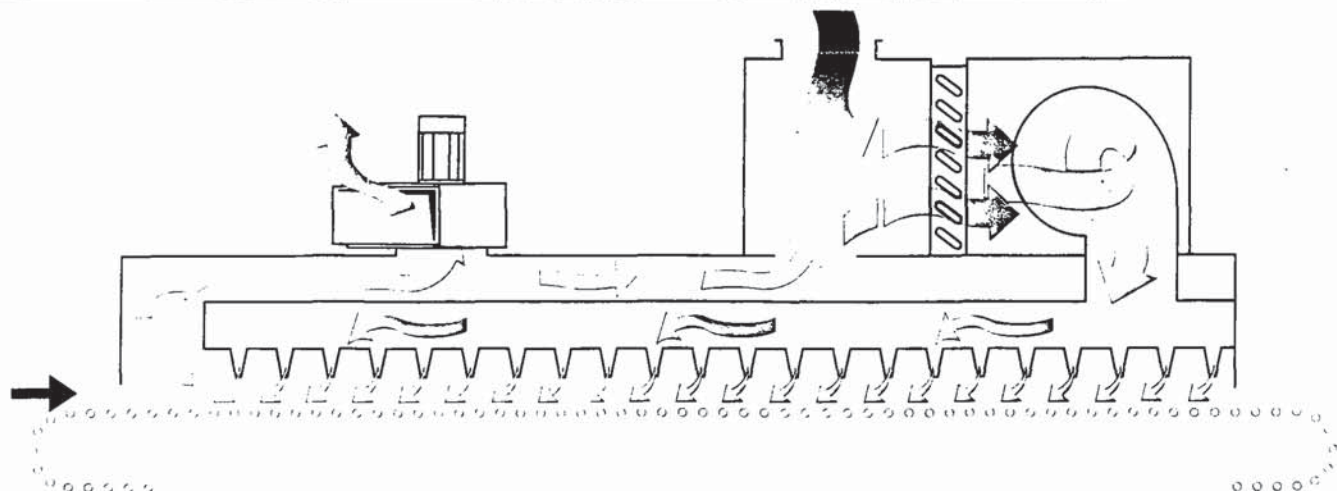
◀ Groupe de traitement de l'air
◀ Grupo de tratamiento del aire

◀ Trasportatore a tapparelle
◀ Bar conveyor

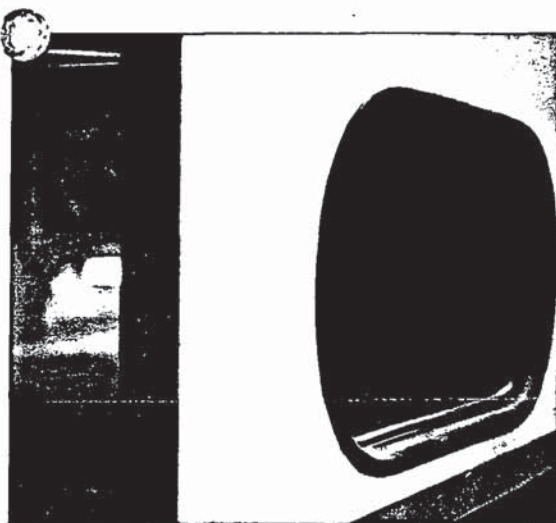
◀ Stabförer

◀ Convoyeur à lattes
◀ Transporte con radillos rotantes





◀ Disposizione ugelli ▶ Düsenverteilung ▶ Disposition des buses
 ▶ Nozzles arrangement ▶ Disposicion de las toberas



◀ Efficace isolamento termico ▶ Effiziente Wärme-Isolierung ▶ Isolation thermique efficace
 ▶ Efficient thermal insulation ▶ Aislamiento termico eficaz

◀ Transportatore a tappeto ▶ Bandförderer ▶ Convoyeur à tapis
 ▶ Belt conveyor ▶ Transportador de tapis



◀ **Il forno di essiccazione ad ugelli** consente una rilevante riduzione dei tempi di essiccazione in virtù di un ottimo scambio termico reso possibile da una elevata velocità dell'aria.

L'uniforme distribuzione degli ugelli su tutta la superficie del forno permette di avere in ogni parte una velocità dell'aria elevata, però senza ondulare il film di vernice applicata.

Il ricircolo dell'aria all'interno, il controllo della quantità d'aria espulsa e il controllo dell'umidità dell'aria all'interno del forno permettono l'impiego nell'essiccazione di tinte all'acqua oppure vernici all'acqua tradizionali o UV.

Lo stesso forno privo di scambiatore di calore può essere impiegato nel raffreddamento dei pannelli (versione RU).

◀ **The jet drying oven with nozzles** provides a dramatic reduction of the drying times thanks to an excellent heat exchange obtained through the high velocity of air.

The uniform nozzles distribution throughout the oven allows to achieve, in every part, a high air speed without "waving" the coated film.

The internal air recycle, the exhausted air flow adjustment and air humidity control inside the oven, permit its use for waterborne stains, conventional waterborne or UV lacquers.

The same tunnel, without the heating exchanger, can be used for panels cooling (RU type).

◀ **Der Düsentrockner** ermöglicht eine wesentliche Reduzierung der Trocknungszeiten aufgrund eines optimalen Wärmeaustausches, der durch die erhöhte Luftgeschwindigkeit erzielt wird.

Durch die einheitliche Verteilung der Düsen auf der gesamten Trockneroberfläche wird in jedem Teil eine erhöhte Luftgeschwindigkeit erzielt, ohne Blasenbildung des Lackfilms.

Die Luftzirkulation im Innern, die Kontrolle der Abluftmengen und die Kontrolle der Luftfeuchtigkeit im Innern des Trockners ermöglichen die Trocknung von Wasserbeizen, herkömmlichen Wasserlacken oder UV-Lacken.

Die gleiche Anlage ohne Wärmetauscher kann als Kühlzone dienen (RU-Ausführung).

◀ **Le tunnel de séchage à buses** permet une considérable réduction des temps de séchage grâce à l'excellent échange thermique dû à la haute vitesse de l'air.

La distribution uniforme des buses sur toute la surface du four permet d'avoir une haute vitesse de l'air dans chaque partie sans provoquer l'ondulation du film de vernis appliqué.

La recirculation de l'air à l'intérieur, le contrôle de la quantité d'air éjecté et le contrôle de l'humidité de l'air à l'intérieur du four permettent son emploi dans le séchage de teinte à l'eau ou vernis à l'eau traditionnel ou UV.

Le même four sans échangeur calorifique peut être utilisé pour le refroidissement des panneaux (version RU)

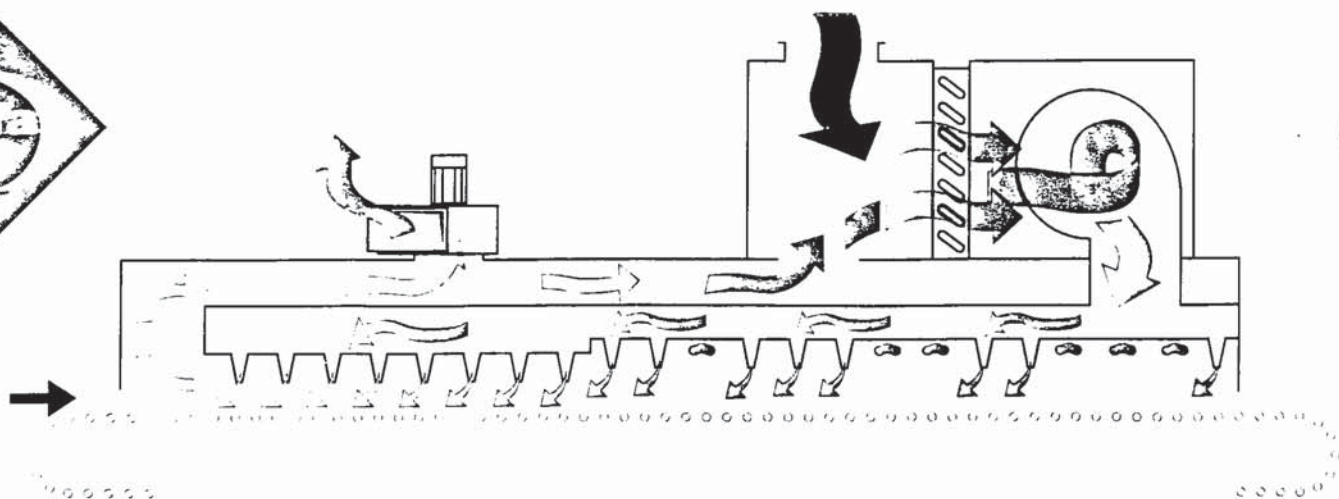
◀ **Este horno de secado por toberas** permite un importante reducción en los tiempos de secado en virtud de un óptimo cambio térmico hecho posible por una elevada velocidad del aire.

La distribución uniforme de las toberas sobre toda la superficie del horno permite tener en cada zona una velocidad de aire elevada, pero sin afectar a la película de barniz aplicado.

La recirculación del aire en el interior, el control del aire expulsado y el control de la humedad del aire en el interior del horno permite el secado de tintas a base agua o también barnices convencionales o UV.

El mismo horno sin intercambiador de calor se puede utilizar para el enfriamiento de paneles (versión RU).

cefla



◀ **A**quadry è il più efficiente sistema di essiccazione di vernici all'acqua ed è ottenuto alternando all'interno dello stesso forno zone di ugelli e lampade IRCK ad alta capacità radiante. La particolare lunghezza d'onda di essiccazione delle IRCK consente una più efficace azione sul film di vernice minimizzando i tempi di evaporazione dell'acqua contenuta.

◀ **A**quadry is the most efficient drying system for waterborne lacquers: it alternates nozzles with high power IRCK lamps. The particular wave length of IRCK lamps allows an efficient drying of the lacquer film, reducing the water evaporation times.

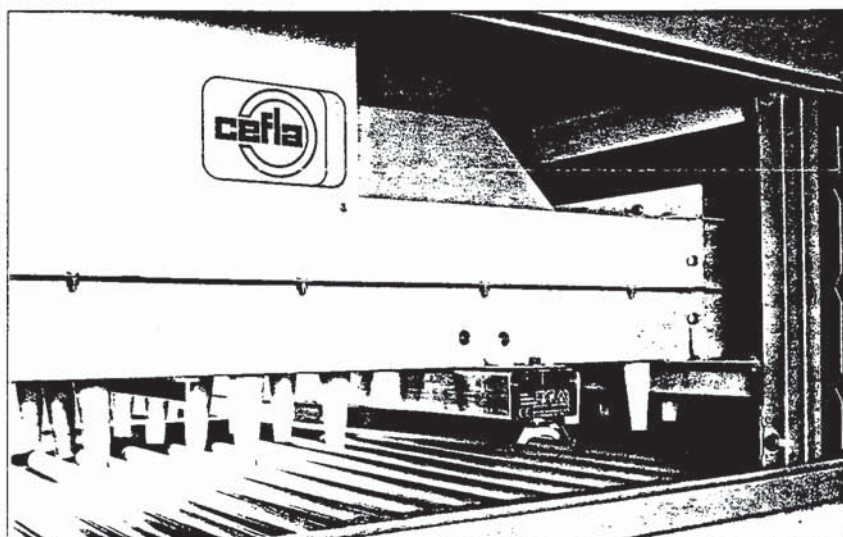
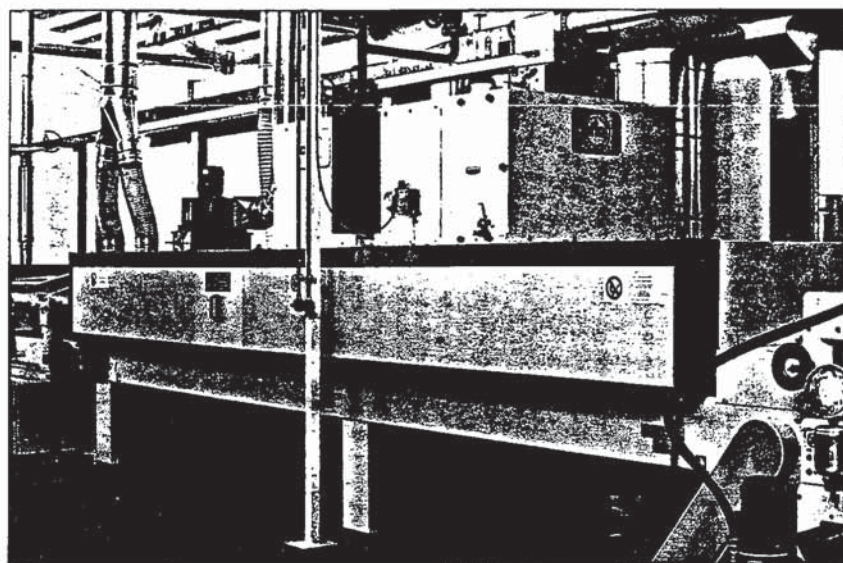
◀ **A**quadry ist das effizienteste Wasserlack-Trocknungssystem mit einer Kombination von Düsen und IRCK-Strahlern mit hoher Strahlungsintensität. Die spezielle IRCK-Wellenlänge ermöglicht eine effizientere Einwirkung auf den Lackfilm unter Verringerung der Verdampfungszeit des enthaltenen Wassers.

◀ **A**quadry représente le système le plus efficace pour le séchage de vernis à l'eau, obtenu grâce à l'alternance à l'intérieur du four même, de zones à buses et zones à lampes IRCK à haute capacité radiante.

La longueur d'onde de séchage spéciale des lampes IRCK permet une action plus efficace sur le film de vernis et réduit le temps d'évaporation de l'eau contenue.

◀ **A**quadry es el sistema más eficiente para el secado de barnices a base agua y se obtiene alternando toberas y lámparas IRCK de alta capacidad de radiación.

La longitud de onda de secado del IRCK permite una eficaz acción sobre la película de barniz minimizando el tiempo de evaporación del agua.



◀ Zone combine lampade - ugelli

◀ Kombinierte Zonen Strahler-Düsen

◀ Zones combinées lampes - buses

◀ Lamps-nozzles combined zones

◀ Zonas combinadas lamparas - toberas

◀ **Il forno EF** è realizzato da una prima zona ad aria con flusso laminare contrario al senso di avanzamento pannelli, seguita da una zona di lampade infrarosse IRC: è impiegabile nell'essiccazione di tinte o isolanti al solvente.

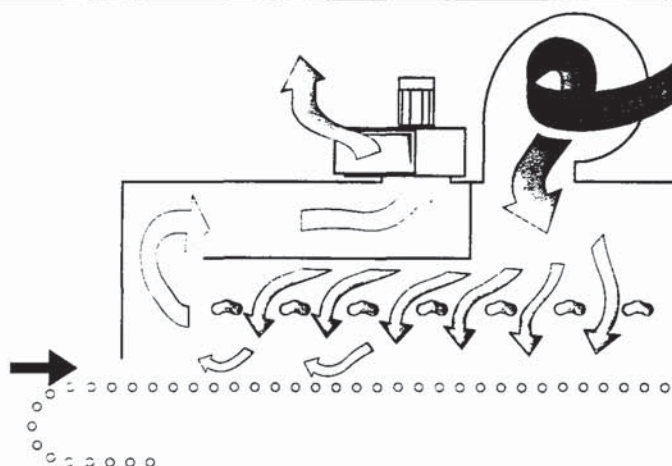
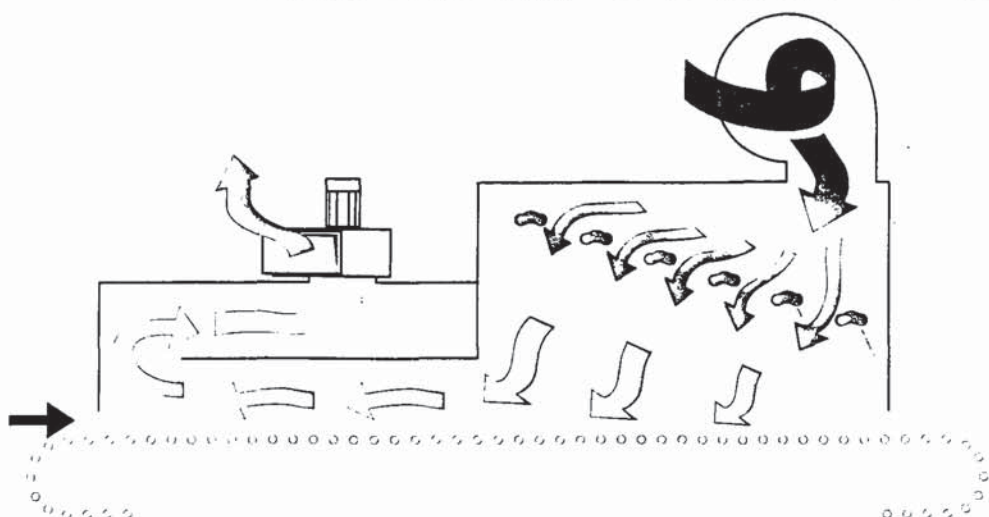
Caratteristiche di questo forno sono modularità e risparmio energetico, assicurato dall'impiego delle lampade IRC per il riscaldamento dell'aria.

◀ **EF system** is composed by a first zone with laminar air flow and a second zone with IRC infrared lamps; this system may be used in the drying of stain or solvent based insulating coats. Modularity and energy saving are the two main features of this oven, the IRC lamps in fact are used to heat the air.

◀ **Der Trockner EF** besteht aus einer ersten Zone mit Laminarluftfluß in entgegengesetzter Richtung zum Plattenvorschub, dann folgt eine Zone mit IRC Infrarotstrahlern: der Trockner wird eingesetzt für die Aushärtung von Beizen oder lösungsmittelhaltigen Isolierprodukten. Typisch für diesen Trockner ist die Modulbauweise und die Energieersparnis, garantiert durch die Nutzung von IRC Strahlern zur Lufterwärmung.

◀ **Le four EF** se compose d'une première zone à flux d'air laminaire en opposition par rapport au sens d'avance des panneaux, suivi par une zone de lampes infrarouges IRC; il est utilisé pour le séchage de teintures ou isolants au solvant. Les caractéristiques de ce four sont la modularité et l'économie d'énergie assurés par l'emploi des lampes IRC pour le réchauffage de l'air.

◀ **El horno EF** realizado con una primera zona de aire con flujo laminar contrario al sentido de avance de los paneles, seguido de una zona de lámparas de infrarrojos IRC: se utiliza en el secado de tintes o impregnaciones al disolvente las características de este horno son: modularidad y ahorro energético, asegurado por el empleo de las lámparas IRC para calentar el aire.



◀ **Il forno a raggi infrarossi UR** è consigliabile ove sia necessario essiccare con un aumento rapido della temperatura: questo effetto si ottiene con lampade infrarosse IRM ed è usato per vernici catalizzate acide. La regolazione in altezza delle lampade e l'accensione delle stesse a gruppi permette di essiccare con il minimo impegno di energia. Il sistema di ventilazione con ricircolo termostato permette di eliminare il solvente a temperatura costante.

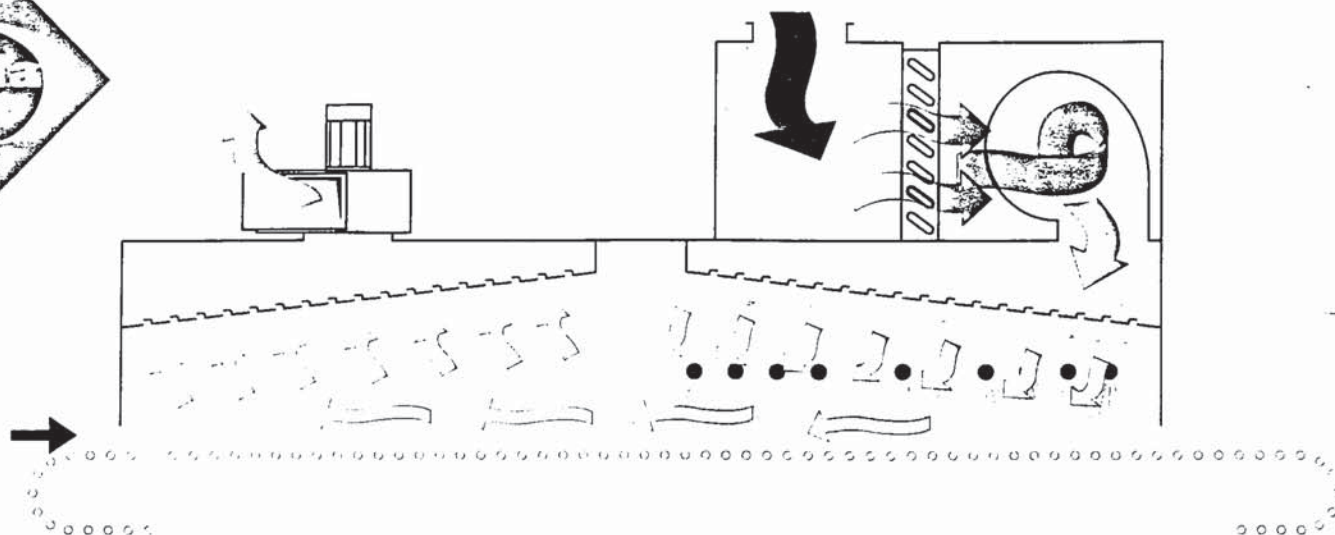
◀ **UR infrared oven** is suggested in all those cases where a quick temperature increase is required; this heat effect is recommended for acid catalyzed lacquers and it is achieved through IRM infrared lamps. The adjustment of the lamp distance from the panels and the possibility to switch on single groups of lamps result in high drying capacity with a minimum required power. The ventilation system keeps constant air temperature through a thermostat controlled recycle.

◀ **Der Trockner mit UR-Infrarotstrahlen** empfiehlt sich, wo eine Trocknung durch einen schnellen Temperaturanstieg erzielt wird: dieser Wärmeeffekt ist geeignet für katalytische säurehaltige Lacke und wird über IRM-Infrarot-Strahler erreicht. Die Höhenregulierung der Strahler und die Möglichkeit, die Strahler gruppenweise einzuschalten, ermöglicht eine Trocknung mit minimalem Energieaufwand. Durch das besondere Belüftungssystem mit thermostatisch geladener Umluft wird das Lösemittel entfernt und die Temperatur konstant gehalten.

◀ **Le four à rayonnement infrarouge UR** est conseillé quand est nécessaire un simple effet d'augmentation rapide de la température; ce système est préconisé pour les vernis catalysés acides et il est obtenu au moyen de lampes infrarouges IRM. Le réglage de la distance entre les lampes et les panneaux et la possibilité d'allumer les lampes par groupes permet un séchage efficace avec la consommation minimale d'énergie. Le système particulier de ventilation avec recirculation commandé par un groupe de régulation thermostatique permet l'élimination du solvant et le maintien de la température à un niveau constant.

◀ **El horno de rayos infrarrojos UR** es aconsejable en todas aquellas condiciones donde sea necesario un simple efecto de aumento rápido de la temperatura: este efecto calor está indicado para productos catalizado ácidos y se obtiene por medio de lámparas de infrarrojos IRM. La regulación de la distancia de las lámparas y la posibilidad de encenderlas por grupos permite un eficaz secado con un mínimo de energía. El particular sistema de ventilación con recirculación permite eliminar el disolvente manteniendo constante la temperatura por medio de un termostato.

cafla



Una distribuzione dell'aria perfettamente laminare, unitamente ad una velocità ben controllata (a richiesta anche elettronicamente) sono le condizioni che determinano l'impiego del FEV/ALD nella fase di appassimento di cicli di verniciatura ad alta qualità.

Il sistema costruttivo modulare è studiato per impedire al pulviscolo di penetrare all'interno ed i gruppi autonomi di pressurizzazione sono dotati di filtri ad alta efficienza (99,8%) permettendo così di utilizzare il forno ALD nei cicli di verniciatura a lucido diretto.

Con l'aggiunta di una serie di lampade ultraviolette TL 03 e 05 a bassa pressione, nella parte finale, è possibile la gelificazione di vernici UV lucide, opache, trasparenti o pigmentate.

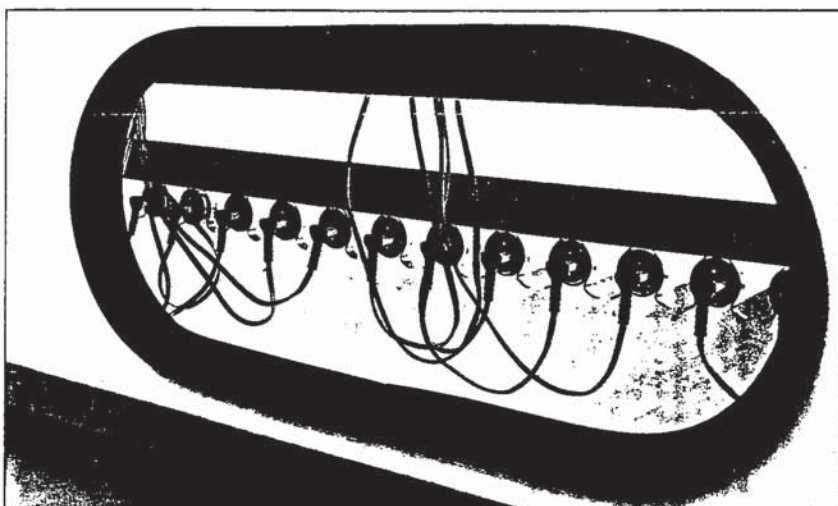
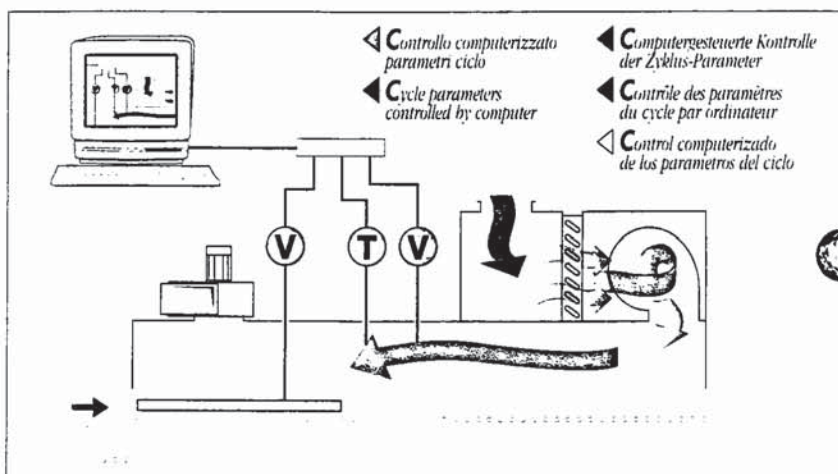
Questo forno è parte integrante del sistema Ecogel, utilizzato nell'essiccazione di vernici PELV, in quanto rappresenta l'inizio di una emissione controllata e progressivamente crescente di radiazioni UV.

A perfect laminar air distribution combined with a well controlled speed (on request, also electronically) determine the use of FEV/ALD for flashing off in high quality finishing cycles.

The modular system has been designed to prevent powder from entering inside; the independent pressurization units are equipped with high efficiency filters (99,8%) allowing to use the ALD oven in direct high-gloss finishing cycles.

By adding a set of low pressure UV lamps TL 03 and 05 in the final section it is possible to obtain the gelling of UV gloss, mat, clear or pigmented lacquers.

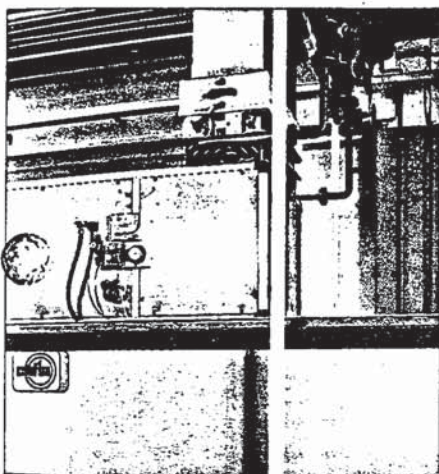
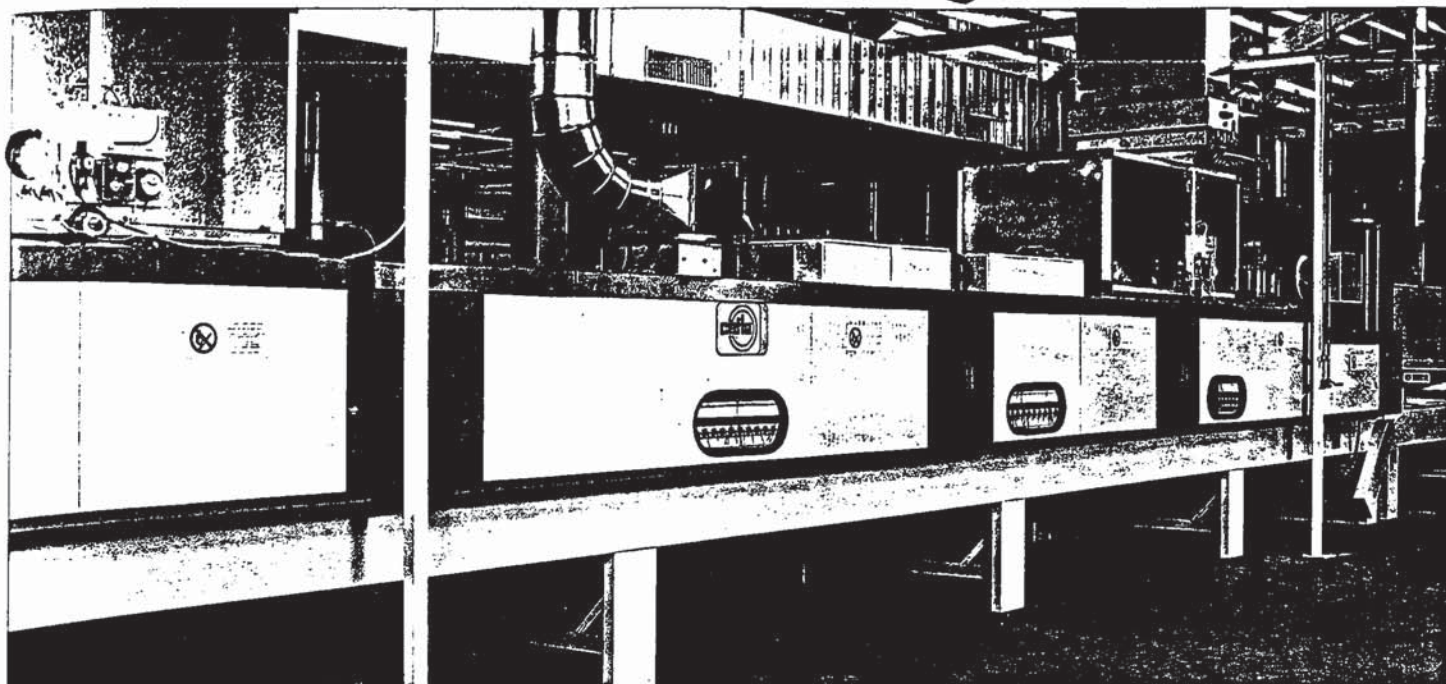
This oven is an integral component of the Ecogel system, used in the PELV lacquers drying, as it represents the beginning of a monitored and gradually increasing emission of UV radiations.



◀ Lampade TL
◀ TL lamps

◀ TL Strahler

◀ Lampes TL
◀ Lámparas TL



- ◀ Gruppo filtrazione / trattamento aria
- ◀ Filtration / air treatment unit
- ◀ Filtrierungs- / Luftbehandlungseinheit
- ◀ Groupe de filtration / traitement de l'air
- ◀ Grupo de filtración / tratamiento del aire



- ◀ Posizionamento forno su curva
in positioning in curve

- ◀ Trockner -
Positionierung auf Kurve

- ◀ Placement
du tunnel en courbe
- ◀ Posicionamiento
horno en curva

◀ Eine perfekt laminare Luftverteilung, zusammen mit einer gut kontrollierten Geschwindigkeit (auf Wunsch auch elektronisch) sind die Bedingungen, die die Nutzung des FEV/ALD in der Abdunstphase der hochqualitativen Lackierzyklen bestimmen. Die modulare Bauweise wurde eigens analysiert, um zu verhindern, daß Staub ins Innere gelangt. Die autonomen Zuluftgruppen sind mit hochleistungsfähigen Filtern ausgestattet (99,8%), so daß der Trockner ALD auch in Lackierzyklen mit Direktglanz einzusetzen ist. Mit einer zusätzlichen Reihe UV-Niederdruckstrahler TL 03 oder 05 in der Endzone ist die Angelierung von glänzenden, matten, transparenten oder pigmentierten UV-Lacken möglich. Dieser Trockner ist Bestandteil des Ecogel-Systems, das für die Trocknung von Polyester-UV-Lacken benutzt wird, insofern er den Beginn einer kontrollierten und progressiv steigenden UV-Strahlungsemission darstellt.

◀ Une distribution d'air parfaitement laminaire et la vitesse bien contrôlée (contrôle électronique sur demande) sont les conditions qui permettent l'utilisation du four FEV ALD dans la phase de debulage des cycles de finition de haute qualité. Le système modulaire a été étudié pour éviter la pénétration de la poussière à l'intérieur et les groupes de pressurisation sont pourvus de filtres à haute efficacité (99,8%) ce qui permet l'utilisation du four ALD dans les cycles de finition brillant direct. Grâce à l'aide d'une série de lampes UV TL 03 et 05 à basse pression dans la partie finale, on peut procéder à la gélification de vernis UV brillants, mats, transparents ou pigmentés. Ce four peut être considéré comme une partie intégrante du système Ecogel, utilisé pour le séchage de vernis PEUV, car il représente le début d'une émission contrôlée et progressivement croissante de radiations UV.

◀ Una distribución del aire perfectamente laminar, unida a una velocidad bien controlada (sobre pedido incluso electrónicamente) son las condiciones que determinan el FEV/ALD en la fase de evaporación en los ciclos de barnizado de alta calidad. El sistema constructivo modular está estudiado para impedir la penetración del polvo al interior y los grupos de presurización autónomo de presurización están dotados de filtros de alta eficiencia (99,8%) permitiendo de esta forma utilizar el horno ALD en los ciclos de barnizado para brillo directo. Adjuntando una serie de lámparas ultravioletas TL 03 y 05 de baja presión en la parte final hace posible la gelificación de barnices UV de alto brillo, mates, transparentes o pigmentados. Este horno forma parte del sistema Ecogel, utilizando en el secado de barnices PE UV lo que representa el inicio de un emisión controlada y progresivamente creciente de radiaciones UV.

stiles

STILES MACHINERY, INC.

Stiles Machinery • Altendorf America • Holzma=U.S.

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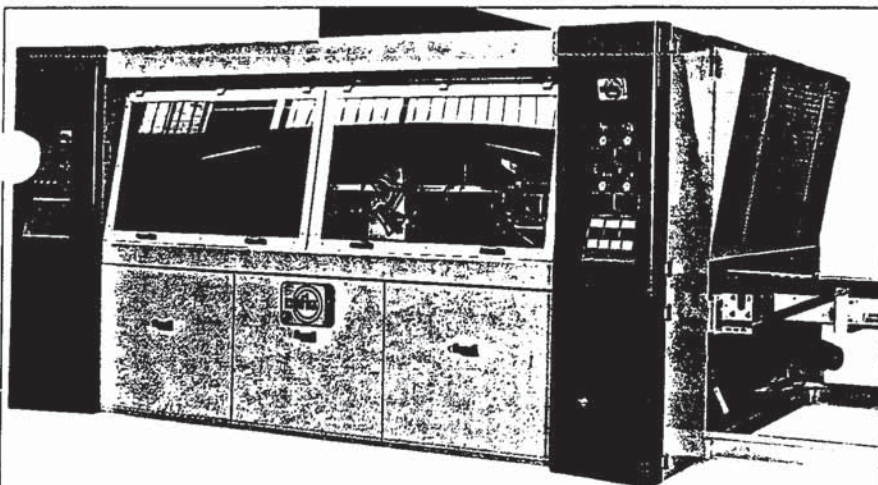
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1200 Tulip Dr.
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2220 Cedar St.
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Fax: 909-823-0953

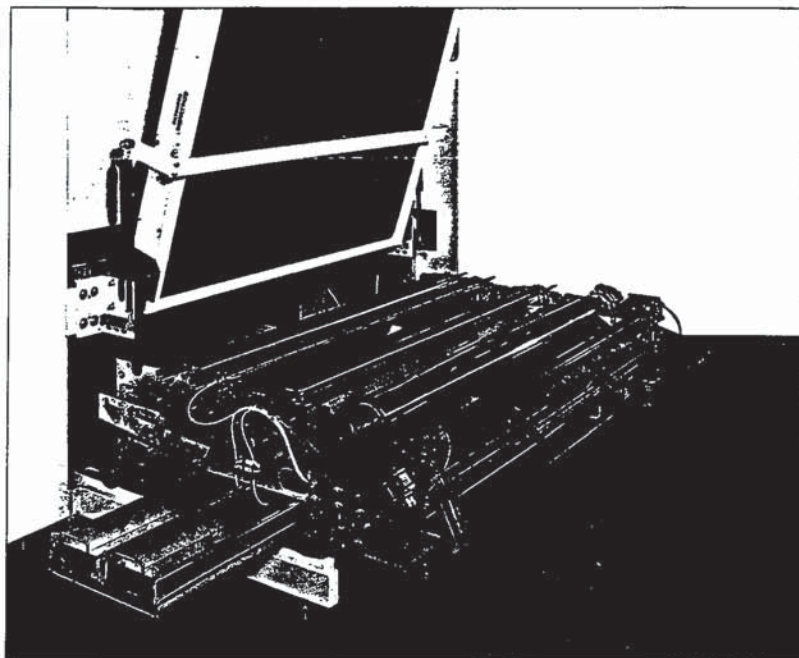
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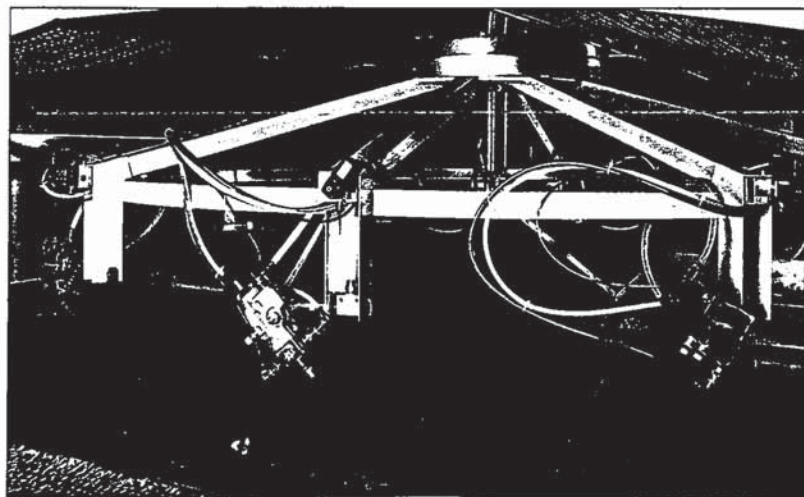
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1



2



3

◀ **R**otostain è la spruzzatrice automatica (foto 1) appositamente studiata per applicare ogni tipo di tinta a base acqua o solvente, su pannelli sagomati, garantendo elevati standard qualitativi e produttivi. La macchina è stata completamente ridisegnata per garantire caratteristiche ergonomiche largamente superiori e una gradevole estetica. L'uniformità di tinteggiatura in ogni condizione, semplicità di uso ed economia di esercizio sono le caratteristiche principali di questa macchina ottenute per mezzo di:

- Sistema di trasporto pezzi a nastro continuo in CFB (l = 1650 mm.) con sistema di pulizia e recupero tinta. Carrello di pulizia ad estrazione longitudinale per minimizzare gli ingombri (foto 2)
- Zona di spruzzatura a ventilazione controllata in cui si trova un gruppo di distribuzione rotante che alimenta 10 pistole tramite uno o due circuiti completi di ricircolo (foto 3)
- Regolazione in altezza del gruppo portapistole per mezzo di volantino esterno
- Abbattimento del particolato solido entro i limiti di Legge per mezzo di doppia serie di filtri a secco di facile sostituzione (schema 4)
- Centralina elettronica di gestione dei parametri di spruzzatura con PLC. Rilevamento pezzi con fotocellula o barriera a 60 fotodiodi (foto 5).

◀ **T**he Rotostain is an automatic spray machine (photo 1) specifically designed for applying any water or solvent based stain on flat or shaped panels, ensuring high quality and production standards. New reviewed design provides much better ergonomic and aesthetic features. Uniform staining under any condition, simple operation and economy of running are the main features of this machine consisting of:

- Workpieces transport system with continuous (CFB) carbon filter belt (l = 1650 mm.) and equipped with cleaning and stain recovery system. Longitudinally removable cleaning trolley requiring minimum floor space. (photo 2)
- Spray section with controlled ventilation: in this section a rotary distribution unit feeds 10 guns through one or two complete recirculation circuits (photo 3)
- Height adjustment of guns supporting unit is provided through external handwheel.
- Entrapment of solid particulates, complying to the limits of the EPA, is achieved using a series of double dry filters. These are fitted with ease of maintenance in mind (diagram 4)
- Electronic control unit to regulate the spraying parameters operated by a PLC. Operation of the guns controlled by a system of photocells or up to 60 photodiode barrier (photo 5)

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PERMITS PROGRAM

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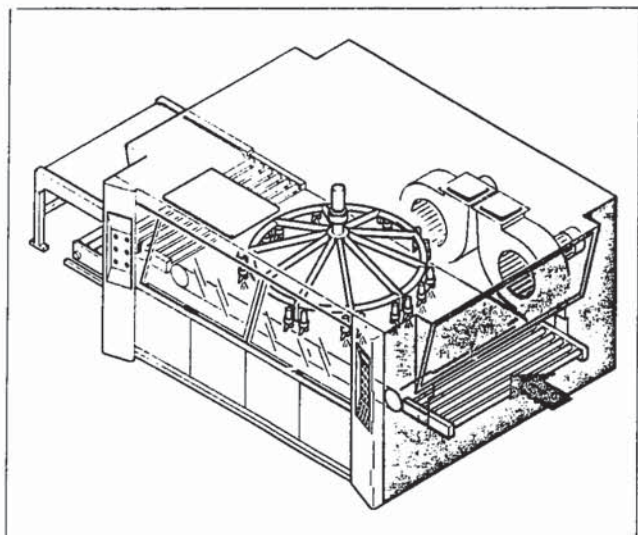
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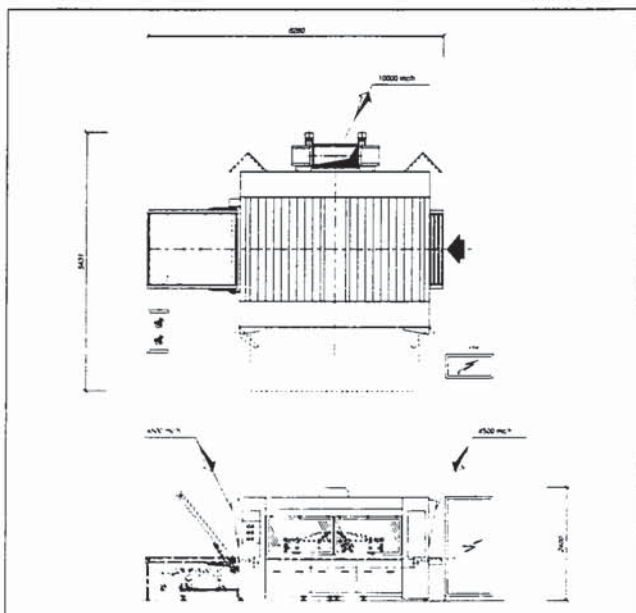
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4



5



6

Rotostain ist eine automatische Spritzmaschine (Foto 1), die speziell zum Auftragen von beliebigen wasserlöslichen oder lösemittelhaltigen Beizarten auf geformten Platten entwickelt wurde, wobei ein hoher qualitativer und produktiver Standard gewährleistet wird. Die Maschine hat ein vollkommen neues Design, das ihre verbesserten ergonomischen Merkmale verdeutlicht und ihr eine, unter ästhetischem Gesichtspunkt, gefälligere Gestalt verleiht. Die Maschine zeichnet sich durch einen gleichmäßigen Beizauftrag unter jeder Bedingung, einfache Bedienung und Wirtschaftlichkeit im Betrieb aus. Diese wesentlichen Merkmale konnten dank folgender Eigenschaften erzielt werden:

- Werkstückfördersystem mit endlosem CFB-Band (l = 1650 mm.) mit Reinigungssystem und Produktrückgewinnung. Längs ausziehbarer Reinigungswagen zur Platzersparnis (Foto 2)
- Spritzbereich mit kontrollierter Belüftung, in welchem sich eine rotierende Verteilereinheit befindet, die 10 Pistolen mittels einem Kreislauf oder zwei Kreisläufen mit Umlaufsystem versorgt (Foto 3)
- Höhenverstellung der Pistolenträgergruppe durch äußeres Handrad
- Abbau der Feststoff-Partikel innerhalb der gesetzlich geltenden Grenzwerte durch doppelte Reihe an leicht austauschbaren Trockenfiltern (Plan 4)
- Elektronische Kontrolleinheit zur Steuerung der Spritzparameter mit PLC. Werkstückerkennung mit Fotozelle oder Lichtschranke mit 60 Photodioden (Foto 5).

Rotostain est la machine de pistelage automatique (photo 1) spécialement conçue pour appliquer tous types de peinture à base d'eau ou à solvant sur des panneaux moulurés, en assurant des niveaux de qualité et de productivité élevés. Cette deuxième génération de machines à été conçue pour garantir des caractéristiques ergonomiques et esthétiques encore plus performantes. Application de peinture uniforme dans toutes les conditions de travail, simplicité d'emploi et économie de service: voilà les caractéristiques principales de cette machine obtenues grâce à:

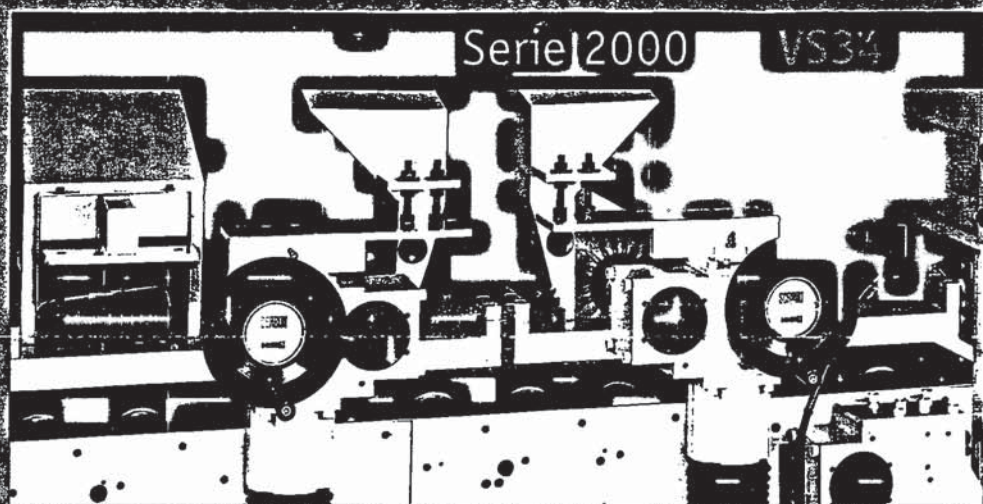
- Système de transport des pièces à tapis continu en CFB (l = 1650 mm) avec un système de nettoyage et de récupération de produits. Chariot de nettoyage extractible dans l'axe longitudinal pour réduire l'encombrement (photo 2)
- Zone de pistelage à ventilation contrôlée, équipée d'un groupe de distribution rotatif alimentant un ou deux circuits de 10 pistolets, avec recirculation (photo 3).
- Réglage en hauteur du groupe porte-pistolets.
- Réduction des émissions de particules solides dans les limites prévues par la Loi au moyen d'un double jeu de filtres secs facilement accessibles (photo 4).
- Unité de gestion électronique des paramètres de pistelage par PLC. Détection des dimensions et position des pièces par photocellule ou barrière à 60 photodiodes (photo 5).

Rotostain es la máquina para la aplicación de tinta (foto 1) estudiada específicamente para cualquier tipo de tinta a base de agua o disolvente, sobre paneles moldurados, garantizando elevados resultados de calidad y producción. La máquina se ha rediseñado completamente para garantizar una ergonomía superior y un agradable impacto estético. Uniformidad de tinte en cualquier tipo de condición, funcionamiento simple y economía de ejercicio son las características principales de esta máquina obtenidas mediante:

- Sistema de transporte de las piezas de cinta continua de CFB (l = 1650 mm.) con sistema de limpieza y recuperación de la tinta. Carro de limpieza con extracción longitudinal para reducir el espacio necesario (foto 2)
- Zona de aplicación y ventilación controlada donde se encuentra un grupo de distribución giratorio que alimenta 10 pistolas mediante uno o dos circuitos con recirculación (foto 3)
- Altura soporte pistolas regulable desde el exterior
- Separación de las partículas sólidas dentro de los límites dictados por la Ley mediante una serie doble de filtros en seco de fácil sustitución (esquema 4)
- Centralita electrónica de gestión de los parámetros de aplicación con PLC. Detección de las piezas con fotocélula o barrera de 60 fotodiodos (foto 5).



SORBINI



Spazzolatrici

Brushing machines

Brosseuses

Bürstmaschinen

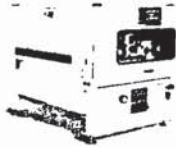
Limpiadoras de cepillos



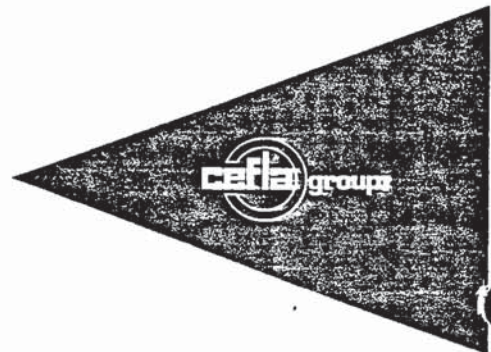
VS32 A
VS32 B



VS33 ACT G
VS33 ACT F



VS34 AC
VS34 ACT





PREPARED FOR:

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ATTENTION:

Mr. Donnie L. Zapara

**(210) 684-1611
125526**

PROPOSAL:

CE-1332-A

PROPOSAL DATE:

July 19, 1999

SALES REPRESENTATIVE:

**Mr. Ron Jones
Howard S. Twichell
(972) 385-0099**

EQUIPMENT:

**Cefla Group Spray System (Clear)
(Reference Stiles Drawing No. CE99-00556-05)**

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PERMITS PROGRAM

Cefla Group Spray System (Clear)

Production Control

This line will provide the best quantity/quality results, if parts (workpieces) which are not suitable for processing are rejected prior to finishing.

Parts are generally considered suitable for finishing if they are free of bow, warp, twist, marks, splits and color variations. It is also assumed that such suitable and properly prepared parts have been cleaned prior to finishing.

Production Capacity

To be determined by the production requirements and the various coating process parameters. Laboratory testing is most valuable in ascertaining and confirming these variables.

Designed line speed 10 mt/min (32.8 fpm)

Note: *Appropriate working speed is subject to the requirements of customer's specific coating.*

Maximum speed range is not necessarily the appropriate working speed.

Component Dimension

Parts having the following approximate maximum and minimum dimensions can be processed through the line:

Length	maximum	2438 mm	(96")
	minimum	330 mm	(13")
Width	maximum	1220 mm	(48")
	minimum	101 mm	(4")
Thickness	maximum	40 mm	(1-9/16")
	minimum	10 mm	(13/32")

Substrates within the following warpage or bow specifications can be processed through the equipment offered:

Substrates 10 to 19 mm thick	10 mm over 1000 mm	13/32" over 3' 3"
Substrates 19 to 40 mm thick	See note	

Note: *Testing by Stiles/Cefla required to determine acceptability of any warpage or bow within this thickness range.*

Labor

Supervisor(s) to monitor, adjust, and control all line components.

Personnel for loading and unloading (as required).

People for hand wiping stain and hand sealer sanding as required.

Thermal Consumption

Heat source is hot water (unless specified otherwise by customer). Flow control valves and automatic thermostats are supplied.

Air Replacement

Air is exhausted from the room by the various processing, curing, and cleaning machines throughout the line.

Air make-up system is not included.

Compressed Air

Compressed air to be supplied to various machines.

Electrical Power

460 volt, 3-phase, 60 cycle motors are supplied (unless specified otherwise by customer). All control circuits are 24 volt DC.

Electrical main supply must be surge protected and voltage fluctuations limited to $\pm 5\%$ from customer specified voltage.

Explosion Safety

All fan blades are made of non-ferrous materials.

Electrics are designed to comply with normal explosion-proof regulations. If specific (or) unusual local requirements are imposed, they are to be satisfied at the owner's expense.

Dimensions and Technical Descriptions

Machine dimensions, technical description and data subject to change or modification. The information provided herein is preliminary and is not to be used for installation purposes.

Notes: "Certified Engineering Drawings" are provided by Cefla after receipt of order, down payment and clarification of all technical details.

Specific requirements for Btu/hr. exhaust air, dust extraction, compressed air, electrical power and machine dimensions will be accurately stated on the above referenced drawings

Item 1

Equipment Supplied

Belt Transfer Conveyor

Model TN 2500

- transfer conveyor for manual loading of product into finishing system

Item 2

Denibbing Machine

Quickwood Model DI-1300/3

- provides automatic abrasive brushing of raised panel and profiled type substrates
- equipped with three (3) counter rotating spindles with abrasive brush
- supplied abrasive brushes are suitable for use in the sealer denibbing process
- spindle head can be angled up to 15 degrees from perpendicular to the conveyor belt; this aids in a more thorough processing of profiles and edges
- each spindle is equipped with infeed and outfeed pressure rollers that are height and pressure adjustable to facilitate part hold down during the denibbing process
- rotation speed of each spindle independently controlled with separate variable speed drives
- inverter controlled spindle rotation is variable in speed from 350 to 1150 rpm
- electrically operated vertical movement of spindle
- inverter controlled conveyor speed is variable from 2 to 12 m/min
- control panel provides digital display of vertical spindle position, and spindle and conveyor speeds

Note: *Denibbing is different from sanding and therefore produces different results*

Stiles Machinery, Inc. can offer alternate equipment (including sanding machines) when Zee Manufacturing defines finished quality level and test results confirm which equipment is necessary to produce the defined quality level.

Dust extraction and connecting ducts by customer

Electrics supplied are not designed for use in an area that may contain a hazard of explosion. Electrics do not comply with explosion proof regulations.

Item 3

Belt Conveyor for Manual Hand Sanding

Model TN 4500/A

- manual sanding station for reinforcement and special parts
- PVC belt conveyor with raised rubber pattern for hand sanding operation

Note: *Dust extraction and connecting ducts by customer*



Item 4

Belt Conveyor for Manual Hand Sanding*Model TN 4500/A*

- manual sanding station for reinforcement and special parts
- PVC belt conveyor with raised rubber pattern for hand sanding operation

Note: *Dust extraction and connecting ducts by customer*

Item 5

Panel Brushing Machine*Model VS/33-ACT-F*

- standard panel brushing machine suitable for cleaning sealer sanding dust from raised panel and profiled type substrates prior to coating application
- one (1) upper mounted anti-static ionization bar
- one (1) upper mounted counter rotating horse hair bristle brush; 400 rpm fixed speed
- one (1) upper mounted part actuated rotary air blower
- one (1) upper mounted part actuated air blow-off unit
- one (1) lower mounted infeed part actuated air blow-off unit
- through feed conveyor belt

Note: *Dust extraction and connecting ducts by customer*

Item 6

Reciprocating Spray Machine*Cefla Model EcoSprayer SGM 16*

This machine is utilized for automatic application of sealer/top coat material.

The *EcoSprayer SGM 16* represents a new generation spray machine from Cefla; the leader in technology development for spraying applications.

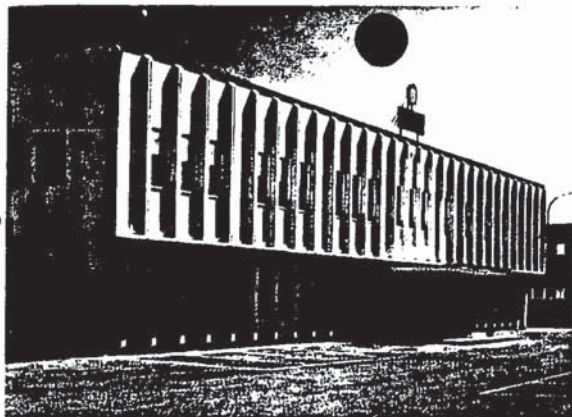
The electronic rotary spraying system provides consistent quality and high volume production in an automated environment while minimizing environmental contaminates.

Many of Cefla's innovative and patented features are utilized in the *EcoSprayer SGM 16*. While these features were designed around today's increasingly stringent environmental regulations they also provide many ecological and economical benefits over previous spray systems.

Ecological and economical features

- A solid continuous 65" width carbon fiber belt enables the recovery of over sprayed coating material for reuse. Many coatings can be reused which results in an increased transfer efficiency and economy of paint usage.
- A uniform coating application is achieved utilizing the "back spray" technique.
- Superior edge coating is achieved when oversprayed coating is diverted (a bounce effect) from the carbon fibre belt to the panel edges.

(continued)



Sorbini, forte di una lunga tradizione, si avvia verso il duemila con due obiettivi: produrre macchine ed impianti sempre all'avanguardia e mantenere una posizione di primaria importanza sui mercati mondiali.

Le premesse per questi obiettivi molto impegnativi sono già state create entrando nel GRUPPO CEFLA, riconosciuto leader mondiale del settore, per migliorare la ricerca e sfruttare tutte le sinergie tecniche e commerciali. Inoltre è stata ampliata e ristrutturata la sede principale su una superficie di circa 12.000 m².

La produzione è stata completamente rinnovata lanciando sul mercato la nuova **SERIE 2000** per tutte le macchine.



Sorbini, with the strength of his long tradition, is approaching the Second Millenium with two main objects.

manufacturing machines and systems technologically advanced and in keeping with its worldwide leadership.

In order to continue this role, Sorbini decided to enter in the CEFLA GROUP, to improve the research and development and unify the efforts when designing machines and turn-key systems.

The Head Office and Main Factory have been increased up to 12.000 sq/mtrs. The all production has been upgraded into the new **SERIE 2000**.



Sorbini, forte d'une longue tradition, aborde les années deux mille avec deux objectifs.

Produire des machines et des implantations d'avant garde et maintenir une position de première importance sur le marché mondial.

Pour atteindre cet objectif, Sorbini a décidé de rejoindre le GROUPE CEFLA, reconnu leader mondial dans ce secteur et exploiter au mieux toutes les sinergies mises en place pour la recherche technique et le développement commercial.

L'usine restructurée s'étend maintenant sur une surface de 12.000 m² afin d'accueillir les nouvelles productions de la **SERIE 2000** concernant des machines complètement renouvelées.



Sorbini's lange Tradition verpflichtet das zweite Jahrtausend mit folgenden Vorsätzen einzuleiten.

Hochtechnologische Maschinen und Systeme zu entwickeln und damit seine weltweite Führungsrolle zu bewahren.

Um diese Rolle auszubauen hat Sorbini beschlossen, sich der CEFLA GRUPPE anzuschliessen.

Forschung und Entwicklung neuer Maschinen und schlüsselfertiger Anlagen wurden damit optimiert.

Sorbini's Hauptsitz und Fabrikanlage wurden letztlich mit 12.000 m² erweitert.

Die Fertigung produziert bereits die neue **SERIE 2000**.



Sorbini empresa con una larga tradición, se prepara para el dos mil con dos objetivos.

Producir maquinas e instalaciones siempre a la vanguardia y mantenerse de primera linea sobre el mercado mundial.

Las premisas para este objetivo han sido ya creadas entrando a formar parte del GRUPO CEFLA reconocido lider mundial del sector, para mejorar el desarrollo y disfrutar de toda la sinergia técnico comercial.

Además se ha ampliado y restructurado la sede principal con una superficie total de aproximadamente 12.000 m².

La producción se ha renovado completamente lanzando la nueva **SERIE 2000** en todas las maquinas.

Spazzolatrice superiore ed inferiore

Top and bottom working brushing machine

Brosseuse supérieure et inférieure

Bürstmaschinen oben und unten

Limpiadora de cepillos superior y inferior



VS 32 A Macchina base idonea a spazzolare pannelli

grezzi piani.

Avanzamento con rulli gommati e rettificati, mediante motovariatore.

Lunghezza minima dei pannelli da lavorare mm. 300.

VS 32 B Macchina base idonea a spazzolare pannelli piani verniciati, levigati in linee di verniciatura, finitura opaca con applicazioni a velatrice o a rullo.

Avanzamento con rulli gommati e rettificati, mediante motovariatore.

Lunghezza minima dei pannelli da lavorare mm. 300.



VS 32 A Standard machine suitable for dust cleaning of

raw flat panels.

Conveying with rubber rollers by means of motorgear.

Minimum length of the panels 300 mm.

VS 32 B Standard machine suitable for dust cleaning of flat panels, coated and sanded in finishing lines, mat top coats, with application by curtain or roller coaters.

Conveying with rubber rollers by means of motorgear.

Minimum length of the panels 300 mm.



VS 32 A Machine standard idéale pour le dépoussiérage

de panneaux plats en "brut".

Convoyeur à rouleaux revêtus de caoutchouc rectifiés et entraînés par motovariateur.

Longueur minimum des panneaux 300 mm.

VS 32 B Machine standard, installée dans les lignes de finition par rouleau et rideau, pour le dépoussiérage après égrénage de panneaux plats.

Convoyeur à rouleaux revêtus de caoutchouc rectifiés et entraînés par motovariateur.

Longueur minimum des panneaux 300 mm.



VS 32 A Standardmaschine zum Entstauben von ebenen,

unbehandelten Werkstücken.

Gummivorschubsrollen mit Variator getriebe.

Min. Werkstückslänge 300 mm.

VS 32 B Standardmaschine zum Entstauben von ebenen, lackierten und geschliffenen Werkstücken.

Integrierbar in Lackierungsstrassen mit Lackgieß- oder Walzenmaschinen für den Auftrag von matten Lacken.

Gummivorschubsrollen mit Variator getriebe. Min. Werkstückslänge 300 mm.



VS 32 A Limpiadora de cepillos, adaptada para limpiar

paneles planos en bruto.

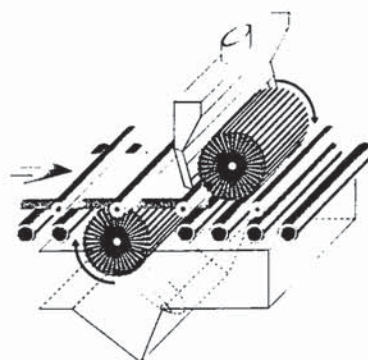
Transporte con rodillos de goma, rectificados, y velocidad regulable con motovariador.

Longitud minima de los paneles mm. 300.

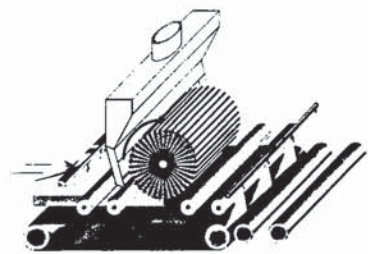
VS 32 B Limpiadora de cepillos, adaptada para limpiar paneles planos barnizados, lijados en linea, terminacion mate, con aplicacion a cortina e a rodillo.

Transporte con rodillos de goma, rectificados, y velocidad regulable con motovariador.

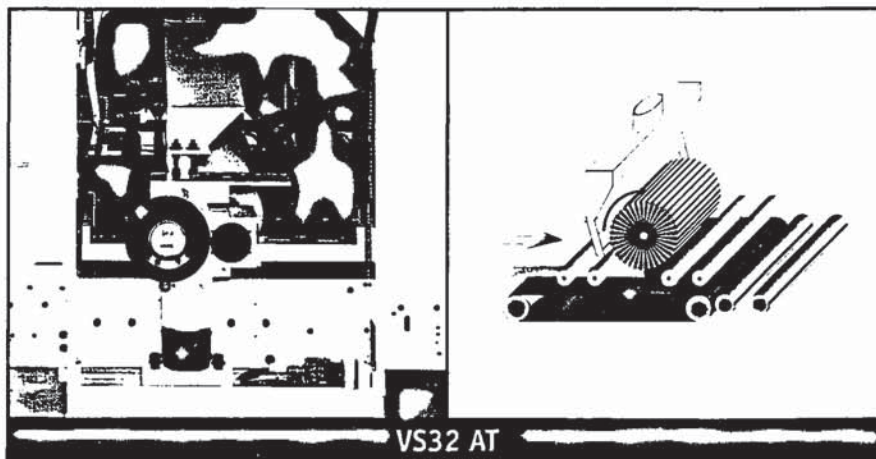
Longitud minima de los paneles mm. 300.



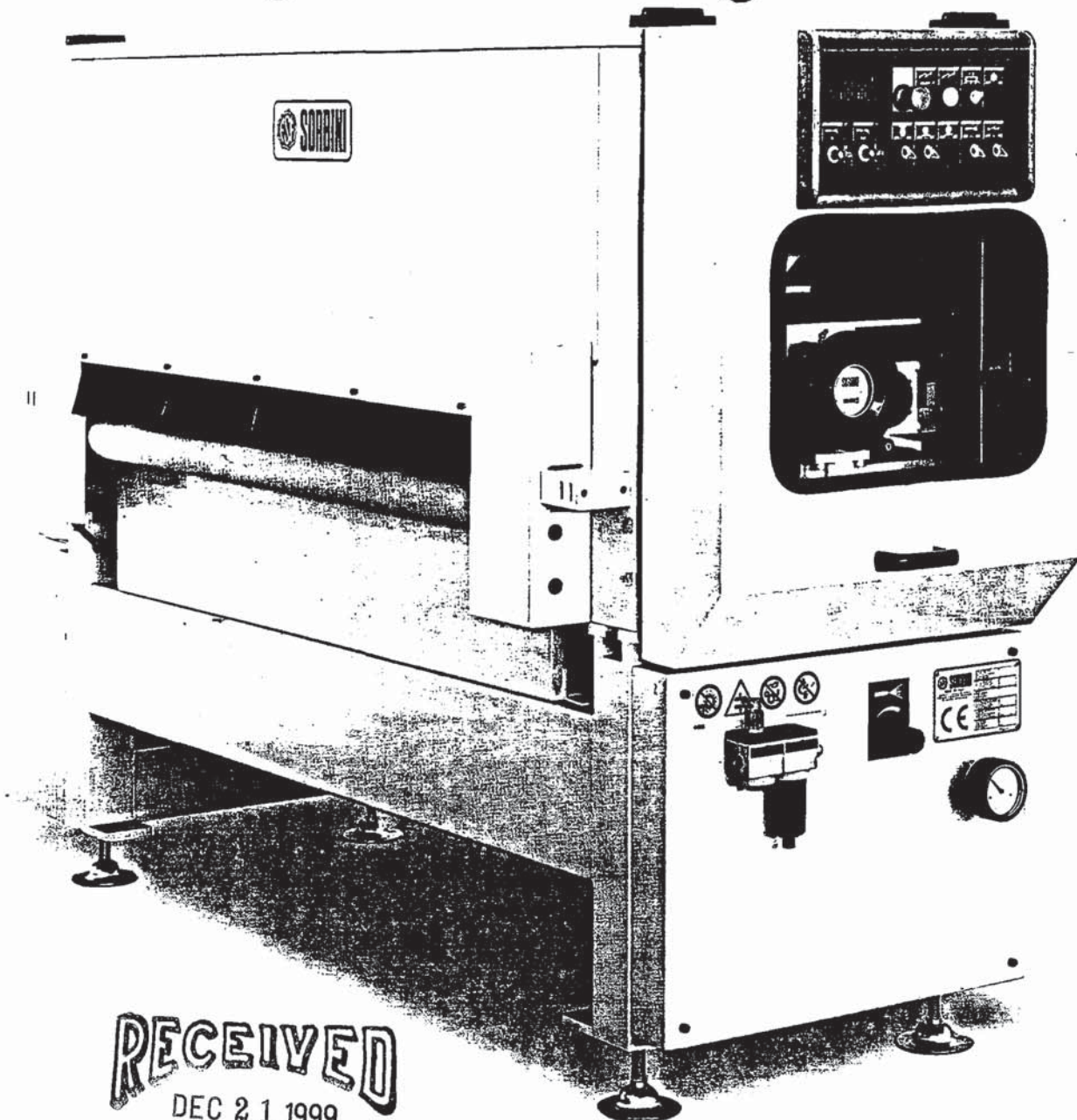
VS32 A



VS32 BT

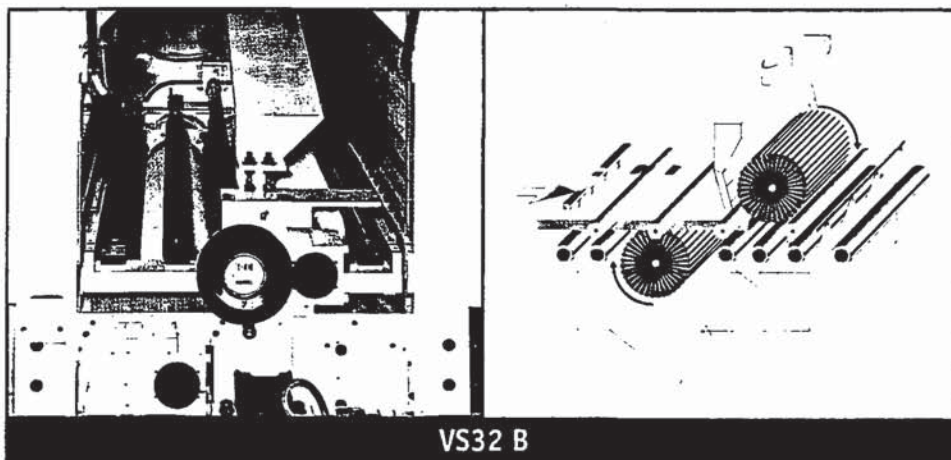


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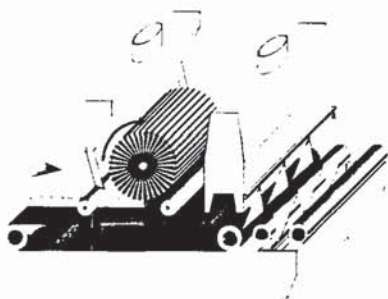
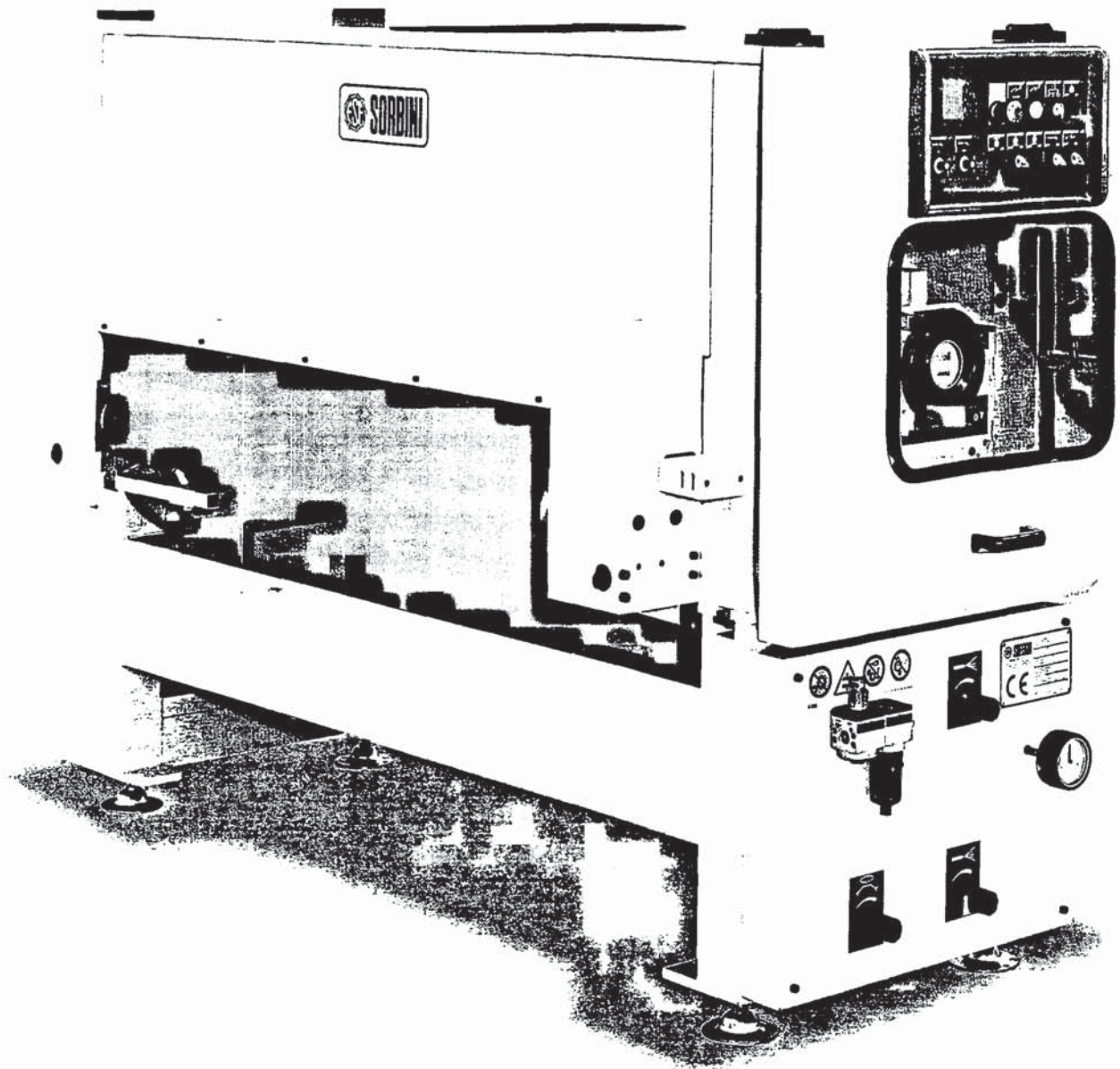


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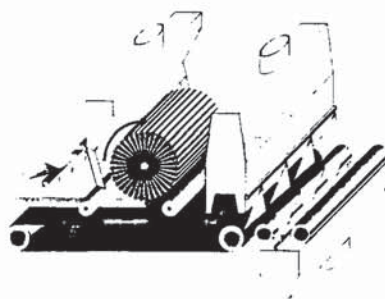
PERMITS PROGRAM



VS32 B



VS33 ACT G



VS33 ACT F


Spazzolatrice superiore ed inferiore

Top and bottom working brushing machine

Brosseuse supérieure et inférieure

Bürstmaschinen oben und unten

Limpiadora de cepillos superior y inferior

 **VS 33 ACT G** Macchina base idonea a spazzolare antine grezze e pannelli sagomati in genere.

Avanzamento con nastro trasportatore con giuntura vulcanizzata, mediante motovariatore.

Lunghezza minima dei pannelli da lavorare mm. 290.

VS 33 ACT F Macchina base idonea a spazzolare antine verniciate levigate, in linee di verniciatura, finitura opaca, con applicazione con spruzzatrice.


Avanzamento con nastro trasportatore con giuntura vulcanizzata, mediante motovariatore.

Lunghezza minima dei pannelli da lavorare mm. 290.

and relieved panels, coated and sanded in finishing lines, mat finishing, with application by spraying machine.

Conveying with belt with vulcanized joint, by means of motorgear.

Minimum length of the panels 290 mm.

 **VS 33 ACT G** Machine standard pour le dépoussiérage de portes ou panneaux moulurés "en brut".


Tapis d'entraînement avec jonction vulcanisée.

Longueur minimum des panneaux 290 mm.

VS 33 ACT F Machine standard pour le dépoussiérage après égrenage de portes ou panneaux moulurés en finition "mat".

Tapis d'entraînement avec jonction vulcanisée.

Longueur minimum des panneaux 290 mm.

 **VS 33 ACT G** Standardmaschine zum Entstauben von unbehandelten Küchentüren und anderen profilierten Werkstücken.


Vorschubsteppich mit Variatorgetriebe.

Min. Werkstückslänge 290 mm.

VS 33 ACT F Standardmaschine zum Entstauben von Küchentüren und anderen profilierten, lackierten Werkstücken.

Vorschubsteppich mit Variatorgetriebe.

Min. Werkstückslänge 290 mm.


 **VS 33 ACT G** Limpiadora de cepillos, adaptada para limpiar puertas de cocina y paneles moldurados en bruto.

Transporte con tapiz, con junta vulcanizada, y velocidad regulable con motovariador.

VS 33 ACT F Limpiadora de cepillos adaptada para limpiar puertas de cocina y paneles moldurados barnizados, lijados en línea, terminación mate, con aplicación a pistolas.

Transporte con tapiz, con junta vulcanizada, y velocidad regulable con motovariador.

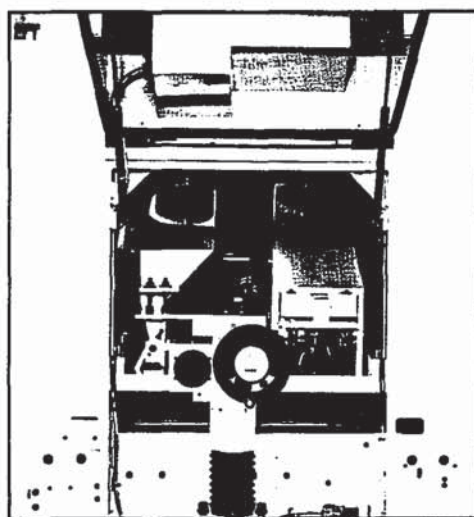
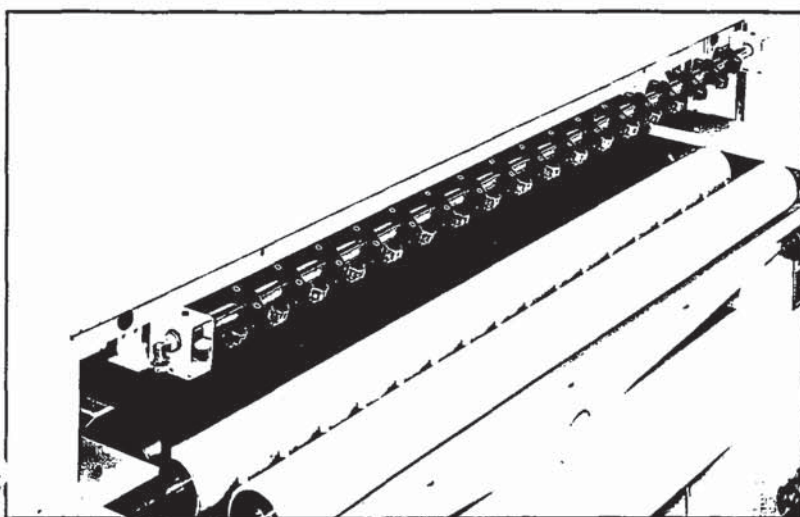
Longitud mínima de los paneles mm. 290.

 **VS 33 ACT G** Standard machine suitable for dust cleaning of raw kitchen cabinet doors and relieved panels.

Conveying with belt with vulcanized joint, by means of motorgear.

Minimum length of the panels 290 mm.

VS 33 ACT F Standard machine suitable for dust cleaning of kitchen cabinet doors




Spazzolatrice superiore ed inferiore

Top and bottom working brushing machine

Brosseuse superieure ed inferieure

Bürstmaschinen oben und unten

Limpiadora de cepillos superior y inferior


 **VS 34 AC** Macchina base idonea a spazzolare pannelli piani, levigati in linee di verniciatura, finitura a lucido diretto, con applicazione mediante velatrice.

Avanzamento con rulli gommati e rettificati, con motovariatore.

Lunghezza minima dei pannelli da lavorare mm. 280.

VS 34 ACT Macchina base idonea a spazzolare antine verniciate, levigate in linee di verniciatura, finitura a lucido diretto, con applicazione mediante spruzzatrice e robot. Avanzamento con nastro trasportatore con giuntura vulcanizzata, con motovariatore. Tappeto a depressione per pannelli di piccole dimensioni.

Lunghezza minima dei pannelli da lavorare mm. 200.


 **VS 34 AC** Standard machine suitable for dust cleaning of flat panels, coated and sanded in finishing lines for high gloss top coats, with application by curtain coater.

Conveying with rubber rollers by means of motorgear.

Minimum length of the panels 280 mm.

VS 34 ACT Standard machine suitable for dust cleaning of kitchen cabinet doors

and relieved panels, coated and sanded in finishing lines for high gloss top coats, with application by spraying machines. Conveying by belt with vulcanized joint. Vacuum belt for small panels. Minimum length of the panels 200 mm.

 **VS 34 AC** Machine standard, installée dans les lignes de finition pour "grand brillant" par application rideaux, pour le dépeussièrege après égrenage de panneaux plats.

Convoyeur à rouleaux revêtus de caoutchouc rectifié et entraînés par moto-variateur.


Longueur minimum des panneaux 280 mm.

VS 34 ACT Machine standard, installée dans les lignes de finition pour "grand brillant" par application robot de pistola-ge, pour le dépeussièrege de portes et panneaux moulurés.

Convoyeur entraînés par moto-variateur.

Tapis à dépression pour tenue des panneaux de petites dimensions.

Longueur minimum des panneaux 200 mm.

 **VS 34 AC** Standardmaschine zum Entstauben von ebenen, lackierten und geschliffenen Werkstücken. Integrierbar in Lackierungsstrassen mit

Giessmaschinen für den Auftrag von Hochglanzlacken.


Gummivorschubsrollen mit Variator getriebe. Min. Werkstückslänge 280 mm.

VS 34 ACT Standardmaschine zum Entstauben von Kuchentüren oder anderen profilierten Werkstücken.

Integrierbar in Lackierungsstrassen mit Spritzautomaten oder Robotern für den Auftrag von Hochglanzlacken.

Vorschubsteppich mit Vakuumeinrichtung für schmale Teile.

Min. Werkstückslänge 200 mm.

 **VS 34 AC** Limpiadora de cepillos, adaptada para limpiar paneles planos barnizados, lijados en línea, terminacion de alto brillo, con aplicacion a cortina.

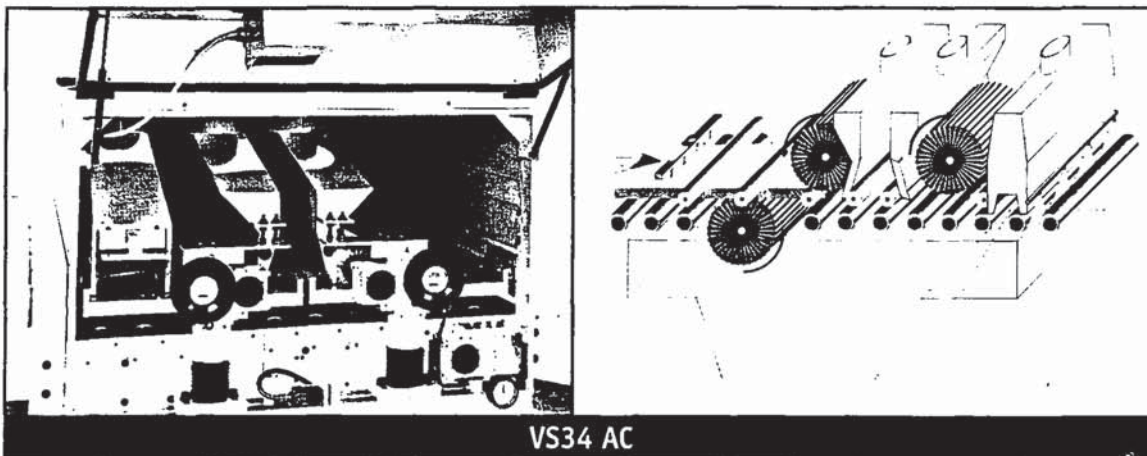
Transporte con rodillos de goma, rectificad- os, y velocidad regulable con motovariador.

Longitud minima de los paneles mm. 280.

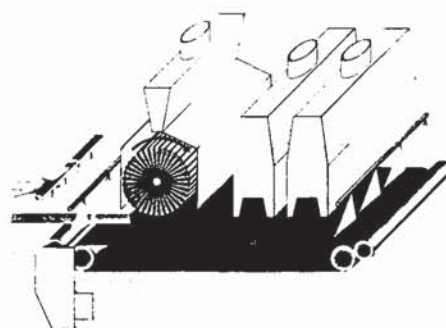
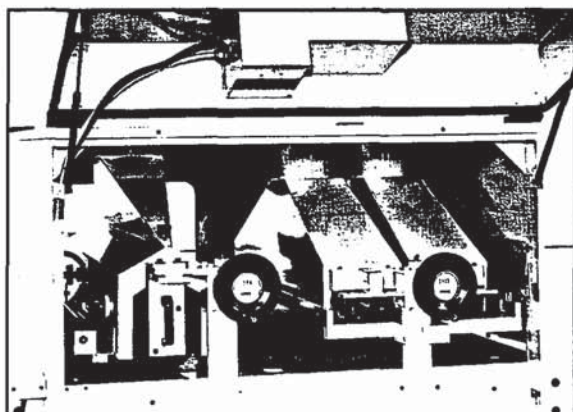
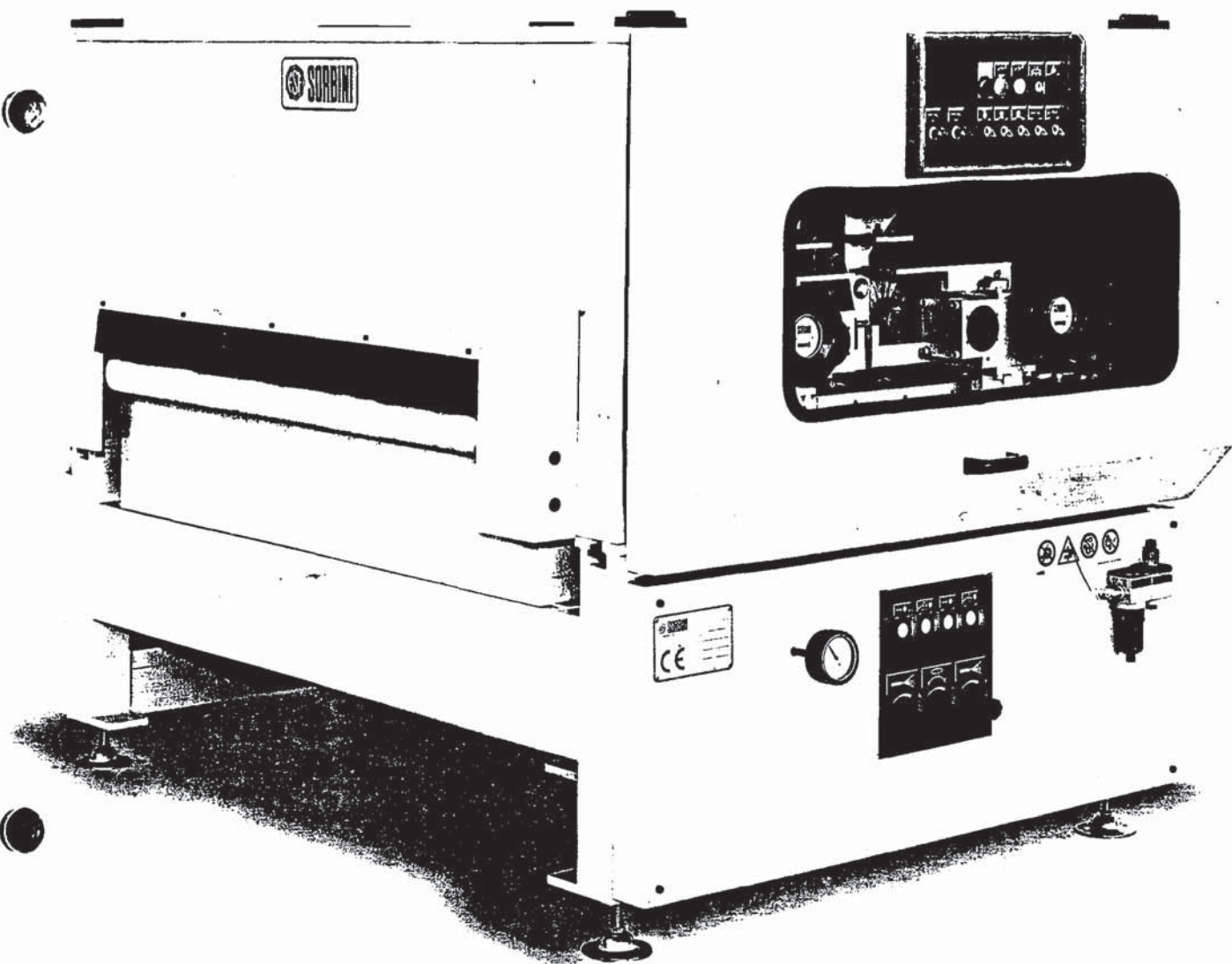
VS 34 ACT Limpiadora de cepillos, adaptada para limpiar puertas de cocina y paneles moldurados barnizados, lijados en línea, terminacion de alto brillo, con aplicacion a pistolas.

Transporte con tapiz, con junta vulcaniza- da, y velocidad regulable con motovariador.

Longitud minima de los paneles mm. 200.



VS34 AC



VS34 ACT

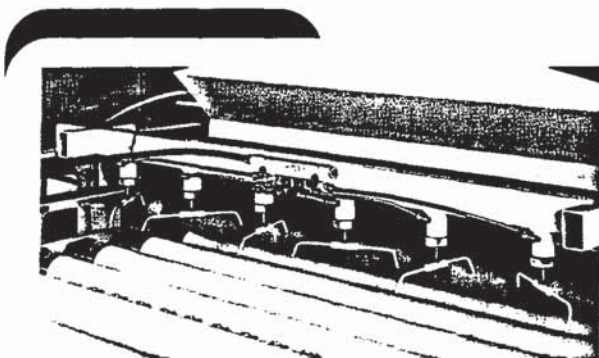
Particolari Tecnici

Manufacturing details

Détails de construction

Technischen Einzelheiten

Detalles de construccion



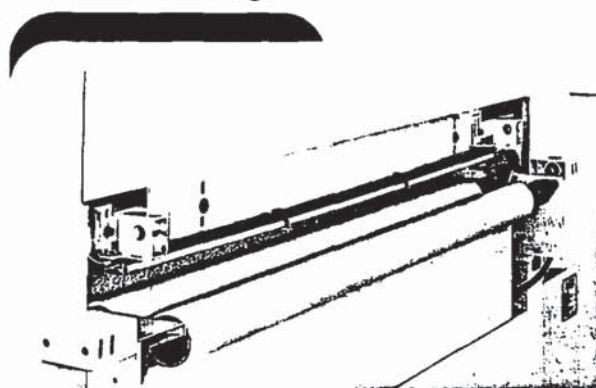
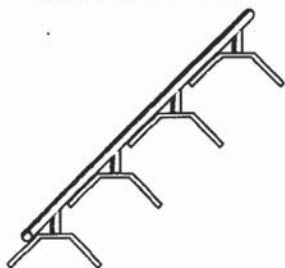
Soffiatore rotante ad ugelli, ad aria compressa, temporizzato.

Temporized rotating air compressed blower, with nozzles.

Souffleur rotatif à air comprimé avec buses, temporisé.

Zeitgesteuerte rotierende Abstrahldüsen für Druckluft.

Soplador rotativo de aire comprimido, temporizado.



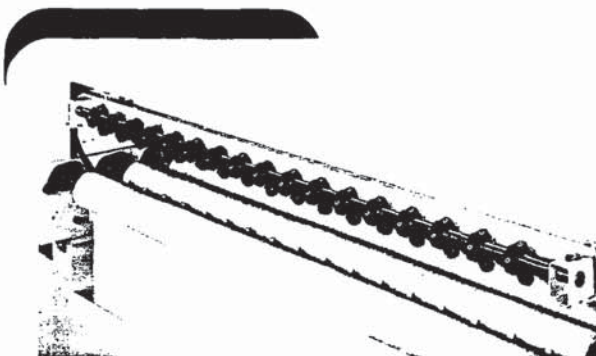
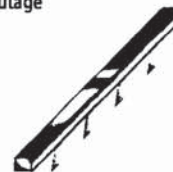
Barra antistatica

Antistatic bar

Barre antistatique

Ionisierungsaulage

Barra antistatica



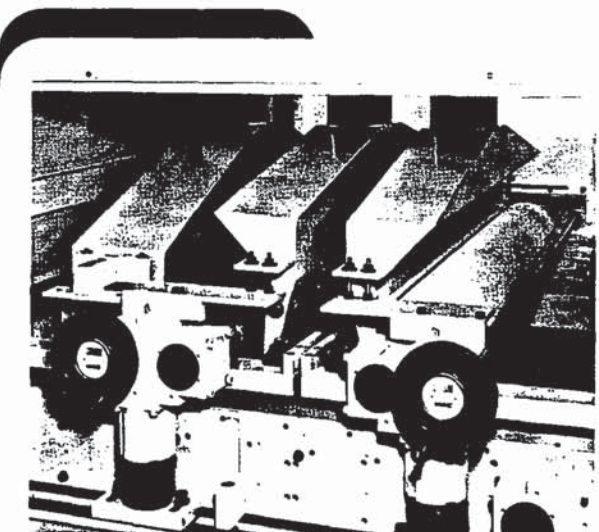
Soffiatore lineare ad ugelli ad aria compressa, temporizzato.

Temporized compressed air blower with nozzles.

Souffleur lineaire à air comprimé avec buses, temporisé.

Zeitgesteuerte Abstrahldüsen für Druckluft.

Soplador lineal de aire comprimido, temporizado.



Cappe di aspirazione polveri superiori ed inferiori.

Top and bottom dust exhausting hoods.

Hottes d'aspiration poussière supérieure et inférieure.

Obere und untere Absaughaube

Campanas superior e inferior de aspiracion de polvo.

CARATTERISTICHE TECNICHE GENERALI

Larghezza di lavoro	1300 m.
Altezza di lavoro	880-940 mm.
Spessore di lavoro	3-70 mm.
Velocità di lavoro	4-20 mt./min.
Voltaggio	380/3/50Hz. con neutro

STANDARD TECHNICAL FEATURES

Working width	1300 m.
Working height	880-940 mm.
Working thickness	3-70 mm.
Working speed	4-20 mt./min.
Voltage	380/3/50Hz. with neutral wire

CARACTERISTIQUES TECHNIQUE STANDARD

Largeur de travail	1300 m.
Hauter de travail	880-940 mm.
Epaisseur de travail	3-70 mm.
Vitesse de travail	4-20 mt./min.
Voltage	380/3/50Hz. avec neutre

STANDARD TECHNISCHE DATEN

Arbeitsbreite	1300 m.
Arbeitshöhe	880-940 mm.
Arbeitsstärke	3-70 mm.
Arbeitsgeschwindigkeit	4-20 mt./min.
Spannung	380/3/50 Hz. mit Nulleiter

CARACTERISTICAS TECNICAS GENERALES

Ancho de trabajo	1300 m.
Altura de trabajo	880-940 mm.
Espesor de trabajo	3-70 mm.
Velocidad de trabajo	4-20 mt./min.
Voltaje	380/3/50 Hz. con neutro

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PERMITS PROGRAM

Sorbini si riserva il diritto di apportare modifiche senza l'obbligo di preavviso.

Sorbini reserves its right to make any alterations without notice.

Sorbini se réserve le droit d'apporter des modifications sans préavis.

Die technische Daten und Zeichnungen sind unverbindlich und können geändert werden.

Sorbini se reserva el derecho de hacer modificaciones sin previo aviso.



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stiles

STILES MACHINERY, INC.

Stiles Machinery • Altendorf America • Holzma=U.S.

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 Fax: 910-665-0787

HOLZMA=U.S. OFFICE
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 Gastonia, NC 28052
 Phone: 704-861-8239
 Fax: 704-867-4140

BRANCH OFFICE
 2220 Cedar St.
 Ontario, CA 91761
 Phone: 909-923-2264
 Fax: 909-923-0953



- Exhaust air filtration system, *Scrubber*, provided in the rear booth plenum eliminates solid particulate matter (to $\leq 3 \text{ mg/m}^3$) from air exhausted to the outside atmosphere.
- Water filtration system, *WF Filmat*, separates solid contaminants from the water in the booth tank and deposits it in a container preparatory to disposal.

Machine features

- A Programmable Logic Control (PLC) with display is utilized to set program parameters, control machine functions, and provides self-diagnostics and production data.
- Cefla's patented conveyor belt system for coating recovery and belt cleaning is controlled by the PLC. This system recovers approximately 98% of the coating material deposited on the belt. The conveyor belt is then automatically cleaned, with coating appropriate solvents, for continued use. This system operates only when necessary (machine in operation) to minimize solvent usage and belt wear.
- Pressurized booth enclosure providing a "clean room" type environment
- Upper and lower tanks of water filtration system constructed in stainless steel for maximum useful life
- Powered vertical movement of spray gun trolleys operated from control panel
- PLC utilizes a sixty (60) cell photodiode bar to monitor and regulate spray application, further maximizing application transfer efficiency.
- Spraying is performed through a rotary system designed for the installation of sixteen (16) guns in a single circuit.
- Spray system designed to accept sixteen (16) spray guns.
- Machine equipped with two (2) coating supply circuits with recycle.

Note: *Spraying equipment to be provided by Zee Manufacturing*

Option(s) included

- stainless steel fittings and distribution block for coating supply system
- machine equipped with two (2) coating supply circuits with recycle
- infeed conveyor section provides additional space between the dust environment of the sanding/cleaning process and the infeed of the spray machine to minimize the possibility of contamination
- Plexiglas cover on outfeed conveyor section minimizes substrate contamination

Item 7

Covered Belt Transfer Conveyor

Model TN 6000/C

- transfer conveyor provides ambient dwell time for flash-off and product leveling
- at designed speed range this oven will provide ≈ 30 seconds dwell time
- longer stay times achieved with slower line speeds

Option(s) included

- telescopic sliding Plexiglas cover minimizes dust contamination during transfer

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Item 8

Flash-off Oven System*Models FEV E 2/7 & TT 10500*

- independent oven section provides a laminar flow, hot air environment for flash off of applied coating material
- at designed speed range this oven will provide ≈ 63 seconds dwell time
- longer stay times achieved with slower line speeds
- oven length 10,500 mm (34' 5")
- through feed bar conveyor length 10,500 mm (34' 5")

Notes: *Exact oven length to be determined based on coating requirements and/or testing results*

Item 9

Curved Flash-off Oven System*Cefla Models FEV E 2/8/180/1600C & CM 180/3000/1600*

- independent oven section provides a laminar flow, hot air environment for flash off of applied coating material
- at maximum speed range this oven will provide ≈ 74 seconds dwell time
- longer stay times achieved with slower line speeds
- 180 degree curve enables loading and unloading of the system in the same vicinity, increasing work flow productivity
- curved conical roller conveyor with straight infeed and outfeed sections

Note: *Exact oven length to be determined based on coating requirements and/or testing results*

Item 10

Flash-off Oven System*Models (2)FEV E 2/7 & TT 21000*

- two (2) independent oven sections provide a laminar flow, hot air environment for flash off of applied coating material
- at maximum speed range this oven will provide ≈ 126 seconds dwell time
- longer stay times achieved with slower line speeds
- total oven length 21,000 mm (68' 11")
- through feed bar conveyor length 21,000 mm (68' 11")

Notes: *Exact oven length to be determined based on coating requirements and/or testing results*

Item 11

Progressive Oven System*Models (2) FEV EU 2/7, FEV UR 2/9, (3)CR/U, TT 13000 and TT 14350/SCR*

- three different oven types provide environments of high velocity hot air movement, infrared radiation and high velocity cooling
- at designed speed range this oven will provide ≈ 154 seconds dwell time
- longer dwell times achieved with slower line speeds

High Velocity Drying Oven

- two (2) independent drying sections provide high velocity hot air movement
- total oven length 21,000 mm (68' 11")

Infrared Curing Oven

- oven provides infrared radiation for the final conversion of coating material
- oven equipped with nine (9), height adjustable IRM type lamps
- oven length 2,000 mm (6' 7")

Panel Cooling

- cooling hoods reduce board surface temperature following curing process
- three (3) units provide approximately 16 seconds dwell time at designed speed range
- high power cooling units provide air discharged through nozzles for maximum efficiency
- total length 2,700 mm (8' 10")

Supporting Conveyor

- oven units are supported by two (2) through feed bar type conveyors
- total bar conveyor length 27,350 mm (89' 9")
- unloading section for personnel safety in unloading operations

Note: *Exact oven length to be determined based on coating requirements and/or testing results*

System Notes:

Supplied heat exchanger(s) can receive a minimum input air temperature of 23 °F

Supplied heat exchanger(s) can provide a maximum Delta T of 86 °F up to a maximum output air temperature of 150 °F.

Ovens systems include valve for temperature adjustment and pneumatic thermostat only

All remaining manual valves and connection to heat exchanger(s) by customer

Total Price

of equipment as described above,

F.O.B. United States Port of Entry

\$ 774,784.00

Price quoted includes importation and installation.

Price quoted excludes all state and local taxes.

Notes: *Above price includes five (5) days of instruction.*

Additional instruction is available at normal service technicians' rates in effect at that time.

Items Not Covered by This Proposal

- Surge protected electrical services to the site with no more than $\pm 5\%$ variance in input voltage
- Electrical trays, wire, conduit, supports, etc.
- Balanced dust extraction system and connecting ducts
- Air inlet/outlet ducts - roof penetrations (open/close/weatherproof) (flow control valves provided)
- Heat source (boiler) and connections between heat source and points of use (temperature controls provided)
- Compressed air lines to connecting points at 6 kg/cm² (90 psi) (dry filters and pressure regulators provided)
- Application or material feed equipment (guns, pumps, tanks, hoses, fittings, regulators, etc.)
- Sprinkling system or other fire protection equipment required by insurance or local code
- Air make-up system
- Building alterations
- Floor or masonry work
- Moving of existing machinery or site preparation
- Equipment to assist in installation (i.e. forklifts, cranes, scissors lifts, etc.)
- Permits to install and operate (when required)

Dimensions

All equipment offered is made to metric standards. Dimensions shown in English measure are approximate and for comparison purposes only.

Delivery

Shipment from factory in Italy approximately 4 months (excluding August) after receipt of order and clarification of all technical details.

Terms of Payment

- 30% Down payment with order
- 30% Due upon shipment from the factory
- 30% Due upon arrival to Port of Entry
- 5% Due upon completion of installation
- 5% Due upon completion of commissioning

If for any reason Shipment, Installation and/or Commissioning are delayed by the customer, the payment(s) shall become due in full sixty (60) days after equipment is available for shipment from the factory.

Completion of Installation

Installation is considered complete when the system is assembled and electrics are connected to the main control console.

Completion of Commissioning

Commissioning is considered complete when the system is available to produce finished panels in accordance with the order confirmation.

Installation and Commissioning

By Cefla and/or Stiles Machinery service technicians are included with the price quoted above with the following agreed terms.

Installation does not include any preparation of the site/floor, masonry work, the running of electrical, pneumatic or dust extraction services to the site.

Cefla/Stiles is not responsible for the off-loading and positioning by crane, forklift or other means. A service technician can be present during the off-loading and positioning if requested and at additional charge in order to act in an advisory capacity, but this is to be understood as fully at the customer's own risk. Moving or modifying existing machinery or plant is not included in the installation.

Once the system is in the 'ready-to-run' state, and the necessary services have been provided, the service technician will "commission" the line by testing, adjusting, and running the line in a production mode.

Customer will make available during the entire installation two (2) mechanics and one (1) electrician to assist as necessary, or the customer may contract to have additional Stiles Machinery, Inc. technicians to assist in the assembly of the finishing system. In the event the customer has not contracted for additional Stiles Machinery, Inc. technicians and the customer finds it necessary to use their aforementioned personnel for purposes other than full dedication to the installation of the finishing system, Stiles Machinery, Inc. will assess a \$450.00 per day charge or a \$56.25 per hour charge for such time.

Terms and Conditions

All equipment listed is offered subject to our General Conditions of Sale. Equipment to be wired according to UL standards. If specific or unusual local regulations require inspection and/or modification, those costs are the responsibility of the buyer. Terms of payment offered herewith, or any terms agreed upon, are subject to proper credit approval. Due to currency fluctuations, all prices are subject to confirmation or revision at time of order. Procurement of all permits by customer.

The price quoted is to be understood for delivery F.O.B. U.S. Port of Entry, U. S. Customs duty paid. Price of additional equipment, if any, valid only when installed at the factory during construction of the machine(s), and/or shipped with the original equipment order. Technical description and data subject to change or modifications without notice. Our offers are contingent upon strikes, accidents to the system by carriers, ocean vessels or any other cause beyond our control.

This offer is valid for thirty (30) days.

STILES MACHINERY, INC.

BY:


Dennis E. Echelbarger
Product Specialist - Finishing

MAKOR SPRAY SYSTEM

Product Dimensions

Substrates having the following approximate maximum and minimum dimensions can be transported through the equipment offered:

length	maximum	4900 mm	(193")
	minimum	305 mm	(12")
width	maximum	1300 mm	(51")
	minimum	25 mm	(1")
thickness	maximum	60 mm	(2-3/8")
	minimum	5 mm	(3/16")

Notes:

Edge coverage may vary when part thickness exceeds 40mm (1-9/16").

We suggest that testing be performed in our laboratory to demonstrate the actual results obtainable with your product and coating material.

Line Parameters

- designed line speed is 3.0 m/min (9.8 fpm) for production calculations
- at designed line speed this system can produce approximately 1,096 m² (11,798 sq/ft) of production with one coat on one surface considering 70% load efficiency and 420 production minutes

Curing Schedule

- at the designed line speed this system will provide the following approximate oven curing schedule:
 - ⇒ one (1) minute ambient dwell time (no air movement)
 - ⇒ eleven (11) minutes laminar flow warm air movement
 - ⇒ two (2) minutes high velocity heated air flow movement
 - ⇒ infrared radiation from two (2) IRM lamps

Scope of Delivery

1. Timed Belt Conveyor with Blow-off Device, Makor Model ROLLY 3000/T/B
2. Reciprocating Spray Machine, Makor Model K-TWO Hybrid
3. Covered Belt Conveyor for Ambient Flash-off or Manual Stain Wiping, Makor Model ROLLY 3000/C/W
4. Multilevel Oven System, Makor Model MULTILEVEL 5500/6
5. Oven System (High Velocity & IR), Makor Model FASTDRY 6/WJ/IRM 2
6. Belt Conveyor, Makor Model ROLLY 2500

Note: *Spraying equipment to be provided by Customer.*

Item 1

Timed Belt Conveyor with Blow-off Device Makor ROLLY 3000/T/B



The ROLLY belt conveyor enables connecting the transport systems of machines in a line. It is also used at the entrance and/or exit of a line for the manual loading and off-loading process.

Machine Features

- transport system is located inside a solid steel structure
- synthetic transport belt is resistant to abrasion and chemical agents
- forward feed is adjustable by inverter

Blow Off Device

- one (1) rotary blowing group with dust extraction hood
- one (1) fixed blowing group with de-ionizing bar
- de-ionizing bar eliminates residual electro-static charges in order to make the rotating blowers more efficient
- a series of upper mounted rotary blowers assist in removal of dust and convey it to the extraction hood

Options Included

- one (1) blow-off device
- one (1) de-ionizing bar
- ATEX motor
- equipped for timed/charge formation

Technical Specifications

overall dimensions	3000 x1600x900mm	(118 x 63 x 36")
working height \pm 30 mm	900 mm	(35-1/2")
feed speed	2 to 10 m/min	(6.6 to 32.8 ft/min)
conveyor drive motor power	0.55 kW	

Utility Requirements

Electrical		
operating voltage	480 V/3-phase/60 Hz	
total connected load	0.75 kW	
Dust Extraction		
volume	3,500 m³/hr	(2,060 cfm)
air make up required	3,500 m³/hr	(2,060 cfm)
connection diameter	180 mm	(11")
Compressed Air		
pressure required	6 bar	(90 psi)
consumption / volume	2,000 NI/min	(71 cfm)

Electrical equipment installed according to UL regulations. Voltage supplied must not fluctuate in excess of +/- 5% of its stated value. Voltage must be balanced phase-to-phase and phase-to-ground.

Item 2

Reciprocating Spray Machine Makor K-TWO HYBRID



The Makor K-TWO HYBRID is the ideal two arm reciprocating spray machine for companies finishing small to medium batch quantities. Several easy to use features, reduced set-up and maintenance time, and an impressive price/quality ratio also make this an excellent choice for those who are approaching automatic finishing for the first time. Benefits include increased productivity, savings on coating material, and consistency of application, which results in a high-quality finished product.

The innovative belt cleaning system, patented by Makor, enables recovery and reuse of overspray from the feed belt, optimizing paint consumption when using recoverable products.

Structure and Transport System



- a piece reading bar is located at the entrance of the machine to detect the work piece shape in order to optimize paint consumption
- the entire transport system is securely fixed to the sturdy steel machine structure and consists of an anti-static belt inside the spraying chamber, which is located between the infeed and outfeed roller conveyor
- the conveyor belt can be quickly and easily replaced when necessary
- patented belt cleaning device for overspray recovery
 - consists of two (2) phases: phase one mechanically scrapes the surface of the belt, and phase two wets the belt and dries it immediately afterward using special gaskets
 - the recovery device sets automatically in position when spraying is on and goes into standby when spraying is suspended, reducing the managing time
 - paint collected from the belt is automatically conveyed into a collecting tank and can be completely reused if it is chemically recoverable
 - the function and design of the cleaning device allows reducing daily solvent consumption to a minimum
- the wide cabin is easily accessible and visible due to a large windowed door on the side and front and back window glasses



Spraying Group

- two (2) reciprocating arms can host four (4) or eight (8) guns
- two (2) high pressure circuits
- an inverter-controlled motor ensures constant movement of the spray units with very accurate control, providing uniform application over the entire working width

Note: Pumps, guns and connection kit are excluded from the supply.

Automatic Color Change Systems (3+1)

- two (2) color changes systems included
- each system operates on one (1) separate circuit
- each system is designed for three (3) colors and one (1) flush
- automatic color change valves are positioned very close to the spray guns to minimize waste material
- color change is controlled by the PLC – manual activation

Note: Pumps and connection kit are excluded from the supply.

Ventilation System

- intake air is treated through various filter sections before entering the wide spray area to avoid contamination by ambient dust
- controlled balance between air intake and air exhaust ensures optimal air pressure in the spray chamber
- inverter controlled exhaust air fan enables optimized extraction flow
- a pressure switch ensures exhaust fan operation prior to activation of reciprocator
- air capacities are adjustable via the control panel
- multiple dry filters capture solid paint particles
- large side filters that is easily removed for access to conveyor belt, filters, and other areas inside the spray cabin during maintenance

Operator's Panel



- the practical touch screen display is designed to make the set-up operations easier for the operator
- the spraying parameters allow optimizing of paint consumption and can be stored in the program
- the production statistics provide determination of the batches produced
- diagnostic functions and maintenance operations are displayed



Options Included

- Lexan cover on out-feed conveyor
- two (2) color change systems (3+1 each)
- hybrid system with paper unrolling and rewinding rolls
 - a paper system contributes to a virtually self-cleaning machine and significantly reduces maintenance costs
 - the unrolling system at the entrance and the rewinding device at the exit are designed to maintain constant tension of the paper, avoiding breakage even when it is soaked by the paint
 - loading and unloading paper rolls are easy due to lateral removal via wheeled trolley
 - rewind station includes a self-adjusting system to maintain a consistently flat paper belt transport (preventing overspray on back side of workpiece)
 - pneumatic disconnection of recovery unit

Technical Specifications

overall dimensions	3750x3550x2550mm	(147 x 140 x 100")
feed speed	1 to 6 m/min	(3.3 to 19.6 ft/min)
working height ± 50 mm	900 mm	(35-1/2")
feed motor power	1 kW	
reciprocator motor power	2.2 kW	
intake air fan motor power	1.1 kW x 2	
exhaust air fan motor power	5.5 kW	
paper roll feed motor power	2.2 kW	

Utility Requirements

Electrical		
operating voltage	480 V/3-phase/60 Hz	
total connected load	15 kW	
Air		
exhaust air volume	10,000 m ³ /hr	(5,890 cfm)
air make up required	10,000 m ³ /hr	(5,890 cfm)
Compressed Air		
pressure required	6 bar	(90 psi)
consumption / volume	1,500 nl/min	(53 cfm)

Electrical equipment installed according to UL regulations. Voltage supplied must not fluctuate in excess of $\pm 5\%$ of its stated value. Voltage must be balanced phase-to-phase and phase-to-ground.

Item 3

Covered Belt Conveyor for Ambient Flash-off or Manual Stain Wiping Makor ROLLY 3000/C/W



Covered belt conveyor to provide ambient flash off of coatings.

Machine Features

- transport system is located inside a solid steel structure
- synthetic transport belt is resistant to abrasion and chemical agents
- forward feed is adjustable by inverter



Options Included

- removable transparent cover
- ribbed belt for manual wiping operation

Technical Specifications

overall dimensions	3000 x1600x900mm	(118 x 63 x 36")
working height \pm 30 mm	900 mm	(35-1/2")
feed speed	2 to 10 m/min	(6.6 to 32.8 ft/min)
conveyor drive motor power	0.55 kW	

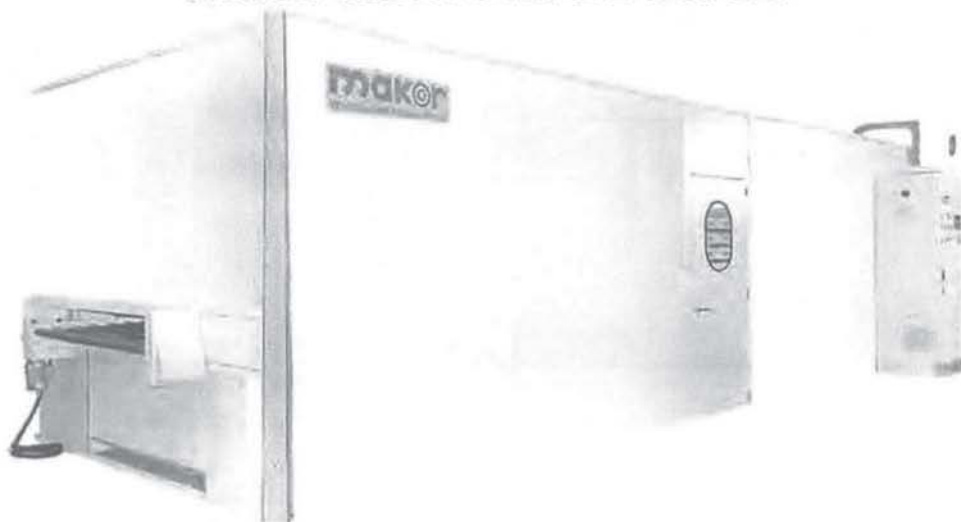
Utility Requirements

Electrical		
operating voltage	480 V/3-phase/60 Hz	
total connected load	0.6 kW	

Electrical equipment installed according to UL regulations. Voltage supplied must not fluctuate in excess of \pm 5% of its stated value. Voltage must be balanced phase-to-phase and phase-to-ground.

Item 4

Multilevel Oven Makor MULTILEVEL 5500/6



The MULTILEVEL oven allows the flash off of water based or solvent based coating materials. Each tray has its own independent transport belt to assure the best cleaning of the flash off zones. This is extremely important to achieve a perfect finish quality.

The PLC manages the machine, and allows selecting the number of stages with which the operator wants to work to achieve maximum flexibility in choosing the drying time.

Structure

- the structure is made of sturdy painted steel profiles and is completely insulated with panels, with sliding doors for entry into the machine
- inside the insulated chamber are located the belt stages to store the pieces
- all of the trays are movable vertically and horizontally and can be positioned, alternatively and independently, to the line working stage
- the geared transmission unit automatically synchronizes with the line transport system to load pieces coming from the previous machines and then off-load pieces that have already been flashed off
- vibration-free vertical movement of the trays is achieved using a screw system
- the value control system provides perfect positioning of the stage column

Air Flow Management

- flash off zone is equipped with one fan for intake of hot air and an exhaust fan that removes the vapors released during the flash off phase
- recycling filters are located on the air intake system
- air is heated by a hot water heat exchanger (heat source by customer)



Options Included

- Automatic Temperature Control
 - a sensor detects the air temperature inside the oven and automatically optimises the heat exchanger that warms up the air
 - this system allows using the maximum potential of the heating system when the machine is started up and saving energy once the set temperature is reached
- ATEX Motors
 - all internal motors executed in ATEX for increased safety

Technical Specifications

overall dimensions	7200x3000x2650mm	(283 x 118 x 104")
max. working dimensions	4900x1300x 100mm	(193 x 51 x 4")
feed speed	2 to 10 m/min	(6.6 to 32.8 ft/min)
working height ± 50 mm	900 mm	(35-1/2")
number of trays	6	
tray length	5500 mm	(216-1/2")
maximum load each tray	120 kg	(265 lb)
feed motor power	0.55 kW	
roller conveyor motor power x2	0.25 kW each	
tray motor power	4 kW	
intake motor power	3 kW	
exhaust motor power	3 kW	

Utility Requirements

Electrical		
operating voltage	480 V/3-phase/60 Hz	
total connected load	12.0 kW	
Air		
exhaust air volume	6,000 m ³ /hr	(3,532 cfm)
air make up required	6,000 m ³ /hr	(3,532 cfm)
Heat Source (hot water)		
thermal power	40,000 kcal/hr	(160,000 BTU/hr)

Electrical equipment installed according to UL regulations. Voltage supplied must not fluctuate in excess of +/- 5% of its stated value. Voltage must be balanced phase-to-phase and phase-to-ground.

Item 5

Oven System (High Velocity with Infrared) Makor FASTDRY 6/WJ/IRM 2



Oven Configuration

High Velocity (Jet) Zone

- oven system provides an environment of high velocity jetted hot air movement for use in the flash off/drying process for applied coating materials
- oven length 6,000mm (19' 8")
- two (2) banks of IRM lamps – 5 kW power each with variable power as a group

Structure and Transport System

- the tunnel is insulated to save energy
- equipped with access doors along the side to provide easy access
- conveyor consists of zinc rollers motorized by a double row of parallel chains
- transport speed is fully adjustable through a potentiometer
- total conveyor length 6,000 mm (19' 8")

Air Flow Management

- heated air flows thru tunnel in the opposite direction of the panel feed
- separate intake and exhaust ports provide flexibility in operation
- replaceable filters are located at the entrance of the intake air system
- air is heated by a hot water heat exchanger (heat source by customer)

Options Included

Automatic Temperature Control

- a sensor detects the air temperature inside the oven and automatically optimises the heat exchanger that warms up the air
- this system allows using the maximum potential of the heating system when the machine is started up and saving energy once the set temperature is reached

Infrared Curing

- two (2) banks of IRM lamps – 5 kW power each with variable power as a group

Technical Specifications

working height \pm 50 mm	900 mm	(35-1/2")
feed speed \pm 5%	2 to 8 m/min	(6.6 to 26.2 ft/min)
feed motor power	0.75 kW	
intake motor power	3 kW	
suction motor power	3 kW	
infrared unit power	5.0 kW	

Utility Requirements

Electrical		
operating voltage	480 V/3-phase/60 Hz	
total connected load	28.0 kW	
Air		
exhaust air volume	7,000 m ³ /hr	(4,120 cfm)
air make up required	7,000 m ³ /hr	(4,120 cfm)
Heat Source (hot water)		
thermal power	40,000 kcal/hr	(160,000 BTU/hr)

Electrical equipment installed according to UL regulations. Voltage supplied must not fluctuate in excess of \pm 5% of its stated value. Voltage must be balanced phase-to-phase and phase-to-ground.

Item 6

Belt Conveyor Makor ROLLY 2500



The ROLLY belt conveyor enables connecting the transport systems of machines in a line. It is also used at the entrance and/or exit of a line for the manual loading and off-loading process.

Machine Features

- transport system is located inside a solid steel structure
- synthetic transport belt is resistant to abrasion and chemical agents
- forward feed is adjustable by inverter

Technical Specifications

overall dimensions	2500 x1600x900mm	(98 x 63 x 36")
working height \pm 30 mm	900 mm	(35-1/2")
feed speed	2 to 10 m/min	(6.6 to 32.8 ft/min)
conveyor drive motor power	0.55 kW x 2	

Utility Requirements

Electrical		
operating voltage	480 V/3-phase/60 Hz	
total connected load	1.1 kW	

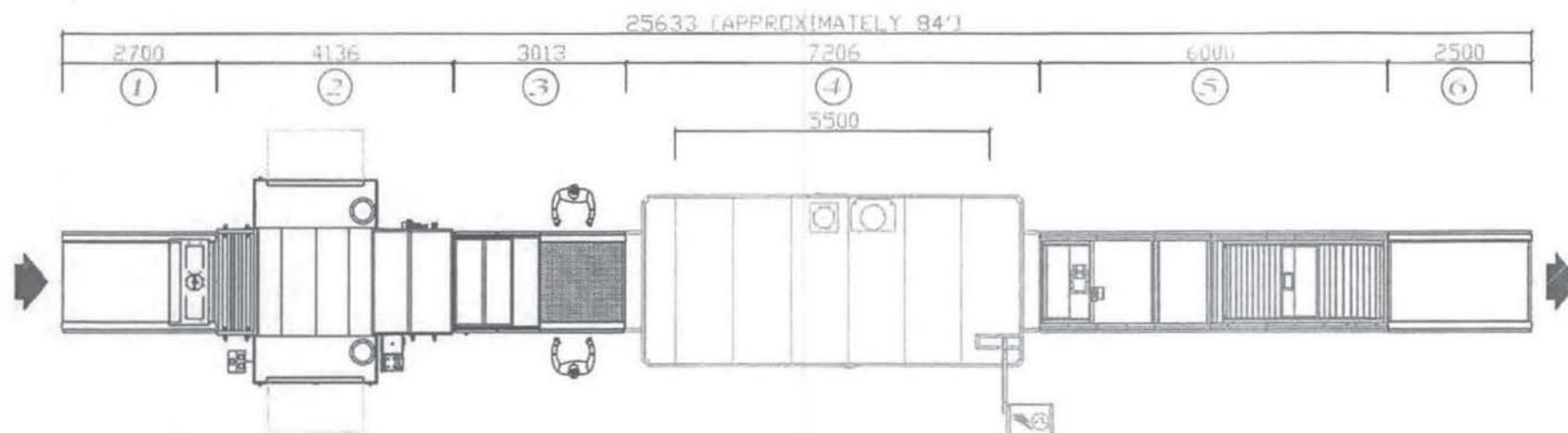
Electrical equipment installed according to UL regulations. Voltage supplied must not fluctuate in excess of \pm 5% of its stated value. Voltage must be balanced phase-to-phase and phase-to-ground.

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ITEM	DESCRIPTION
1	TIMED BELT CONVEYOR WITH BLOW OFF UNIT
2	RECIPROCATING SPRAY MACHINE (K-TVO)
3	COVERED BELT CONVEYOR - MANUAL WIPING
4	MULTI-LEVEL OVEN SYSTEM
5	LINEAR OVEN SYSTEM (HIGH VELOCITY & IR)
6	BELT CONVEYOR

stiles Engineering Services

05-11-2017

SF17-01213-01

SCALE=N.T.S.

DENNIS E. ECHELBARGER

B J TIDWELL

SAN ANTONIO, TX

MAKOR SPRAY SYSTEM (MK-1937)

20.50 & 20.50T PUMP

AIRMIX® PUMPS



The 20.50 pump is ideal for water-based and high solid materials. The Turbo air motor is recommended for continuous use.

FEATURES	BENEFITS
Simple design, reduced number of spare parts	Easy maintenance
Large diameter suction rod and high compression ratio	Can be used with a wide range of materials
Stainless steel construction	Compatible with water-based products

SPECIFICATIONS

Pressure ratio	20/1
Fluid volume per cycle	(100 cm³)
Number of cycles per 33.8 oz (1 liter) of product	10
Fluid output at 30 cycles/min	0.8 gal/min (3 L/min)
Free flow rate	1.6 gal/min (6 L/min)
Air consumption at 30 cycles/min at 85 psi (4 bar)	12.7 cfm (21.6 m³/h)
Maximum air inlet pressure	87 psi (6 bar)
Maximum fluid pressure	1740 psi (120 bar)
Maximum fluid temperature	140°F (60°C)
Sound level	78 dBA
Sealing packings	Upper sealing: Polyfluid + PTFE G Lower sealing: GT
Weight	48.5 lbs. (22 kg)
Wetted parts	Stainless steel
Height	33.8 in (86 cm)
Width	13.8 in (35 cm)
Depth	11 in (28 cm)

FITTINGS

Fitting	Air inlet (valve)	F 3/8" BSP
	Air outlet (atomization air)	M 1/4" NPS
	Fluid inlet	M 26 x 125
	Fluid output (filter)	M #5 JIC

CONFIGURATION OF AIRMIX® 20.50 PUMPS

Set-up	Suction rod	Drain rod	Atomization air regulator	Air regulator fluid pressure	Pump output filter	Part number
Wall mounted	●	-	●	●	-	151-780-100
Wall mounted	●	●	●	●	●	151-780-200
Turbo wall mounted	-	-	●	●	-	151-782-100
Turbo Wall mounted	●	●	●	●	●	151-782-200

KITS

Description	Part number
H50 GT seal kit	144-960-091
H50 GT repair kit	144-960-096
Seal kit for 1000-4 air motor	146-270-991
Repair kit for 1000-4 air motor	146-270-995

CART AND RODS (SUCTION AND FLUSHING)

Description	Part number
Single post cart	051-730-110
Two post cart w/o plate	051-221-000
Two post pump mounting plate	056-100-199
Easyflow suction rod, 5 gal	149-596-150
Easyflow suction rod, 55 gal	149-596-160
Stainless steel flushing rod F18 x 125	049-596-000



Associated informations ▾

A25 F FLOWMAX® AUTOMATIC AIRSPRAY SPRAY GUN

The automatic A25F benefits from the Flowmax technology, which guarantees a very high reliability and possibility to spray critical products. It is recommended for spraying paints, glues, water-based materials and UV products.

- High transfer efficiency
- Outstanding finish quality
- Modular design & high reliability

 **Where to buy?** [./usa/en/where-to-buy.html?](https://usa/en/where-to-buy.html?)

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DESCRIPTION

- High transfer efficiency
- Outstanding finish quality
- Modular design & high reliability

Performance

- ◆ Index knob adjustments of fluid output allows for precise output accuracy
- ◆ Fan width control delivers a high quality finish & fan pattern optimization
- ◆ Precise machining of aircap delivers rigid fan control



Productivity

[\(/usa/en/where-to-buy.html\)](/usa/en/where-to-buy.html)

- ◆ Reduced overspray delivers fast ROI (Return on Investment) & material savings
- ◆ A 0-90° indexed aircap enables easy & fast re-adjustment of fan pattern
- ◆ Easy assembly reduces downtime

Associated informations

Side output for easy mounting on automatic systems

- ▼ Circulation only in base in order to reduce pressure loss in the circulating system

Sustainability

- ◆ Guaranteed needle sealing by self-adjusting cartridge
- ◆ Hard treated needle & wetted parts in stainless steel or treated stainless steel for increased lifetime
- ◆ Reduced overspray decreases spray booth maintenance
- ◆ Brass nickel plated aircap ensures high resistance to water-based materials



TECHNICAL DATA TABLE

Designation	Value	Unit: metric (US)
Maximum Fluid Pressure	6 (87)	bar (psi)
Maximum Fluid Outlet	350 (12.3)	cc/min (oz/min)
Minimum Fluid Outlet	180 (6.3)	cc/min (oz/min)
Maximum Air Pressure	6 (87)	bar (psi)
Recommended Atomization Air Pressure	2.5 (36.2)	bar (psi)
Air Consumption	24 (14.1)	m3/h (cfm)
Trigger Air Pressure	4 (58)	bar (psi)

Designation	Value	Unit: metric (US)
Maximum Fluid Temperature	50 (122)	°C (°F)
Associated informations	5 - 8	
Stainless Steel, PTFE Wetted Parts	♦	
Power Supply on Gun Base (non-fitted supplied fitting)	♦	
Fluid Inlet	M 1/4" BSP	
Pilot Air Inlet	M 1/8" BSP	
Atomizing Air Inlet	M 1/4" BSP	

TECHNOLOGIES

Airspray HPA™

HPA is an Airspray technology offering high power atomization.

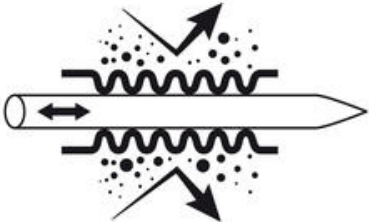
[\(/usa/en/technologies-hpa-airspray.html\)](#)



Flowmax®

Flowmax® bellow technology is used on gun needle for abrasive material. The bellow is cleaned thanks to a specific cleaning circuit on the gun base plate.

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DOCUMENTS

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A25 F Flowmax®

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Leaflet A25 F Flowmax Automatic Airspray Spray Gun (English version) SAMES KREMLIN
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Associated informations



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Catalog Airspray Range SAMES KREMLIN (English version)
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MATERIALS

Primer Epoxy
Epoxy primer/sealer is a non-porous finish that is typically recommended as the first base coat over bare steel.
(/usa/en/materials-primer-epoxy.html)



Primer Epoxy Multi-Component

Epoxy primer/sealer multi-component is a non-porous finish base mixed with a hardener that is typically recommended as the first base coat over bare steel.

[Associated information \(/usa/en/materials-primer-epoxy-multicomponent.html\)](/usa/en/materials-primer-epoxy-multicomponent.html)

[\(/usa/en/where-to-buy.html\)](/usa/en/where-to-buy.html)



Primer Polyurethane Multi-Component

Designed to hide profile & surface imperfections, multi-component polyurethane primers & sealers improve adhesion of top coats to the substrate due to the addition of a hardener.

[\(/usa/en/materials-primer-polyurethane-multicomponent.html\)](/usa/en/materials-primer-polyurethane-multicomponent.html)



Primer Water-Based

Designed to hide profile & surface imperfections, water-based primers & sealers are environmentally friendly.

[\(/usa/en/materials-primer-waterbased.html\)](/usa/en/materials-primer-waterbased.html)



Primer Polyurethane

Designed to hide profile & surface imperfections, polyurethane primers & sealers promote adhesion of top coats to the substrate.

[\(/usa/en/materials-primer-polyurethane.html\)](/usa/en/materials-primer-polyurethane.html)



Water-Based Stains

Water-Based Wood Stains have all the advantages of oil-based stains. They spread easily, can be repaired, blend effortlessly & have plenty of open time. The thicker formula allows for controlled penetration, which will reduce blotching on softer woods such as Aspen, Pine & Maple.

[\(/usa/en/materials-stains-waterbased.html\)](/usa/en/materials-stains-waterbased.html)



Solvent-Based Stains

A wood stain consists of a colorant suspended or dissolved in an agent or solvent. Colored, or "stained", finishes do not penetrate the pores of the wood to any significant degree.

[\(/usa/en/materials-stains-solventbased.html\)](/usa/en/materials-stains-solventbased.html)



[\(/usa/en/where-to-buy.html\)](/usa/en/where-to-buy.html)

Associated informations ▾

CARC Water-Based

Chemical Agent Resistant Coating (CARC) is available in a water-based solution for environmental protection.

[\(/usa/en/materials-carc-water-based.html\)](/usa/en/materials-carc-water-based.html)



CARC Epoxy Multi-Component

Chemical Agent Resistant Coating (CARC) is a paint commonly applied to military vehicles to provide protection against chemical & biological weapons. The surface of the paint is engineered to be easily decontaminated after exposure to chemical warfare & biological warfare agents. The paint is also resistant to damage & removal by decontaminating solutions.

[\(/usa/en/materials-carc-epoxy-multicomponent.html\)](/usa/en/materials-carc-epoxy-multicomponent.html)



CARC Polyurethane Multi-Component

Chemical Agent Resistant Coating (CARC) can be two-component polyurethane paint commonly applied to military vehicles to provide protection against chemical & biological weapons.

[\(/usa/en/materials-carc-polyurethane-multicomponent.html\)](/usa/en/materials-carc-polyurethane-multicomponent.html)



Moisture-Sensitive Polyurethane Multi-Component

Catalyzed polyurethane clear coats and paints are prized for their durability and versatility around the world. They are used on everything from wood cabinetry, mill work and furniture to planes, trains, and automobiles. They are usually mixed with isocyanates in the hardener. The isocyanate component of polyurethane reacts with moisture in the air and form a hard crystalline structure.

[\(/usa/en/materials-moisture-sensitive-polyurethane-multicomponent.html\)](/usa/en/materials-moisture-sensitive-polyurethane-multicomponent.html)



UV Material Epoxy Multi-Component

UV-resistant epoxy systems mixed with hardener cure faster & in moist conditions.

[\(/usa/en/materials-uv-material-epoxy-multicomponent.html\)](/usa/en/materials-uv-material-epoxy-multicomponent.html)



[\(/usa/en/where-to-buy.html\)]((/usa/en/where-to-buy.html))

Associated informations ▾

UV Material 100% Solid

UV coatings can be formulated up to 100% solids so that they have no volatile component that contributes to pollution.

[\(/usa/en/materials-uv-material-100-solid.html\)]((/usa/en/materials-uv-material-100-solid.html))



UV Material Water-Based

Water-based UV coatings can be considered aesthetically equivalent to bi-component acrylic & polyurethane solvent-based coatings. The range is composed of both pigmented & transparent products.

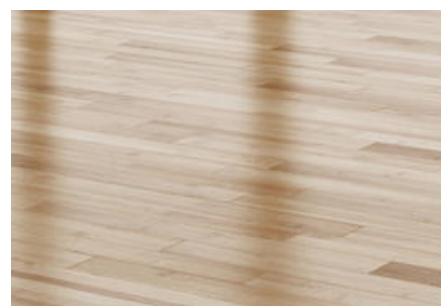
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UV Material Epoxy

UV curable epoxy systems do not require the addition of curing agents. They cure within minutes, or even seconds, and have unlimited working times.

[\(/usa/en/materials-uv-material-epoxy.html\)]((/usa/en/materials-uv-material-epoxy.html))



UV Material Polyurethane Multi-Component

The UV polyurethane multi-components are especially designed for very strong UV stability. Mixing with hardener gives very high durability & UV resistance.

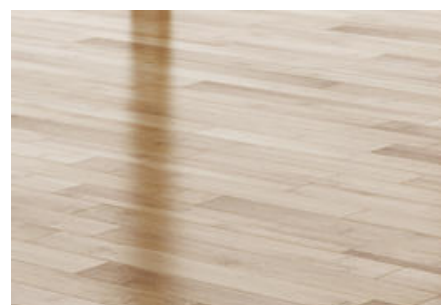
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UV Material Polyurethane

The UV polyurethanes are especially designed for UV stability. The coating is long lasting, offers excellent substrate protection, provides an attractive finish & is user-friendly.

[\(/usa/en/materials-uv-material-polyurethane.html\)]((/usa/en/materials-uv-material-polyurethane.html))



[\(\(/usa/en/where-to-buy.html\)]((/usa/en/where-to-buy.html))

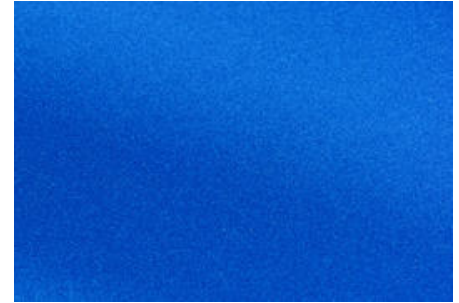
Associated informations ▾



Top Coat Polyurethane Multi-Component

Polyurethane Top Coat is a two- or three-pack isocyanate-cured polyurethane that gives a durable, high gloss finish. Isocyanates included in the hardener are moisture-sensitive & need a specific process for insulating the circuit.

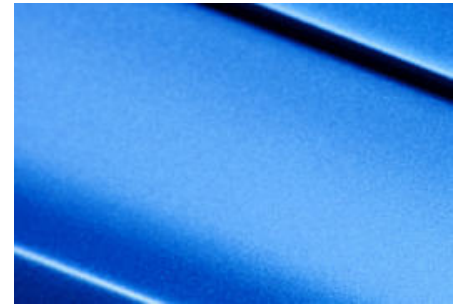
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Top Coat Epoxy

Top Coat Epoxys are used for decorative flooring applications, such as Terrazzo flooring, chip flooring & colored aggregate flooring.

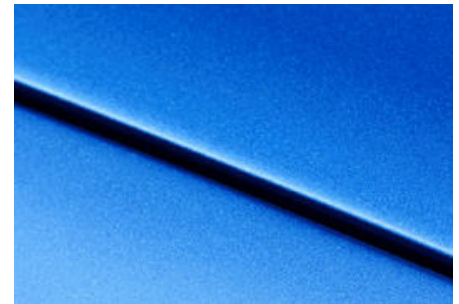
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Top Coat Epoxy Multi-Component

Two-part epoxy coatings were developed for heavy duty service on metal substrates & use less energy than heat-cured.

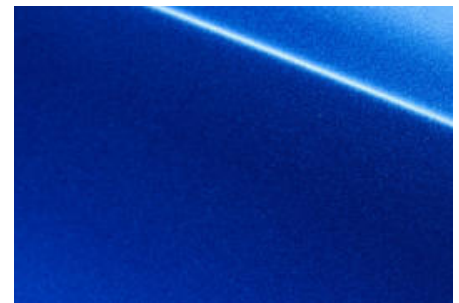
[\(\(/usa/en/materials-top-coat-epoxy-multicomponent.html\)]((/usa/en/materials-top-coat-epoxy-multicomponent.html))



Top Coat Water-Based

Water-based polyurethane is popular because of its low odor & low toxicity. It goes on clear without adding a faint color like oil-based versions do & it dries much faster.

[\(\(/usa/en/materials-top-coat-waterbased.html\)]((/usa/en/materials-top-coat-waterbased.html))



Top Coat Polyurethane

Polyurethane Top Coat gives a durable, high gloss finish.

[\(\(/usa/en/materials-top-coat-polyurethane.html\)]((/usa/en/materials-top-coat-polyurethane.html))



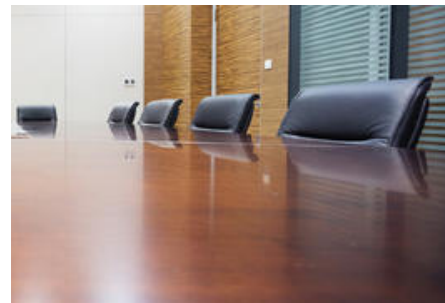
[\(/usa/en/where-to-buy.html\)](/usa/en/where-to-buy.html)

Associated informations ▾

Acid Catalyst Polyurethane Multi-Component

Multi-Component Epoxy Acid Catalyzing (AC) systems require a hardener or catalyst to dry/cure, which works by starting & maintaining the binder's curing process until the chemical reaction is complete. The solvent evaporates prior to & during the chemical reaction concluding a final film of lacquer, paint or filler. The catalyst is moisture-sensitive and requires a Flowmax® technology protection.

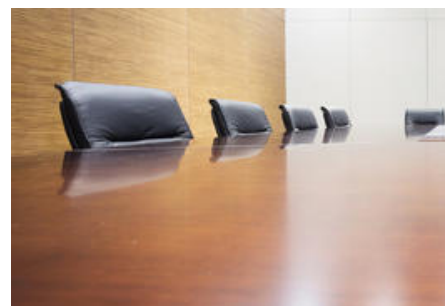
[\(/usa/en/materials-acid-catalyst-polyurethane-multicomponent.html\)](/usa/en/materials-acid-catalyst-polyurethane-multicomponent.html)



Acid Catalyst Epoxy Multi-Component

Multi-Component Epoxy Acid Catalyzing (AC) systems require a hardener or catalyst to dry/cure, which works by starting & maintaining the binder's curing process until the chemical reaction is complete. The solvent evaporates prior to & during the chemical reaction concluding a final film of lacquer, paint or filler. Curing times of AC products can be dramatically accelerated with heat application.

[\(/usa/en/materials-acid-catalyst-epoxy-multicomponent.html\)](/usa/en/materials-acid-catalyst-epoxy-multicomponent.html)



Metallic Epoxy

The newest metallic epoxy system on the market allows contractors to heighten the effects & make floors look three-dimensional.

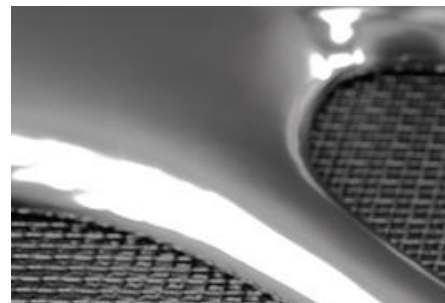
[\(/usa/en/materials-metallic-epoxy.html\)](/usa/en/materials-metallic-epoxy.html)



Metallic Water-Based

Polyurethane water-based coatings offer a very high chemical/physical resistance & steel effect & are environmentally friendly.

[\(/usa/en/materials-metallic-water-based.html\)](/usa/en/materials-metallic-water-based.html)



Metallic Epoxy Multi-Component

A two-component 100%-solid epoxy blended with metallic pigments, Metal Fusion is self-leveling, allowing easy application & seamless floor surfaces.

[\(/usa/en/materials-metallic-epoxy-multicomponent.html\)](/usa/en/materials-metallic-epoxy-multicomponent.html)



[\(/usa/en/where-to-buy.html\)](/usa/en/where-to-buy.html)

Associated informations ▾

Metallic Polyurethane

Polyurethane coatings are particularly recommended for application to surfaces subject to high levels of wear & tear where excellent chemical/physical resistance is required. The metallic parts will give a steel effect.

[\(/usa/en/materials-metallic-polyurethane.html\)](/usa/en/materials-metallic-polyurethane.html)

Metallic Polyurethane Multi-Component

Polyurethane multi-component coatings offer a very high chemical/physical resistance & a very high steel effect.

[\(/usa/en/materials-metallic-polyurethane-multicomponent.html\)](/usa/en/materials-metallic-polyurethane-multicomponent.html)

MARKETS

Cab

Protection, finishing, bonding & sealing solutions for cabs

[\(/usa/en/markets-cab.html\)](/usa/en/markets-cab.html)



Handling Machines

Protective & finishing coating for handling & lifting machines

[\(/usa/en/markets-handling-machines.html\)](/usa/en/markets-handling-machines.html)



Electronic Components

Technical coating for electronic components

[\(/usa/en/markets-electronic-components.html\)](/usa/en/markets-electronic-components.html)





Associated informations ▾

Kitchen & Bath

Preparation & finishing for kitchen & bath market

(/usa/en/markets-kitchen-and-bathroom.html)



Furniture

Protection, bonding & finishing for furniture

(/usa/en/markets-furniture.html)



Mining Machines

Protection, finishing, bonding & sealing for mining machinery

(/usa/en/markets-mining-machines.html)



Earth Moving Machines

Protection & finishing spray applications

(/usa/en/markets-earth-moving-machines.html)



Interior Plastic Parts

Bonding, adhesion, promotion & finishing for composite & plastic parts

(/usa/en/markets-interior-plastic-parts.html)



Exterior Plastic Parts for Automotive

Protection, bonding, finishing & sealing for composite & plastic parts

(/usa/en/markets-exterior-plastic-parts-for-automotive.html)



Farming Trailers

Protection, finishing, bonding & sealing solutions for farming trailers

(/usa/en/markets-farming-trailers.html)



Associated informations ▾

Metallic Furniture

Liquid & powder paint coating for metallic furniture

(/usa/en/markets-metallic-furniture.html)



Bottles

Glass coating

(/usa/en/markets-bottles.html)



Plastic Mass

Liquid paint coating for electronic plastics

(/usa/en/markets-plastic-mass-market-1.html)



Railways

Protective coating, sealing & bonding applications for railway vehicles & parts

(/usa/en/markets-railways.html)



Yachting

Protective & finishing coating for yacht & sea vessels

(/usa/en/markets-yachting.html)



Road Trailers

Anti-corrosion & protective coating for road trailers

(/usa/en/markets-road-trailers.html)



Tip Selection Chart

AAP Tip Chart

All tips in the AAP selection chart can be used with Models 288046 and 288044 G40 guns. Order desired tip (part no AAPxxx) from the selection chart below.

Orifice Size in (mm)	*Fluid Output, fl oz/min (lpm)		Maximum Pattern Width at 12 in (305 mm)						
	at 600 psi (4.1 MPa, 41 bar)	at 1000 psi (7.0 MPa, 70 bar)	4 to 6 (150)	6 to 8 (200)	8 to 10 (250)	10 to 12 (300)	12 to 14 (350)	14 to 16 (400)	16 to 18 (450)
† 0.009 (0.229)	7.0 (0.2)	9.1 (0.27)	209	309	409	509			
† 0.011 (0.279)	10.0 (0.3)	13.0 (0.4)	211	311	411	511	611		
0.013 (0.330)	13.0 (0.4)	16.9 (0.5)	213	313	413	513	613	713	
0.015 (0.381)	17.0 (0.5)	22.0 (0.7)	215	315	415	515	615	715	815
0.017 (0.432)	22.0 (0.7)	28.5 (0.85)		317	417	517	617	717	817
0.019 (0.483)	28.0 (0.8)	36.3 (1.09)			419	519	619	719	
0.021 (0.533)	35.0 (1.0)	45.4 (1.36)			421	521	621		821

†These tip sizes include a 150 mesh tip filter. *Tips are tested in water

AAF Tip Chart

Recommended for high finish quality applications at low and medium pressure. AAF tips have a pre-orifice which assists in atomizing shear thinning materials, including lacquers. Order desired tip (part no. AAFxxx).

Orifice Size in (mm)	*Fluid Output, fl oz/min (lpm)		Maximum Pattern Width at 12 in (305 mm)				
	at 600 psi (4.1 MPa, 41 bar)	at 1000 psi (7.0 MPa, 70 bar)	6 to 8 (200)	8 to 10 (250)	10 to 12 (300)	12 to 14 (350)	14 to 16 (400)
0.011 (0.279)	9.5 (0.28)	12.5 (0.37)	310	410	510	610	710
0.013 (0.330)	12.0 (0.35)	16.0 (0.47)	312	412	512	612	712
0.015 (0.381)	16.0 (0.47)	21.0 (0.62)		414	514	614	714
0.017 (0.432)	20.0 (0.59)	26.5 (0.78)		416	516	616	716

*Tips are tested in water

LTX Tip Chart

All tips in the LTX selection chart can be used with Model 288053 G40 RAC gun. Order desired tip (part no LTXxxx) from the selection chart below. The RAC aircap also accommodates fine finish tips (FFTxxx) and wide RAC tips (WRXxxx). Refer to instruction manual 311052.

Orifice Size in (mm)	*Fluid Output, fl oz/min (lpm)	Maximum Pattern Width at 12 in (305 mm)				
	at 2000 psi (14.0 MPa, 140 bar)	4 to 6 (150)	6 to 8 (200)	8 to 10 (250)	10 to 12 (300)	12 to 14 (350)
0.009 (0.229)	11.2 (0.33)	209	309			
0.011 (0.279)	16.6 (0.49)	211	311	411	511	
0.013 (0.330)	23.3 (0.69)	213	313	413	513	
0.015 (0.381)	30.8 (0.91)	215	315	415	515	615
0.017 (0.432)	39.5 (1.17)	217	317	417	517	617
0.019 (0.483)	49.7 (1.47)	219	319	419	519	619
0.021 (0.533)	60.5 (1.79)		321	421	521	621
0.023 (0.584)	72.7 (2.15)			423	523	623
0.025 (0.635)	85.9 (2.54)				525	625
0.027 (0.686)	100.0 (2.96)				527	627
0.029 (0.737)	115.6 (3.42)					629
0.031 (0.787)	131.8 (3.90)				531	631

*Tips are tested in water



FINISHING SPRAYING APPLICATIONS



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- Outstanding reliability
- Easy maintenance
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- Up to 50% savings in spray booth waste
- Conforms to virtually all Regulations
- Enthusiastic operator acceptance



AIRMIX® AUTOMATIC SPRAY GUNS



ATX

The Kremlin ATX gun is the most widely used gun in the world for flat-line and linear finishing. They provide excellent atomization quality and outstanding transfer efficiency. Special tips and bases are available for this modular gun.



AVX

The Kremlin gun is the most efficient non-electrostatic production gun available and is used in thousands of applications all over the world. Most automatic machines using medium fluid pressure use Airmix® guns because they are extremely reliable and deliver outstanding finish quality at minimal production cost.



ATX-UV

This workhorse gun has been used in thousands of installations worldwide. It now is available for demanding UV applications.

Ask for Part # 668-625-700.

HVLP & LVLP AUTOMATIC SPRAY GUNS



A35 HTi

The A35 HTi gun is designed for maximum performance, excellent finish quality and superior transfer efficiency. Gun is featured with indexing aircap and an adjustable graduated fluid knob at the back. The gun is available with side and rear outputs.



A35 HTV

The A35 HTV gun is specially designed with a vortex system to provide outstanding penetration and finish quality with spray stains. The gun is also featured with indexing aircap and an adjustable graduated fluid knob at the back. The gun is available with side and rear outputs.



A35 HPA

The A35 HPA has excellent atomization, outstanding transfer efficiency with higher airflow than the HTi gun. The gun is also featured with indexing aircap and an adjustable graduated fluid knob at the back. The gun is available with side and rear outputs.



CYCLOMIX™ MULTI PH



CYCLOMIX™ MULTI PH

The Cyclomix™ PH system was specifically designed to provide accurate mixing for acid catalyzed coatings. Complete with 316 stainless steel fluid passages for catalyst, this system provides reliability for customers using these harsh coatings in single color applications.

SPECIFICATIONS

TECHNOLOGY SUPPLIED:	Airspray, Airmix®, Air Assisted Airless & Airless
MIXING RATIO:	0.6:1 to 20:1 (166% to 5%)
MIXING ACCURACY:	± 1%
INPUT FLUID VISCOSITY RANGE:	20 to 5000 cps
INLET FLUID PRESSURE:	30 to 2900 psi / 2 to 200 bar
INLET AIR PRESSURE:	30 to 87 psi / 2 to 6 bar
FLUID OUTPUT FLOW RATE:	2 to 50 oz/min / 50 to 1500 cc/min
CATALYST - WETTED MATERIAL METAL PARTS:	316 Stainless Steel
ALL REMAINING - WETTED MATERIAL METAL PARTS:	303/304 Stainless Steel
AIR INLET FITTING:	F 1/4" BSP
AIR OUTLET FITTING:	F 1/4" BSP

PUMPING EQUIPMENT

04.120F Flowmax®



This piston pump is designed for use on multiple gun systems spraying medium viscosity coatings. The Flowmax® bellows technology makes this pump perfect for paint kitchens feeding multiple low pressure guns.

4:1 ratio
3.8 gal/min free flow

PDM 01.175 Diaphragm Pump



For short or low pressure circulation loops, the PDM 01.175 is the best choice. This pump is found in

a multitude of applications throughout the world for medium to large factories that have dedicated colors in the wood, metal and plastic industries.

16.120F Flowmax®



This pump is designed for use on multiple gun systems spraying medium viscosity coatings. The Flowmax® bellows technology makes this pump perfect for paint kitchens feeding multiple medium pressure Airmix® guns.

16:1 ratio
3.8 gal/min free flow

COLOR CHANGERS



Man-U-Color

The operator selects the color on the rotary dial, which also includes the option for air and solvent. The dump valve uses a one push/pull switch to activate this timed sequence.

Auto-Color

This system consists of a PLC control panel to operate the sequencing of color change valves. This stand alone system is designed to control recirculating material without reclaim. Each color will be controlled by one solenoid valve.

Auto-Color Plus+

This system consists of a PLC control panel to operate the sequencing of color change valves along with controlling recirculating stains: stains will be recovered automatically. Customizable options include networking color change panels together, automatic initiation of color change sequence, add additional colors (20+) and much more..

CYCLOMIX™ RECOVERY SERIES

The Cyclomix™ Recovery Series was specifically designed to collect over spray so it can be reclaimed. The automatic recovery system measures the density of the reclaim material is constantly monitored and adjusted by injecting solvent. This will rejuvenate the collected material to the correct density. The reclaimed material is monitored and reintroduced into the virgin mixed fluid stream to assure a uniform final coating. This Cyclomix™ Recovery Series will deliver quality mixed material regardless of running a virgin mixed material or a mixture of virgin mixed material and controlled reclaimed material. Fast flushing for easy cleanup.

A semi-automatic and U.V. systems are available.



Kremlin Rexson



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➔ More : <http://www.kremlinrexson-sames.com/en/usa/products/marches/>

KREMLIN REXSON, innovator of Airmix®, Flowmax® and Cyclomix™ technologies, manufacture a broad range of high quality guns, pumps and mixing equipment for the application of paints, sealants and adhesives.



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Fax: (734) 927-0064

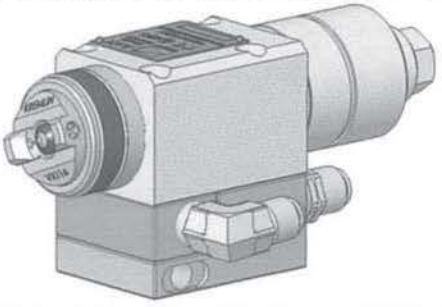
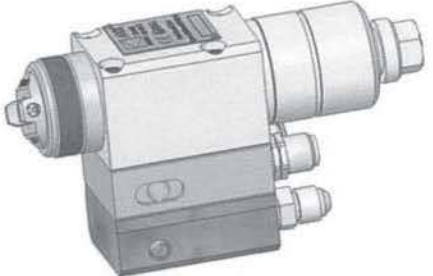
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México, C.P. 76120
Tel: +52 (442) 161 2595



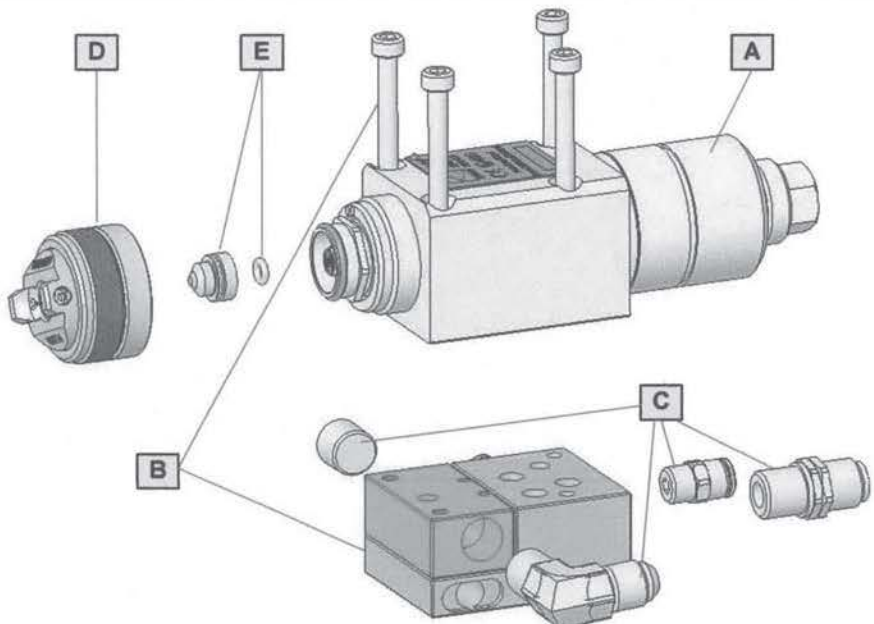
Doc. 573.349.050	Modif. /Änderung : # Ind. 27 & 29	Pièces de rechange
Date/Datum/Fecha : 5/05/08		Spare parts list
Annule/Cancel/Ersetzt/Anula : 8/02/08		Ersatzteilliste
		Piezas de repuesto

AVX	PISTOLET AUTOMATIQUE AIRMIX® AVEC EMBASE, sans tête, ni buse AIRMIX® SPRAY GUN WITH BASE , without aircap and tip AUTOMATISCHE AIRMIX®-SPRITZPISTOLE MIT GRUNDPLATTE, ohne Kopf und Düse PISTOLA AUTOMÁTICA AIRMIX® CON BASE, sin cabezal, ni boquilla
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AVX (L) # 129.695.000	AVX (L) # 129.695.050
AVX (Ω) # 129.695.100	AVX (Ω) # 129.695.150

(L) : circulation du produit dans l'embase / fluid circulation in the base / Material-Zirkulation in der Grundplatte / circulación de producto a través de la base.

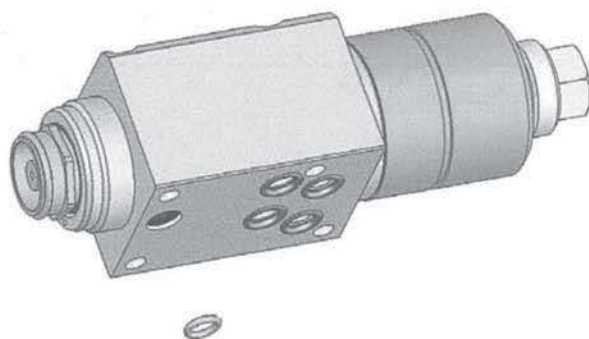
(Ω) : circulation du produit dans le pistolet / fluid circulation in the gun / Material-Zirkulation in der Pistole / circulación de producto a través de la pistola.

	AVX	A Pistolet / Gun / Pistole / Pistola
		B Embase / Base / Grundplatte / Base
		C Raccords / Fittings / Anschlüssen / Racores
		D Tête / Aircap / Zerstäuber-kopf / Cabezal
		E Buse AIRMIX® / AIRMIX® Tip / AIRMIX®-Düse / Boquilla AIRMIX®

A

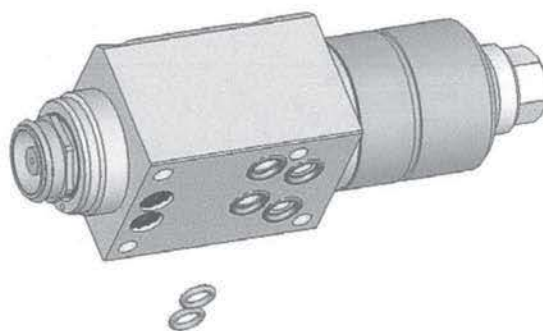
PISTOLET / GUN / PISTOLE / PISTOLA
(inox / stainless steel / Edelstahl)

(⊥)

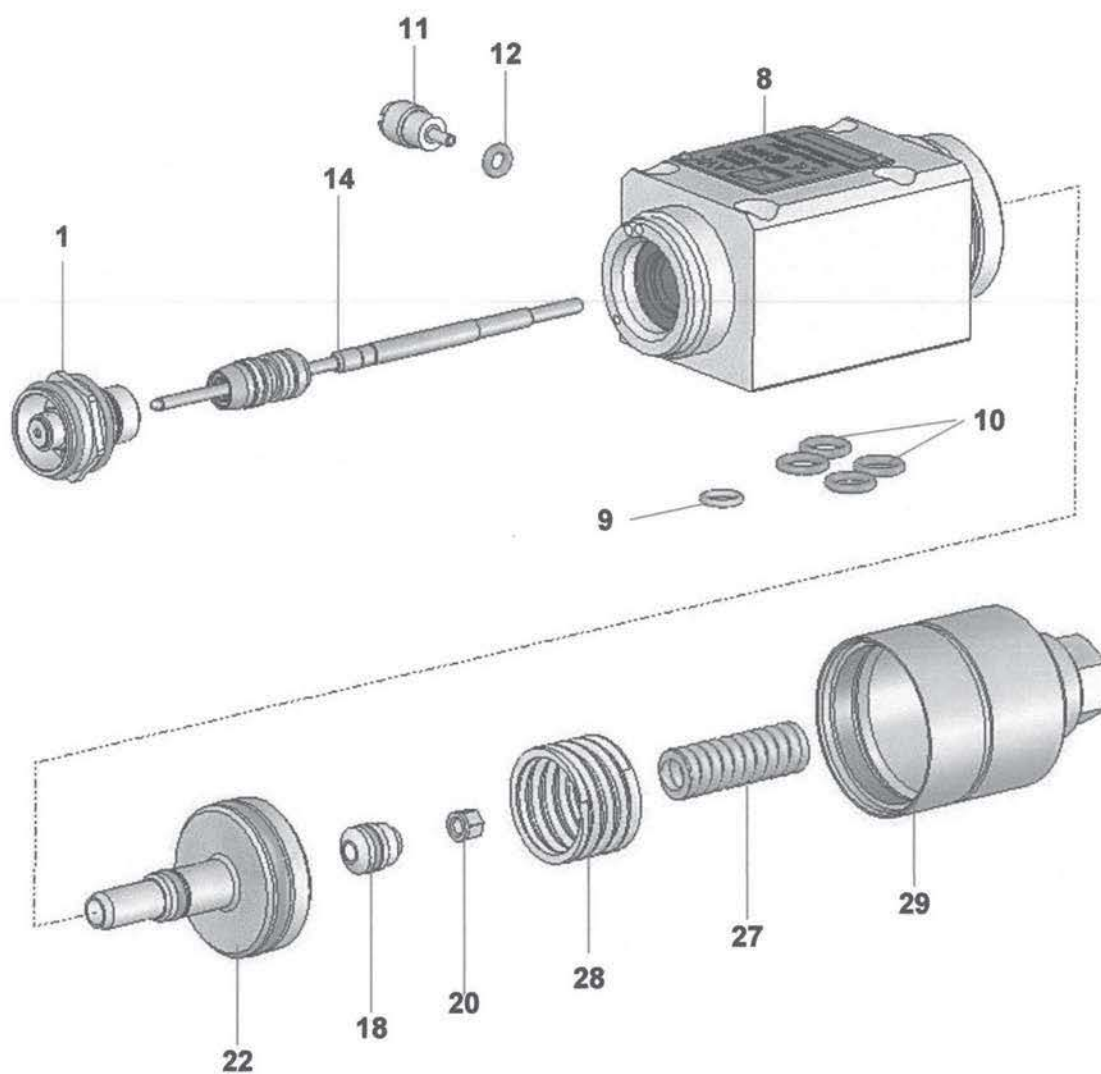


129.690.000

(Ω)

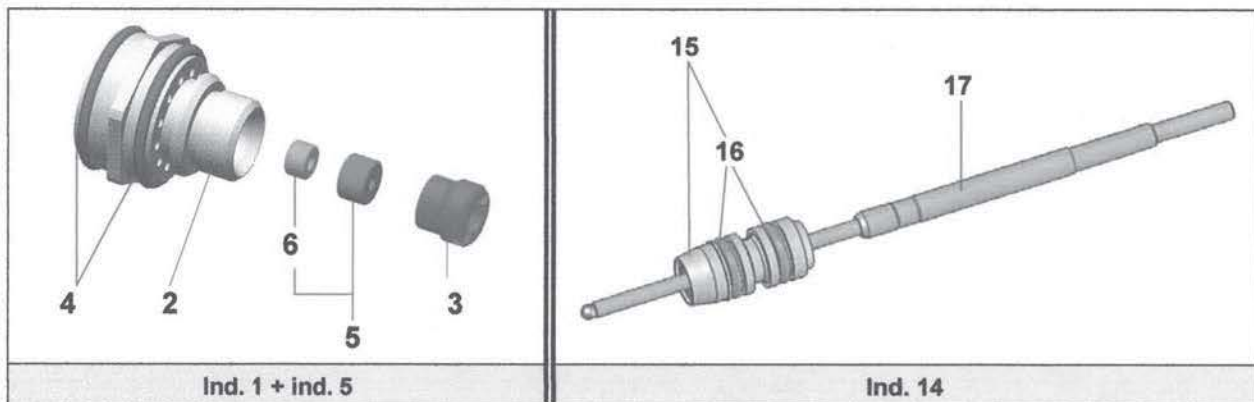


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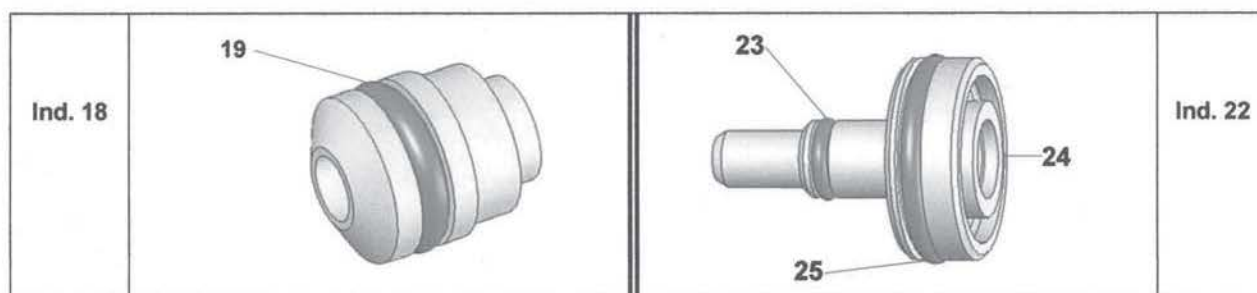


Pièces communes - Common parts - Gleiche Teile - Partes comunes

Ind	#	Désignation	Description	Bezeichnung	Denominación	Qté
* 1	129.679.907	Porte-siège équipé (sans siège)	Seat-holder assembly (without seat)	Düsennadelsitz, kpl (ohne Einsatz)	Porta-asiento equipado (sin asiento)	1
2	NCS /NSS	• Porte-siège	• Seat-holder	• Düsennadelsitz	• Porta-asiento	1
3	029.600.106	• Vis	• Screw	• Schraube	• Tornillo	1
4	150.040.329	• Joint torique (les 10)	• O-Ring (pack of 10)	• O-Ring (10 St.)	• Junta tórica (x 10)	2
* 5	129.679.905	Siège en inox avec joint (les 2)	Seat with seal, stainless steel (pack of 2)	Edelstahl-Einsatz mit Dichtung (2 St.)	Asiento de inox con junta (bolsa de 2)	1
6	129.629.922	• Joint de siège (les 10)	• Seal, seat (pack of 10)	• Dichtung (10 St.)	• Junta asiento (x 10)	1



* 10	129.251.991	Joint (les 10)	Seal (pack of 10)	Dichtung (10 St.)	Junta (bolsa de 10)	4
11	029.690.001	Témoin de fuite	Fluid leakage detector	Lekage-Anzeige	Testigo de fuga	1
* 12	129.529.903	Joint (les 10)	O-Ring (pack of 10)	O-Ring (10 St.)	Junta (bolsa de 10)	1
* 14	129.690.050	Ensemble pointeau-cartouche (les 4)	Needle-cartridge assembly (pack of 4)	Nadel-Packung, kpl. (4 St.)	Conjunto aguja cartucho (bolsa de 4)	1
15	129.690.039	• Cartouche avec joints	• Cartridge with seals	• Packung mit O-Ring	• Cartucho con juntas	1
16	909.429.702	• • Joint blanc (polyfluid)	• • Seal, white, Polyfluid	• • O-Ring, weiß, Polyfluid	• • Junta blanco, Polyfluid	2
17	NCS / NSS	• Pointeau	• Needle	• Nadel	• Aguja	1
* 18	029.626.200	Entraîneur de pointeau	Retainer, needle	Nadelmitnehmer	Arrastre de la aguja equipado	1
19	129.400.915	• Joint vert R5a (les 10)	• Seal, green, R5a (pack of 10)	• O-Ring, grün, R5a (10 St.)	• Junta verde R5a (bolsa de 10)	1
20	029.251.303	Ecrou spécial	Nut, special	Spezialmutter	Tuerca especial	1
* 22	129.690.010	Piston équipé	Piston assembly	Kolben, kpl.	Pistón equipado	1
23	129.479.910	• Joint R6 (les 10)	• Seal, R6 (pack of 10)	O-Ring, R6 (10 St.)	• Junta R6 (bolsa de 10)	1
24	NCS / NSS	• Piston seul	• Piston only	Kolben, einzeln	• Pistón solo	1
25	909.130.522	• Joint noir R20	• Seal, black, R20	O-Ring, schwarz, R20	• Junta negro R20	1
* 27	050.313.107	Ressort de pointeau (inox)	Spring, fluid needle (stainless steel)	Farbnadelfeder (Edelstahl)	Muelle de aguja (inox)	1
* 28	050.313.504	Ressort de piston (inox)	Spring, piston (stainless steel)	Kolbenfeder (Edelstahl)	Muelle de pistón (inox)	1
29	129.690.040	Cylindre	Cylinder	Zylinder	Cilindro	1



Pièces spécifiques - Specific parts - Spezifische Teile - Partes específicas

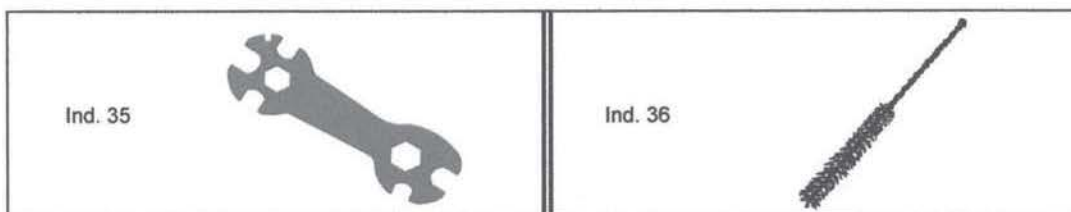
AVX (L)

Ind	#	Désignation	Description	Bezeichnung	Denominación	Qté
8	129.690.020	Corps pistolet en inox	Gun body, stainless steel	Pistolenkörper, Edelstahl	Cuerpo pistola inox	1
* 9	150.040.328	Joint (les 10)	Seal (pack of 10)	Dichtung (10 St.)	Junta (bolsa de 10)	1

AVX (M)

8	129.691.020	Corps pistolet en inox	Gun body, stainless steel	Pistolenkörper, Edelstahl	Cuerpo pistola inox	1
* 9	150.040.328	Joint (les 10)	Seal (pack of 10)	Dichtung (10 St.)	Junta (bolsa de 10)	2

Ind	#	Désignation	Description	Bezeichnung	Denominación	Qté
35	049.030.042	Clé plate	Gun wrench	Pistolschlüssel	Llave para pistola	1
36	906.300.101	Goupillon	Large size brush	Reinigungsbürste, groß	Cepillo grande	1



Ind	#	Désignation	Description	Bezeichnung	Denominación	Qté
*	129.690.901	Pochette de joints (Ind. 4x2, 9x2, 10x4, 12, 16x2, 19, 23, 25, 44, 51x2, 72, 75, 79a, 79b + tube de graisse)	Package of seals (Ind. 4x2, 9x2, 10x4, 12, 16x2, 19, 23, 25, 44, 51x2, 72, 75, 79a, 79b + grease)	Dichtungssatz (Pos. 4x2, 9x2, 10x4, 12, 16x2, 19, 23, 25, 44, 51x2, 72, 75, 79a, 79b + tube-fett)	Bolsa de juntas (Ind. 4x2, 9x2, 10x4, 12, 16x2, 19, 23, 25, 44, 51x2, 72, 75, 79a, 79b + tubo de grasa)	1

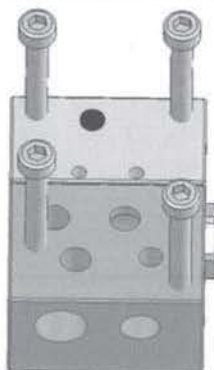
* Pièces de maintenance préconisées tenues en stock
 * Preceding the index number denotes a suggested spare part.
 * Bezeichnete Teile sind empfohlene Ersatzteile.
 * Piezas de mantenimiento preventivo a tener en stock.

N C S : Non commercialisé seul.
 N S S : Denotes parts are not serviceable separately.
 N S S : Bezeichnete Teile gibt es nicht einzeln, sondern nur komplett.
 N C S : no suministrado por separado.

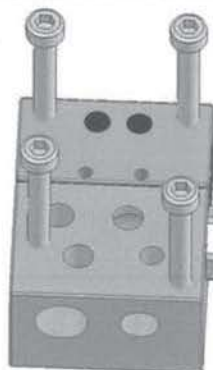
B

EMBASES - BASES - GRUNDPLATTEN - BASES
 (insert inox / stainless steel insert / Edelstahl-Insert / Inserto inox)

raccordements produit latéraux / lateral fluid connections / Seitenanschlüsse / conexiones producto laterales

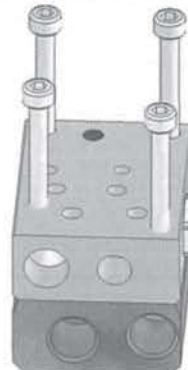


(⊥)
129.690.070

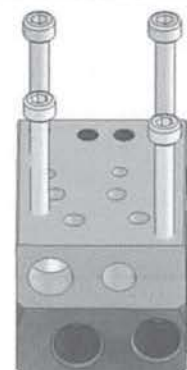


(Ω)
129.691.070

raccordements produit arrière / back fluid connections / Hintere Materialanschlüsse / conexiones producto trasero

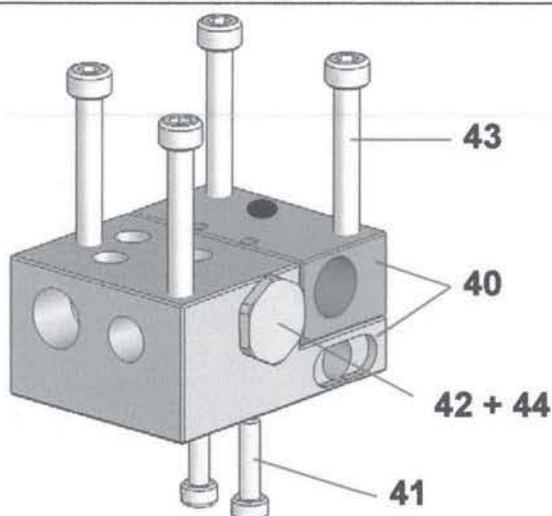


(⊥)
129.690.080

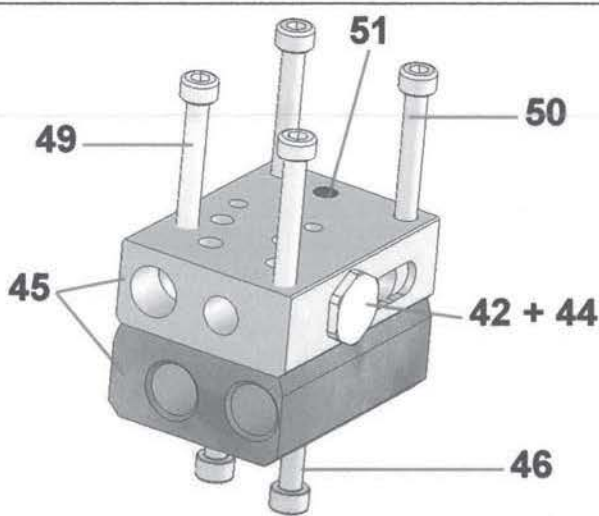


(Ω)
129.691.080

(⊥) : circulation dans l'embase / circulation in the base / Zirkulation in der Grundplatte / circulación a través de la base
 (Ω) : circulation dans le pistolet / circulation in the gun / Zirkulation in der Pistole / circulación a través de la pistola



129.690.070 & 129.691.070



129.690.080 & 129.691.080

Pour embase / For base / Für Grundplatte / Para Base : # 129.690.070 & 129.691.070

Ind	#	Désignation	Description	Bezeichnung	Denominación	Qté
40	NCS / NSS	Embase + insert	Base + insert	Grundplatte + Insert	Base + Inserto	1
41	933.151.219	Vis M 4x16	Screw	Schraube	Tornillo	2
42	050.261.103	Bouchon	Plug	Bindstopfen	Tapón	1
43	88126	Vis M 5x40	Screw, M 5x40	Schraube M 5x40	Tornillo M 5x40	4
44	129.529.907	Joint (les 10)	Seal (pack of 10)	Dichtung (10 St.)	Junta (bolsa de 10)	1

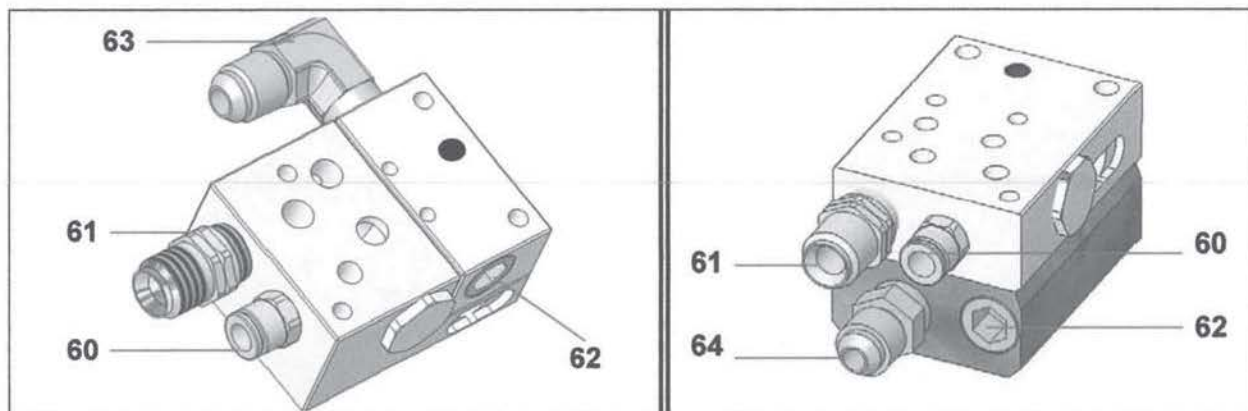
Pour embase / For base / Für Grundplatte / Para Base : # 129.690.080 & 129.691.080

Ind	#	Désignation	Description	Bezeichnung	Denominación	Qté
42	050.261.103	Bouchon	Plug	Bindstopfen	Tapón	1
44	129.529.907	Joint (les 10)	Seal (pack of 10)	Dichtung (10 St.)	Junta (bolsa de 10)	1
45	NCS / NSS	Embase + insert	Base + insert	Grundplatte + Insert	Base + Inserto	1
46	88 124	Vis M 5x25	Screw, M 5x25	Schraube, M 5x25	Tornillo, M 5x25	2
49	88 126	Vis M 5x40	Screw, M 5x40	Schraube M 5x40	Tornillo M 5x40	2
50	930.151.596	Vis M 5x60	Screw, M 5x60	Schraube M 5x60	Tornillo M 5x60	2
51	150.040.328	Joint (les 10)	Seal (pack of 10)	Dichtung (10 St.)	Junta (bolsa de 10)	-

Ind.51 : Qté = 1 (Pour embase / For base / Für Grundplatte / Para Base : # 129.690.080)

Qté = 2 (Pour embase / For base / Für Grundplatte / Para Base : # 129.691.080)

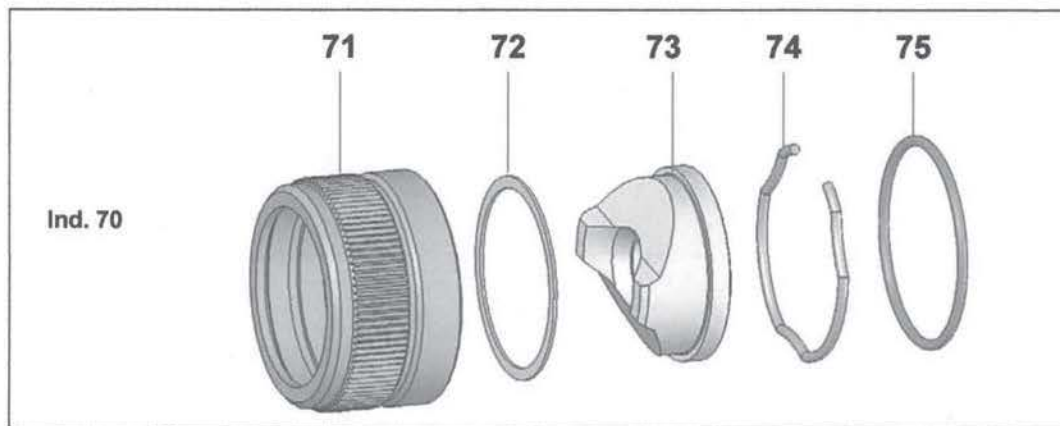
C	RACCORDS - FITTINGS - ANSCHLÜSSE - RACORES
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Ind	#	Désignation	Description	Bezeichnung	Denominación	Qté
60	905.124.901	Raccord (commande) M 1/8 BSP - T 4 x 6	Fitting, quick release (control) M1/8BSP- T4x6	Schlauchanschluss für 6 x 1 (Steuerluft)	Racor (mando) M 1/8 BSP - tubería 4 x 6	1
61	050.102.624	Raccord (air) M 1/4 BSP - M 1/4 NPS	Fitting (air) - double male, 1/4 BSP - 1/4 NPS	Doppelnippel, AG 1/4 BSP - AG 1/4 NPS	Racor (aire) M 1/4 BSP - M 1/4 NPS	1
62	905.210.303	Bouchon produit inox, 1/4 NPT	Plug, fluid ,stainless steel, 1/4 NPT	Bindstopfen, Edelstahl, 1/4 NPT	Tapón inox 1/4 NPT	1
63	905.210.602	Raccord coudé en inox (produit) M 1/4 NPT - M 1/2 JIC (# 5 JIC)	Elbow fitting, stainless steel (material), double male, 1/4 NPT - 1/2 JIC (# 5 JIC)	Winkelnippel, Edelstahl AG 1/4 NPT - AG 1/2 JIC	Racor acodado de inox (producto) M 1/4 NPT - M 1/2 JIC	2
64	905.210.502	Raccord droit en inox (produit) M 1/4 NPT - M 1/2 JIC	Straight fitting, stainless steel (material) double male, 1/4 NPT - 1/2 JIC (# 5 JIC)	Gerader Nippel, Edelstahl AG 1/4 NPT - AG 1/2 JIC	Racor recto de inox (producto) M 1/4 NPT - M 1/2 JIC	2

D

TETES - AIRCAP - DÜSENKÖPFE - CABEZALES



* 70	-	Tête complète (voir tableau)	Aircap assembly (refer to chart)	Zerstäuberkopf kpl., (siehe Tabelle)	Cabezal completo (consultar cuadro)	1
71	029.670.006	• Bague de tête	• Aircap ring	• Überwurfring	• Anillo del cabezal	1
72	129.670.075	• Joint de tête (les 2)	• Seal, aircap (x 2)	• O-Ring (2 St.)	• Junta del cabezal (x 2)	1
73	NCS / NSS	• Tête nue	• Aircap only	• Zerstäuberkopf	• Cabezal solo	1
74	032.670.003	• Anneau de retenue	• Stop ring	• Sicherungsring	• Anillo de retención	1
75	150.040.330	• Joint de bague (les 10)	• Seal, ring (pack of 10)	• O-Ring (10 St.)	• Junta del anillo (x 10)	1

Têtes - Aircap - Düsenköpfe - Cabezales

	#	Utilisation	Use	Benutzung	Utilización
VX 14	132.670.020	Largeur de jet réglable et grande possibilité de réglage de débit	For adjustable pattern width - Adjustable flow rate	Einstellbare Spritzstrahlbreite, regulierbare Ausbringungsmenge	Anchura de abanico regulable y grande posibilidad de regulacion de caudal
VX 54	132.670.030	Largeur de jet fixe - Tête traitée anti-adhérent	For permanent pattern width - antiaderent treatment	Feste Spritzstrahlbreite - antihafbeschichteter Düsenkopf	Anchura de abanico fija - Cabezal tratado anti-adherente
VX 114	132.670.040	Largeur de jet fixe - Haute finition	For permanent pattern width - High finishing	Feste Spritzstrahlbreite	Anchura de abanico fija - Alto acabado

VX 14 KHVLP

132.670.920

VX 114 KHVLP

132.670.940

Nota : Pour que le pistolet AVX soit à jet réglable, il faut équiper le pistolet d'une tête VX 14 et l'embase d'un pointeau des événements – (voir option - kit : VX 14 + pointeau des événements).


Nota : To get an AVX gun with adjustable fan, you must fit the gun with a VX 14 aircap and the base with an air adjuster – (see option - kit : VX 14 + air adjuster).

Anmerkung : Sie dürfen der Pistole mit einem Kopf VX 14 und der Grundplatte von der Lufthörnernadel, damit die Pistole mit regulierbarem Spritzstrahl wird – (Siehe Option - Fertigteile : VX 14 + Lufthörnernadel)

Nota : Para que la pistola AVX tenga un abanico ajustable, Vd. tiene que equiparla con un cabezal VX 14 y la base con una aguja de los eventos – (consultar opción - kit : VX 14 y aguja de los eventos).

78 79

**Buses standards / Standard tips / Standard Düsen / Boquillas estándar (ind. 78)**

		Débit d'eau Water output Wasserdurchlaufmenge		Repères tamis pour filtre Mesh number for filter Siebgrösse für filter Índices para filtro		Largeur de jet à 25 cm / Spray fan width at 25 cm (10 ") Strahlbreite bei 25 cm / Ancho abanico à 25 cm									
Calibre Size Grösse	Ø. (mm)	Caudal agua (l / mn)		Pistolet Gun Pistole Pistola		Mini (cm)	7	10	13	17	21	25	29	33	38
		35 bar (500 psi)	70 bar (1000 psi)		Pompe Pump Pumpe Bomba	Mini (")	2.8	4	5.3	6.7	8	10	12	13	15
						Maxi (cm)	9	12	17	21	25	29	33	37	44
						Maxi (")	3.5	4.7	6.7	8	10	12	13	14.5	17.3
02						Nombre gravé	02.034	02.054							
03	0,18	0,10	0,15	4	2	sur la buse	03.034	03.054	03.074						
04	0,23	0,15	0,22	4	2 ou 4		04.034	04.054	04.074	04.094	04.114				
06	0,28	0,20	0,33	4	4 ou 6	Number en-	06.034	06.054	06.074	06.094	06.114	06.134	06.154		
09	0,33	0,30	0,45	6	6 ou 8	graved on the	09.034	09.054	09.074	09.094	09.114	09.134	09.154		
12	0,38	0,35	0,60	6	8 ou 12	tip			12.074	12.094	12.114	12.134	12.154	12.174	
14	0,41	0,40	0,72	12	8 ou 12	Eingravierte		14.054	14.074	14.094	14.114	14.134	14.154	14.174	
18	0,48	0,45	0,85	12	12	Kennzahl auf						18.134	18.154	18.174	
20	0,50	0,50	1,06	12	12	der Düse			20.074	20.094	20.114	20.134	20.154	20.174	20.194
25	0,56		1,33	12	15	Número índice						25.134			
30	0,61	0,75	1,60	12	15	gravado sobre			30.074		30.114	30.134	30.154	30.174	30.194
45	0,73	1,15	2,30	12	20	la boquilla					45.114		45.154	45.174	45.194

**Buses spéciales pour peintures hydrodiluable / Specific tips for water-based paints /
Spezifische Düsen für Wasserlacken / Boquillas específicas para pinturas hidrosolubles**

04	0,23	0,15	0,22	4	2 ou 4		04.032	04.052	04.072	04.092	04.112				
06	0,28	0,20	0,33	4	4 ou 6		06.032	06.052	06.072	06.092	06.112	06.132	06.152		
09	0,33	0,30	0,45	6	6 ou 8		09.032	09.052	09.072	09.092	09.112	09.132	09.152		
12	0,38	0,35	0,60	6	8 ou 12				12.072	12.092	12.112	12.132	12.152	12.172	
14	0,41	0,40	0,72	12	8 ou 12			14.052	14.072	14.092	14.112	14.132	14.152	14.172	

Pour établir la référence d'une buse, remplacer les croix par le nombre repère de la buse précédé de 134.5XX.XXX
Exemple : pour commander une buse 09.094, utiliser la référence : 134.509.094

To obtain tip part number, replace the crosses by the engraved tip number preceded by 134.5XX.XXX
Example : use part number 134.509.094 to obtain TIP N° 09.094

Die Bestell-Nr. erhält man, indem man die Kreuze durch die vorgenannte Kennzahl ersetzt : 134.5XX.XXX
Beispiel : für eine Düse 09.094 ergibt sich die Bestell-Nr. : 134.509.094

Para establecer la referencia de una boquilla reemplazar las cruces por el número de la boquilla precedido por 134.5XX.XXX
ejemplo : para pedir una boquilla 09.094 emplear la referencia : 134.509.094

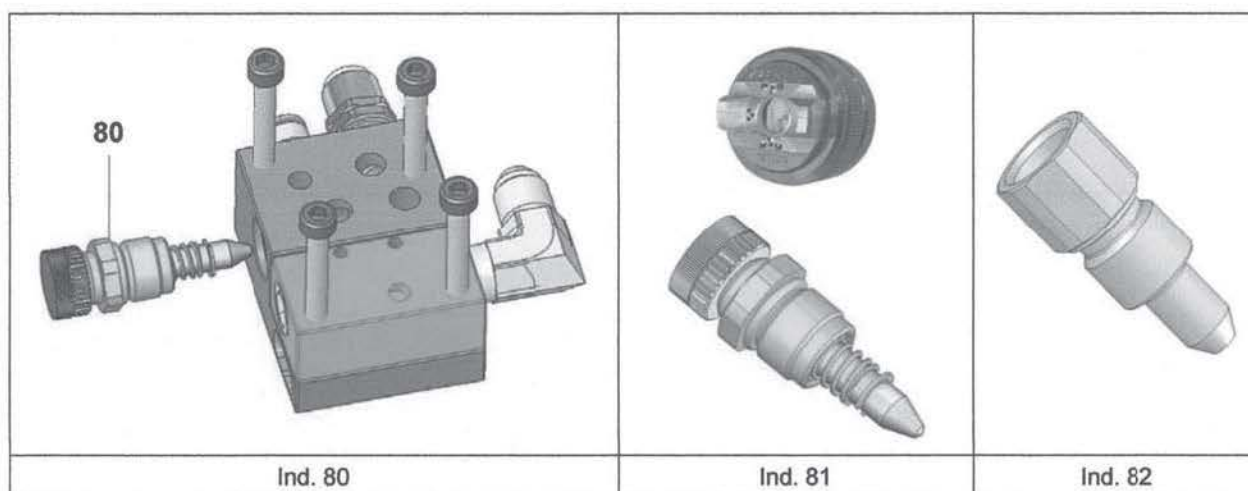
Joint et micro-tamis - Microfilter and seal - Dichtungen und Mikrosieb - Junta y microtamiz (Ind. 79)

Ind.		#	Désignation	Description	Bezeichnung	Denominación
79a		129.609.901	Micro-tamis 100 µ (les 10) - Seulement pour buses 03, 04 et 06	Microfilter 100 µ (pack of 10) - Only for tips size 03, 04 and 06	Micro-Sieb 100 µ (10 St.) - Nur für Düsentyp 03, 04 und 06	Micro-tamiz 100 µ (bolsa de 10) - Sólo para boquillas 03, 04 y 06
79b		129.529.903	Joint PTFE (les 10) - Seulement pour buse de 09 et calibre supérieur	PTFE seal (pack of 10) - Only for tips size 09 and above	PTFE-Düsensdichtungen (10 St.) - Nur für Düsentyp 09 und größer	Junta PTFE (bolsa de 10) - Sólo para boquilla de 09 y calibre superior

OPTIONS - ON REQUEST - OPTIONEN - OPCIONES


Ind.	#	Désignation	Description	Bezeichnung	Denominación
5	129.679.904	Siège en résine acétale (les 10)	Seat, acetal resin (pack of 10)	Sitz in Acetalharz (10 St.)	Asiento de resina acetabo (x 10)
5	129.679.906	Siège en carbure avec joint (les 2)	Seat with seal, carbide (pack of 2)	Nadelsitz aus Hartmetall und Dichtring (2 St.)	Asiento carburo con junta (bolsa de 2)

80	129.253.100	Pointeau des événements	Air adjuster	Spritzstrahlregulierschaube	Aguja control abanico
81	129.695.250	Kit jet réglable (tête VX 14 + pointeau des événements)	Adjustable fan kit (VX 14 aircap + air adjuster)	Fertigteile (Kopf VX 14 + Lufthörnernadel)	Kit abanico ajustable (cabezal VX 14 + aguja de los eventos)
82	029.253.002	Raccord pour réglage largeur de jet à distance	Remote adjusting fan width	Spezialanschluss zur Fernverstellung der Spritzstrahlbreite	Racor regulación anchura abanico a distancia

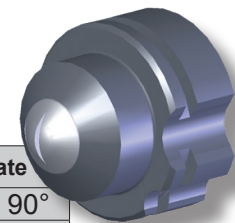


Ind.	#	Désignation	Description	Bezeichnung	Denominación
85	049.351.000	Support de fixation pour pistolet (Ø 16 mm - longueur : 100 mm)	Mounting rod (Ø 16 mm - 5/8 " length : 100 mm / 4 ")	Pistolenhalterung (Ø 16 mm - Länge : 100 mm)	Soporte de fijación para pistola (Ø 16 mm - longitud : 100 mm)
86	049.351.700	Support de fixation	Mounting support	Halterung	Soporte de fijación
87	049.351.705	Support de fixation orientable	Mounting support swiveling	Halterung verstellbar	Soporte de fijación orientable
90		Aiguilles de débouchage (x 12) pour buses :	Unclogging needles (pack of 12) for tips :	Düsenreinigungsnadeln (12 St.) für Düsen :	Agujas desobturadoras (x 12) para boquillas :
	000.094.000	de 03 à 09	size 03 to 09	von 03 to 09	de 03 a 09
	000.094.002	de 12 à 30	size 12 to 30	von 12 to 30	de 12 a 30

			
Ind. 85	Ind. 86	Ind. 87	Ind. 90

	#	Allonge	Extension	Verlängerung	Prolongador
	075.800.011	Droite, L= 250 mm	L=10 " , straight	L= 250 mm gerade	L= 250 mm, lateral
	075.800.012	Droite, L= 400 mm	L=16 " , straight	L= 400 mm gerade	L= 400 mm, lateral
	075.850.011	Coudée 45°, L= 250 mm	L=10" Extension with 45 degree swivel	L=250 mm , Kopf 45° abgewinkelt	L= 250 mm, codo a 45°

AIRMIX® TIP CHART



Tip Number	Fluid Output				Diameter in Inches	Diameter in mm	Gun Filter		Pump Filter		Spray Angle and Max fan width at gun target distance of 10" from Substrate											
	500 psi 35 bar		1000 psi 70 bar								10°	18°	30°	40°	45°	50°	60°	67°	75°	82°	90°	
											3.5"	5"	7"	9"	9.5"	10"	12"	13"	15"	18"	22"	
	oz/ min	cm³/ min	oz/ min	cm³/ min			Mesh	Filter #	Mesh	Filter #	9 cm	13 cm	18 cm	23 cm	24 cm	25 cm	31 cm	33 cm	38 cm	46 cm	60 cm	
02	1.2	40	3.4	100	0.005	0.127	140 (4)		200 (2)	02-03	02-05											
03	3.4	100	5.1	150	0.007	0.178				03-03	03-05	03-07										
04	5.1	150	6.8	200	0.009	0.229				140 (4)	04-03	04-05	04-07	04-09	04-10	04-11	04-13					
06	6.8	200	11.2	330	0.011	0.279					06-03	06-05	06-07	06-09	06-10	06-11	06-13	06-15				
09	10.1	300	15.2	450	0.013	0.330	85 (6)		85 (6)	09-03	09-05	09-07	09-09	09-10	09-11	09-13	09-15					
12	11.2	350	20.3	600	0.015	0.381			70 (8)		12-05	12-07	12-09	12-10	12-11	12-13	12-15	12-17				
14	13.5	400	24.4	720	0.016	0.406	60 (12)		60 (12)	14-03	14-05	14-07	14-09	14-10	14-11	14-13	14-15	14-17				
18	15.2	450	28.7	850	0.018	0.457					18-05	18-07	18-09	18-10	18-11	18-13	18-15	18-17				
20	16.9	500	35.8	1,060	0.020	0.508						20-07	20-09	20-10	20-11	20-13	20-15	20-17	20-19			
25	22.0	650	45.0	1,330	0.022	0.559						25-07	25-09	25-10	25-11	25-13	25-15	25-17				
30	25.4	750	54.1	1,600	0.024	0.610						30-07	30-09	30-10	30-11	30-13	30-15	30-17	30-19			
40	33.3	985	66.6	1,970	0.027	0.686							40-09	40-10	40-11	40-13	40-15	40-17	40-19	40-21		
45	38.9	1150	77.8	2,300	0.029	0.737								45-10	45-11	45-13	45-15	45-17	45-19	45-21		
60	43.3	1281	86.6	2,561	0.031	0.787									60-10	60-11	60-13	60-15	60-17	60-19	60-21	

The choice of the tip is based on the desired flow rate in order to achieve a good finish and reduce paint costs. An AIRMIX® tip needs to be replaced frequently in order to maintain the original transfer efficiency.

To order a tip, replace the "x" characters in the table, by the chosen tip number in 134-5xx.xx4 for a Fine Finish or 134-5xx.xx2 for an Xtra™ Fine Finish tip, recommended for water-based materials or for an increased atomization quality due to the preatomization.

(For example: order 134-509-094 (Fine Finish) or 134-509-092 (Xtra™ Fine Finish) if choosing a 09.09 tip).

Standard tips

- To order a tip, replace the crosses in 134-5xx-xx4 with the corresponding number from the chart above. (Example: 134-506-094 for a 06-09 tip)

Xtra™ tips

To order a tip, replace the crosses in 134-5xx-xx2 with the corresponding number from the chart above. (Example: 134-506-092 for a 06-09 tip) Ideally used for waterborne materials.

Special Order tips

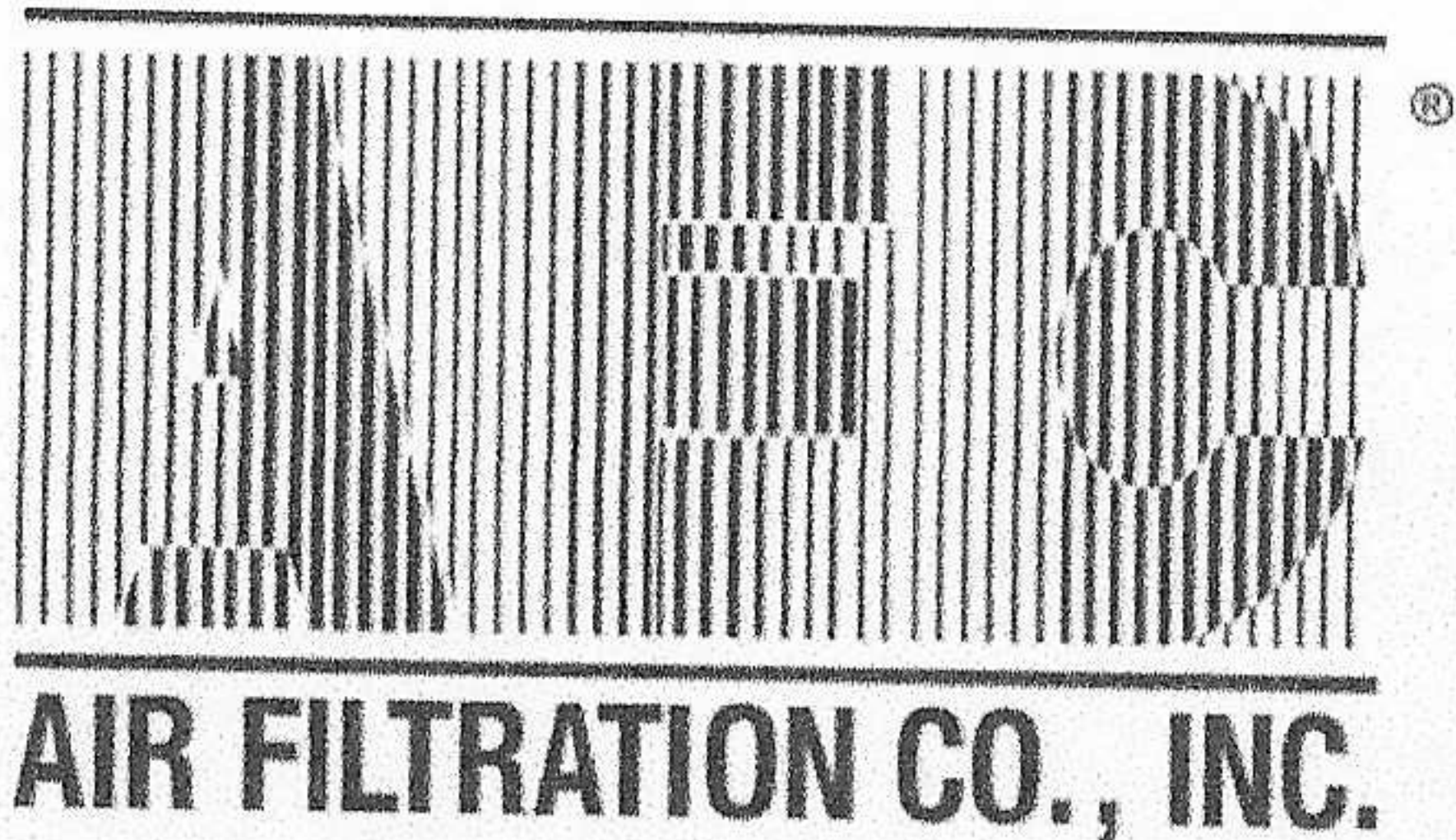
- These tips require a minimum of 25 tips per order and these tips cannot be ordered in the Xtra™ tip style.

Optimum Fan Adjustment

- These tips allow for fan adjustment when used with a VX24 air cap.

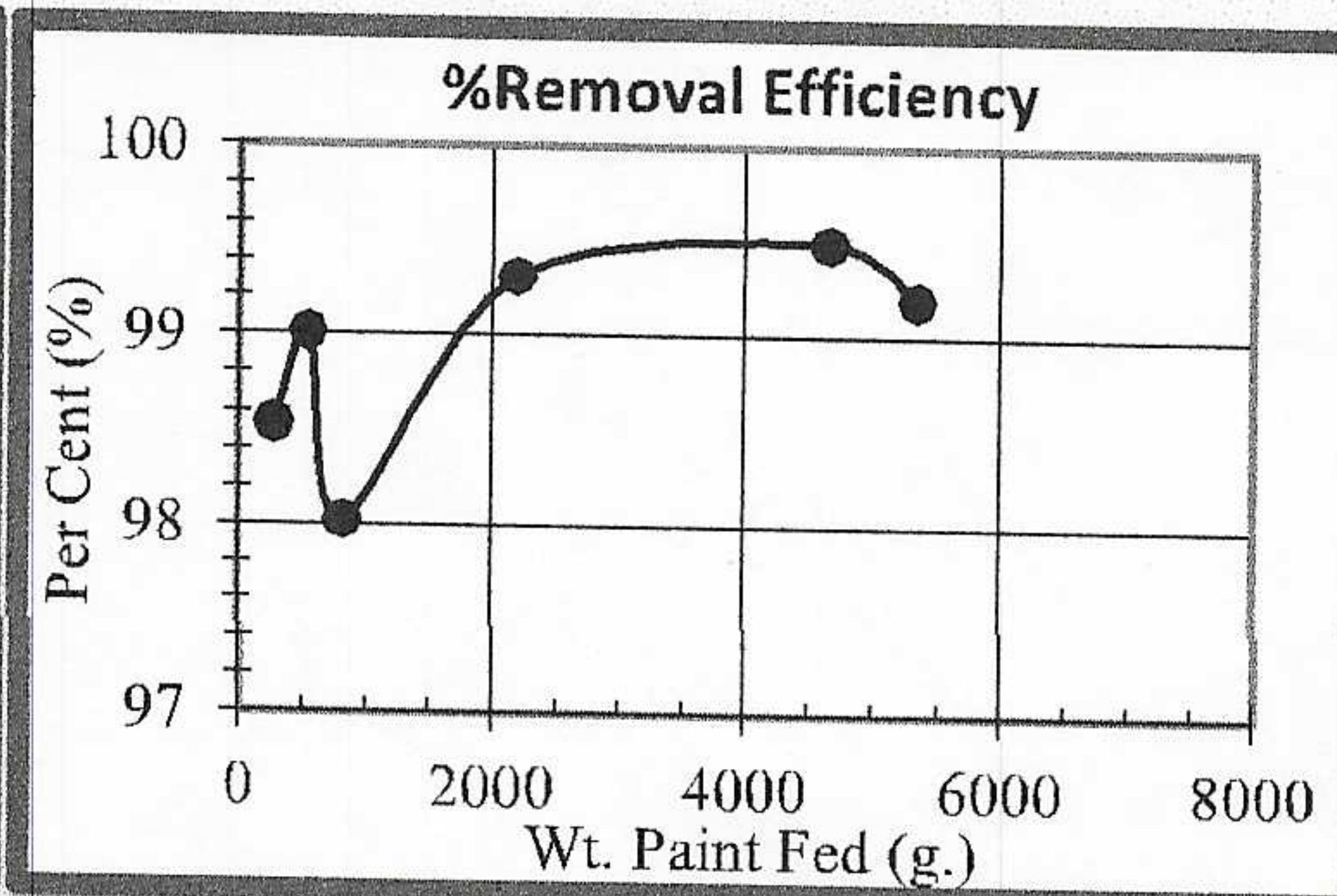
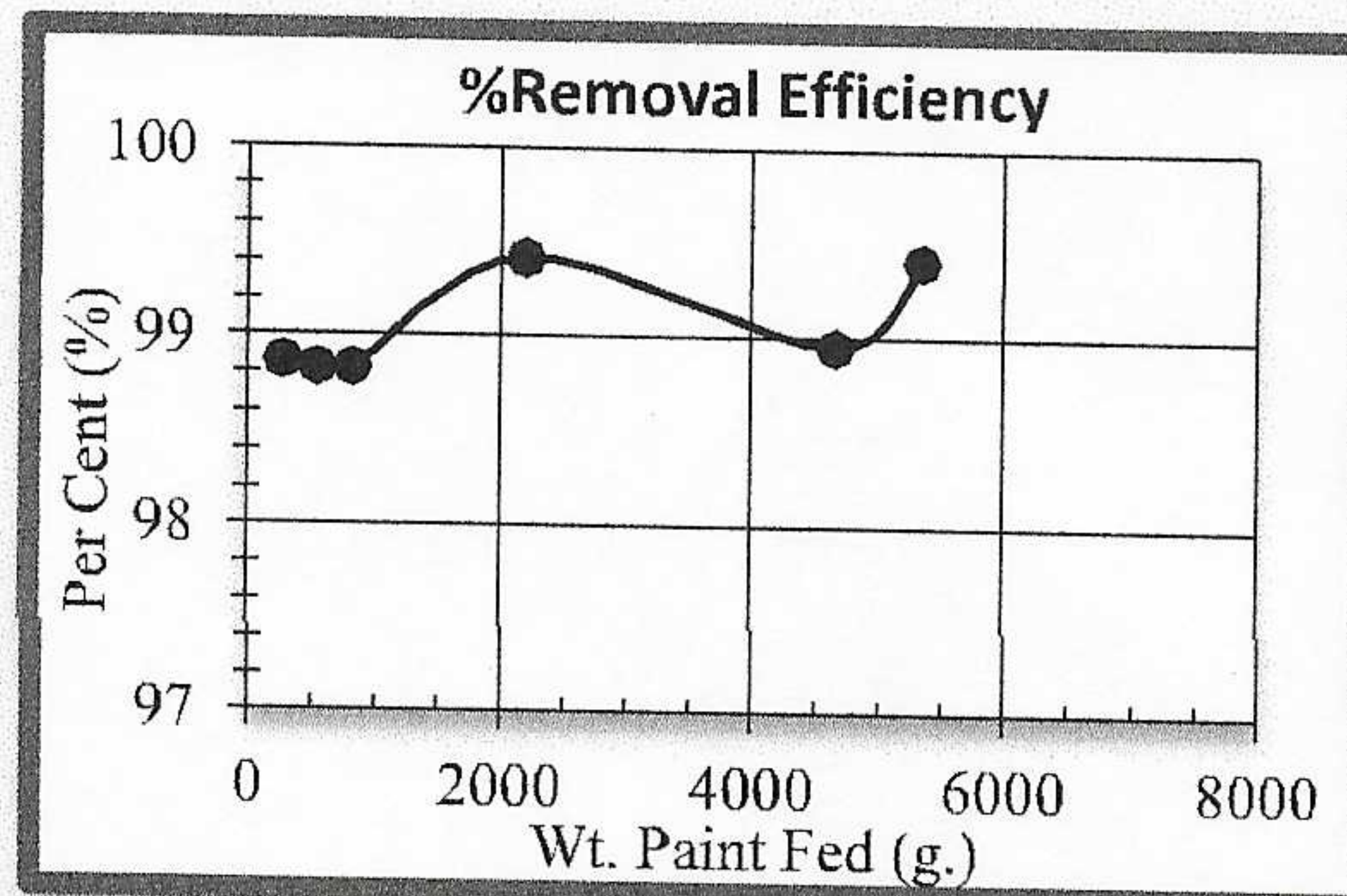
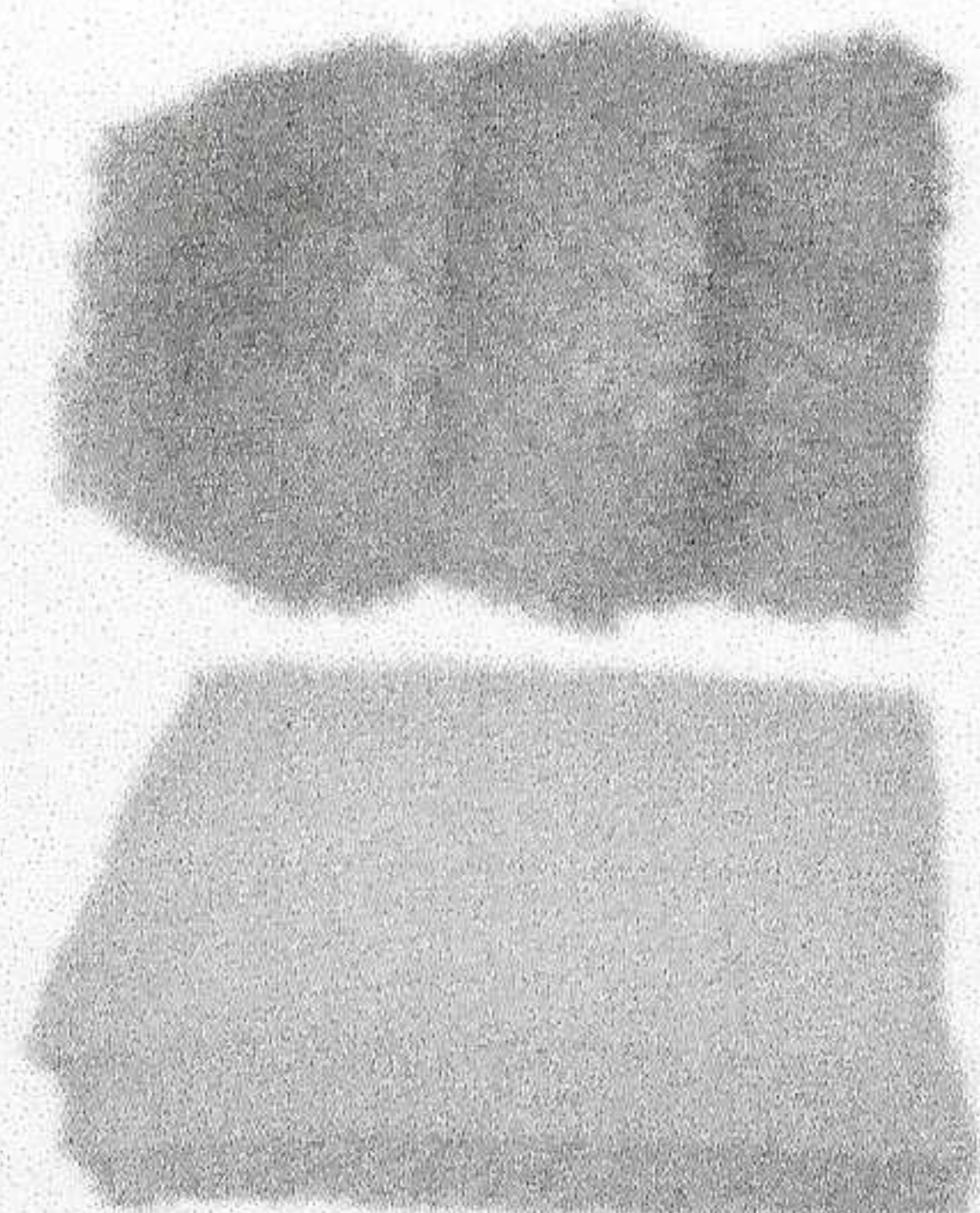
EXEL North America, Inc.

North American Headquarters
45001 5 Mile Road
Plymouth, MI 48170
Toll Free: (800) 573-5554
Offices in Canada and Mexico



PA15 - 45x132 - 13

Fiberglass Exhaust Filters



GA/PA Series 15 Gram Fiberglass and PA22 Series 22 Gram Fiberglass

Product Application

Our most popular arrestors, ideal for use in most spray booth applications and the most economical option. For use where the user requires a good basic filter and cost is a major consideration. Available in pads and roll sizes listed below. **Compliant with EPA 6H law.**

Product Specifications

- GA/PA 2" green, water resistant, 15 gram fiberglass. PA22 2" Yellow, water resistant, 22 gram fiberglass.
- 98.81% efficient with an average paint holding capacity of 2.22 pounds in a 15 Gram 20"x20" pad.
- 99.03% efficient with an average paint holding capacity of 2.6 pounds in a 22 Gram 20"x20" pad.

Item #	Description	Set Qty	Item #	Description	Set Qty
GA10	20"x20" 15 Gram Fiberglass Arrestor Pads	50	PA403	40.5"x300' 15 Gram Fiberglass Arrestor Roll	1
GA10-100	20"x20" 15 Gram Fiberglass Arrestor Pads	100	PA421	42"x100' 15 Gram Fiberglass Arrestor Roll	1
GA20	20"x25" 15 Gram Fiberglass Arrestor Pads	50	PA423	42"x300' 15 Gram Fiberglass Arrestor Roll	1
GA20-100	20"x25" 15 Gram Fiberglass Arrestor Pads	100	PA451	45"x100' 15 Gram Fiberglass Arrestor Roll	1
GA24	20"x24" 15 Gram Fiberglass Arrestor Pads	50	PA453	45"x300' 15 Gram Fiberglass Arrestor Roll	1
GA24-100	20"x24" 15 Gram Fiberglass Arrestor Pads	100	PA481	48"x100' 15 Gram Fiberglass Arrestor Roll	1
GA26	20"x48" 15 Gram Fiberglass Arrestor Pads	8	PA483	48"x300' 15 Gram Fiberglass Arrestor Roll	1
PA201	20"x100' 15 Gram Fiberglass Arrestor Roll	1	PA601	60"x100' 15 Gram Fiberglass Arrestor Roll	1
PA203	20"x300' 15 Gram Fiberglass Arrestor Roll	1	PA603	60"x300' 15 Gram Fiberglass Arrestor Roll	1
PA221	22"x100' 15 Gram Fiberglass Arrestor Roll	1	PA801	80"x100' 15 Gram Fiberglass Arrestor Roll	1
PA223	22"x300' 15 Gram Fiberglass Arrestor Roll	1	PA803	80"x300' 15 Gram Fiberglass Arrestor Roll	1
PA241	24"x100' 15 Gram Fiberglass Arrestor Roll	1	PA222020	20"x20" 22-Gram Fiberglass Arrestor Pads	50
PA243	24"x300' 15 Gram Fiberglass Arrestor Roll	1	PA222025	20"x25" 22-Gram Fiberglass Arrestor Pads	50
PA251	25"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22203	20"x300' 22-Gram Fiberglass Arrestor Roll	1
PA253	25"x300' 15 Gram Fiberglass Arrestor Roll	1	PA22253	25"x300' 22-Gram Fiberglass Arrestor Roll	1
PA281	28"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22283	28"x300' 22-Gram Fiberglass Arrestor Roll	1
PA283	28"x300' 15 Gram Fiberglass Arrestor Roll	1	PA22303	30"x300' 22-Gram Fiberglass Arrestor Roll	1
PA301	30"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22363	36"x300' 22-Gram Fiberglass Arrestor Roll	1
PA303	30"x300' 15 Gram Fiberglass Arrestor Roll	1	PA22413	41"x300' 22-Gram Fiberglass Arrestor Roll	1
PA321	32"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22453	45"x300' 22-Gram Fiberglass Arrestor Roll	1
PA323	32"x300' 15 Gram Fiberglass Arrestor Roll	1	PA22483	48"x300' 22-Gram Fiberglass Arrestor Roll	1
PA361	36"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22603	60"x300' 22-Gram Fiberglass Arrestor Roll	1
PA363	36"x300' 15 Gram Fiberglass Arrestor Roll	1	PA22843	84"x300' 22-Gram Fiberglass Arrestor Roll	1
PA401	40.5"x100' 15 Gram Fiberglass Arrestor Roll	1			



A Complete Line of Filters and Spray Booth Related Items Since 1967

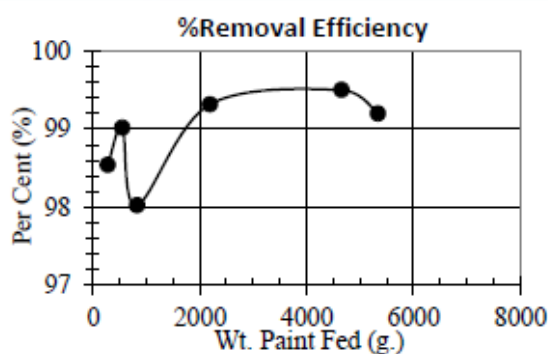
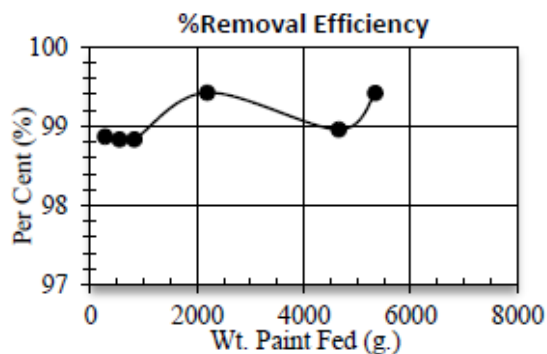
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15 Gram Standard Grade Media

Our most popular arrestors, ideal for use in most spray booth applications and the most economical option. For use where the user requires a good basic filter and cost is a major consideration. Available in pads and rolls sizes listed below. Compliant with EPA 6H law.



- GA/PA 2" green, water resistant, 15 gram fiberglass.
- PA22 2" Yellow, water resistant, 22 gram fiberglass.
- 98.81% efficient with an average paint holding capacity of 2.22 pounds in a 15 Gram 20"x20" pad.
- 99.03% efficient with an average paint holding capacity of 2.6 pounds in a 22 Gram 20"x20" pad.



Item #	Description	Set Qty.	Item #	Description	Set Qty.
GA10	20"x20" 15 Gram Fiberglass Arrestor Pads	50	PA403	40.5"x300' 15 Gram Fiberglass Arrestor Roll	1
GA10-100	20"x20" 15 Gram Fiberglass Arrestor Pads	100	PA421	42"x100' 15 Gram Fiberglass Arrestor Roll	1
GA20	20"x25" 15 Gram Fiberglass Arrestor Pads	50	PA423	42"x300' 15 Gram Fiberglass Arrestor Roll	1
GA20-100	20"x25" 15 Gram Fiberglass Arrestor Pads	100	PA451	45"x100' 15 Gram Fiberglass Arrestor Roll	1
GA24	20"x24" 15 Gram Fiberglass Arrestor Pads	50	PA453	45"x300' 15 Gram Fiberglass Arrestor Roll	1
GA24-100	20"x24" 15 Gram Fiberglass Arrestor Pads	100	PA481	48"x100' 15 Gram Fiberglass Arrestor Roll	1
GA26	20"x48" 15 Gram Fiberglass Arrestor Pads	8	PA483	48"x300' 15 Gram Fiberglass Arrestor Roll	1
PA201	20"x100' 15 Gram Fiberglass Arrestor Roll	1	PA601	60"x100' 15 Gram Fiberglass Arrestor Roll	1
PA203	20"x300' 15 Gram Fiberglass Arrestor Roll	1	PA603	60"x300' 15 Gram Fiberglass Arrestor Roll	1
PA221	22"x100' 15 Gram Fiberglass Arrestor Roll	1	PA801	80"x100' 15 Gram Fiberglass Arrestor Roll	1
PA223	22"x300' 15 Gram Fiberglass Arrestor Roll	1	PA803	80"x300' 15 Gram Fiberglass Arrestor Roll	1
PA241	24"x100' 15 Gram Fiberglass Arrestor Roll	1	PA222020	20"x20" 22-Gram Fiberglass Arrestor Pads	50
PA243	24"x300' 15 Gram Fiberglass Arrestor Roll	1	PA222025	20"x25" 22-Gram Fiberglass Arrestor Pads	50
PA251	25"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22203	20"x300' 22-Gram Fiberglass Arrestor Roll	1
PA253	25"x300' 15 Gram Fiberglass Arrestor Roll	1	PA22253	25"x300' 22-Gram Fiberglass Arrestor Roll	1
PA281	28"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22283	28"x300' 22-Gram Fiberglass Arrestor Roll	1
PA283	28"x300' 15 Gram Fiberglass Arrestor Roll	1	PA22303	30"x300' 22-Gram Fiberglass Arrestor Roll	1
PA301	30"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22373	37"x300' 22-Gram Fiberglass Arrestor Roll	1
PA303	30"x300' 15 Gram Fiberglass Arrestor Roll	1	PA22413	41"x300' 22-Gram Fiberglass Arrestor Roll	1
PA321	32"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22453	45"x300' 22-Gram Fiberglass Arrestor Roll	1
PA323	32"x300' 15 Gram Fiberglass Arrestor Roll	1	PA22483	48"x300' 22-Gram Fiberglass Arrestor Roll	1
PA361	36"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22603	60"x300' 22-Gram Fiberglass Arrestor Roll	1
PA363	36"x300' 15 Gram Fiberglass Arrestor Roll	1	PA22723	72"x300' 22-Gram Fiberglass Arrestor Roll	1
PA401	40.5"x100' 15 Gram Fiberglass Arrestor Roll	1	PA22843	84"x300' 22-Gram Fiberglass Arrestor Roll	1

[Download 15 Gram Test Sheet](#)
[Download 22 Gram Test Sheet](#)

(641) 872-1137 (800) 848-5859 FAX: (641) 872-1663



PAINT ARRESTANCE FILTER TEST REPORT

Spray Removal Efficiency & Paint Holding Capacity

BASED ON 40 CFR PART 63 NATIONAL EMISSION STANDARD

Tested for: **AAF International**
 Filter Mfr.: **AAF International**
 Filter Name: **PA/GA Series**
 Report#./Test# **R 838 AAF T 938**
 Report Date: **December 30, 2016**
 PN# **602-511-xxx-300**

Test Information

FILTER DESCRIPTION:

Green skin/white highloft glass

PAINT DESCRIPTION:

High Solids Baking Enamel (S.W. #1 Permaclad 2400, red)

PAINT SPRAY METHOD:

Conventional Air Gun at 40 PSI

SPRAY FEED RATE:

142 gr./min. 135 cc./min.

AIR VELOCITY:

150 FPM

Test Results

INITIAL PRESSURE DROP of Clean Test Filter

0.02 in. water

FINAL PRESSURE DROP of Loaded Test Filter

0.08 in. water

WEIGHT GAIN of TEST FILTER & TEST FRAME THROUGH

3868 grams

PAINT HOLDING CAPACITY of TEST FILTER

1230 grams = 2.7 lbs.

PAINT RUN-OFF

2638 grams

WEIGHT GAIN on FINAL FILTER

31.6 grams = PENETRATION

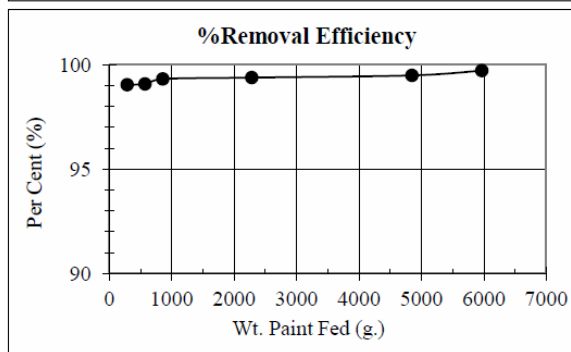
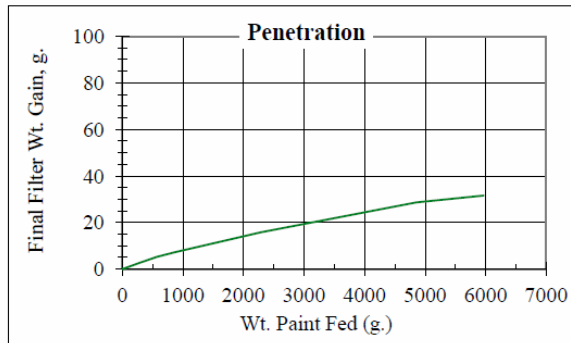
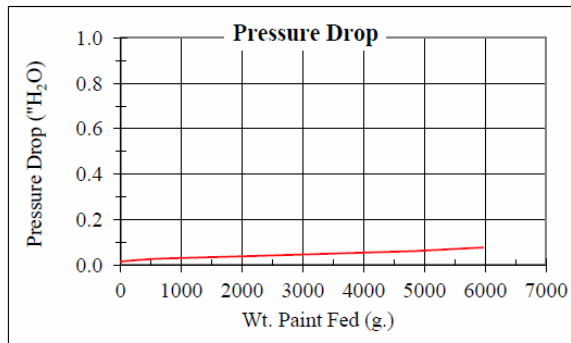
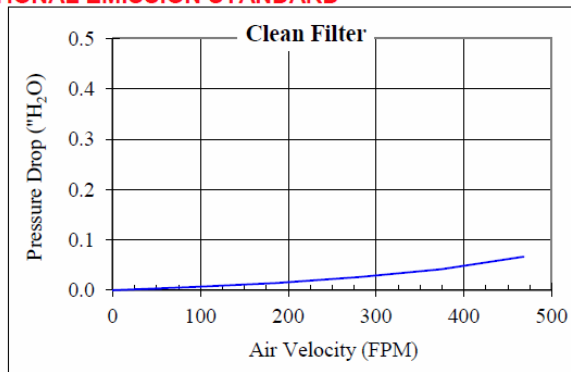
AVERAGE REMOVAL EFFICIENCY of TEST FILTER

99.19 %



Test Engineer: Jose Tizcareno

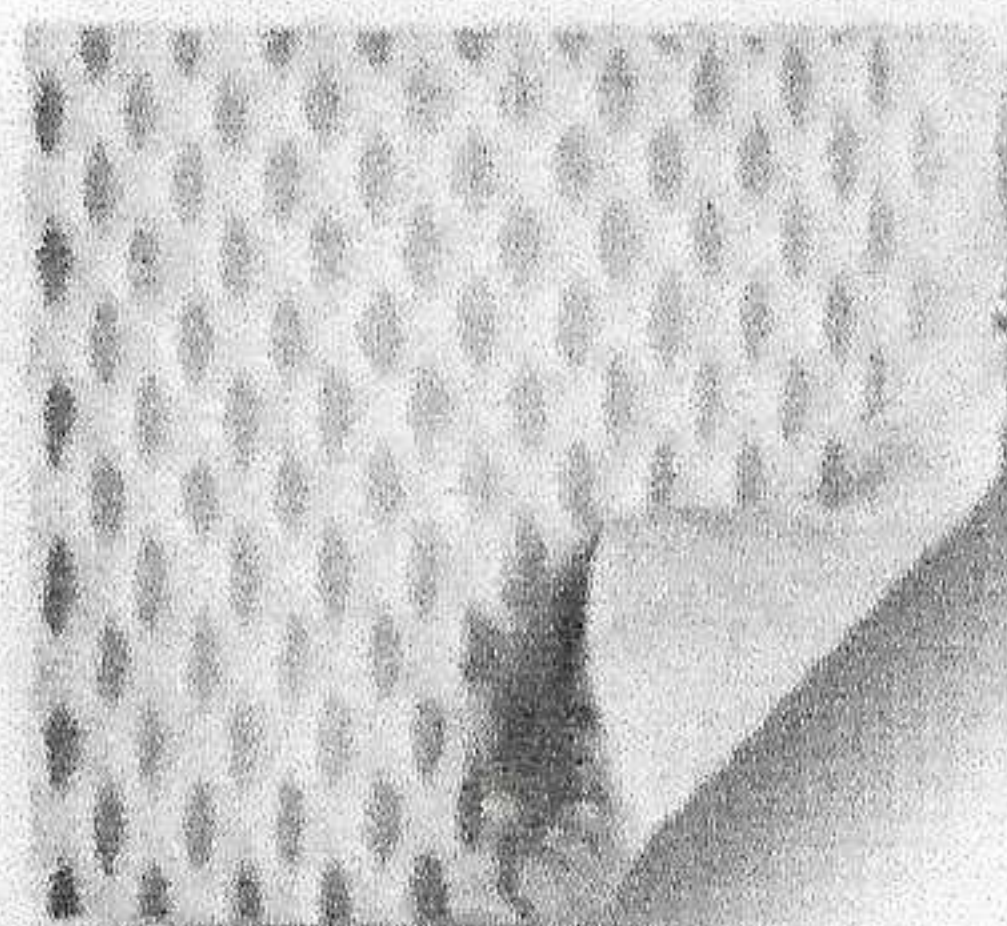
Supervising Engineer: K. C. Kwok, Ph.D.



PP020-020-030



Paint Pockets Exhaust Filters



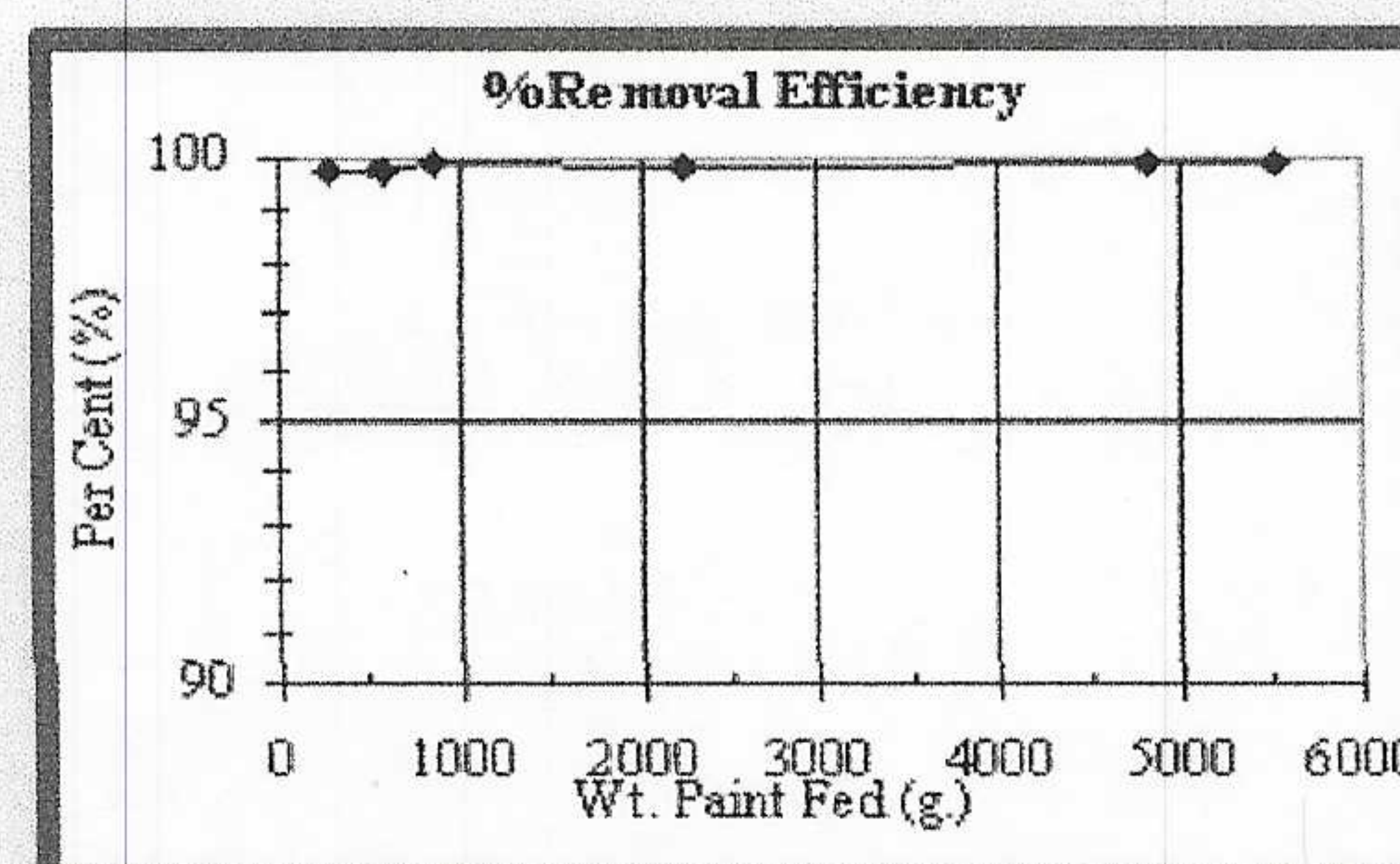
Paint Pockets

Product Application

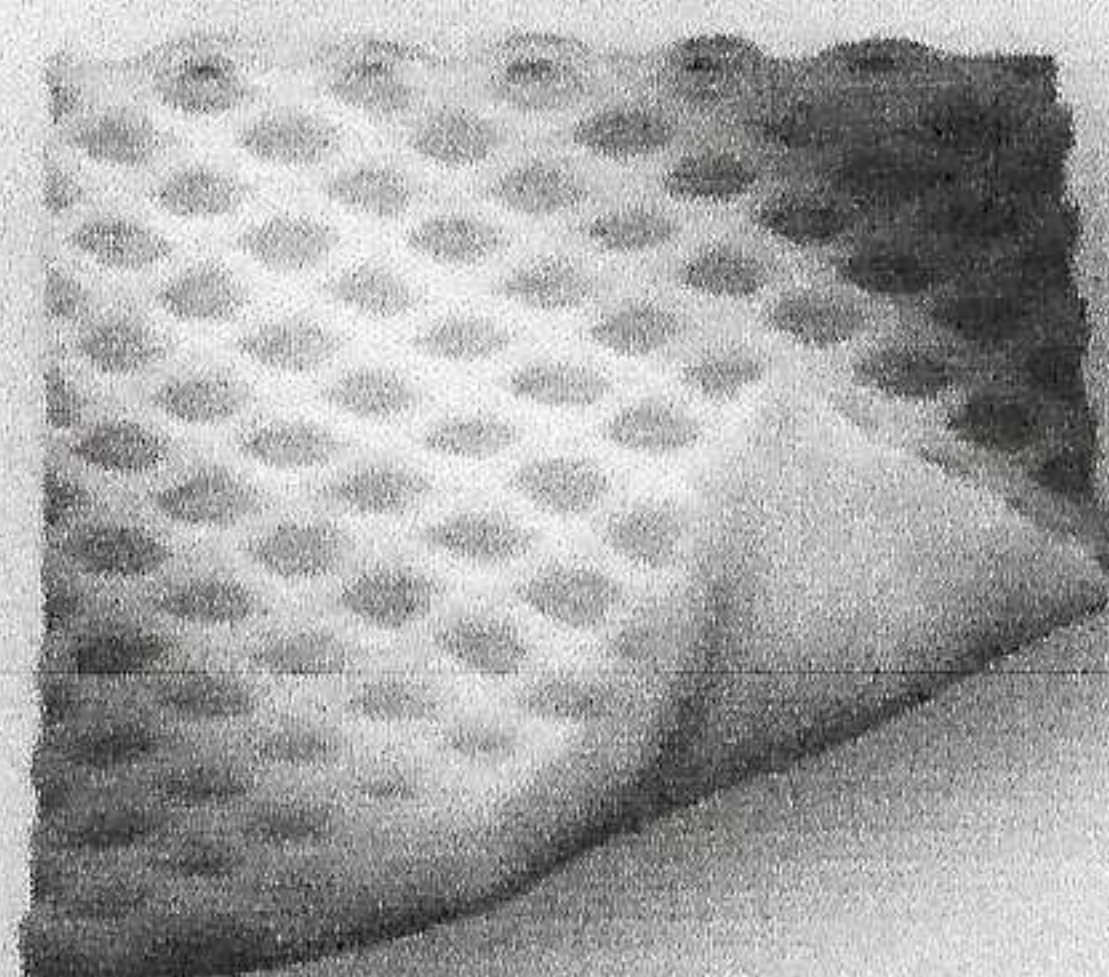
The best performing, single-stage overspray arrestor, bar none. Paint Pockets excels in arresting both liquid and powder coating overspray generated in industrial, automotive, and aerospace applications. **Compliant with EPA 6H law.**

Product Specifications

- 1.5" white, multi-layer polyester media with unique diamond pocket design.
- 99.83% efficient with a holding capacity of 6.9 pounds in 20x20 pad.



Item #	Description	Set Qty
PK2020	20"x20" Paint Pockets Arrestor	30
PK2025	20"x25" Paint Pockets Arrestor	30
PK205	20"x50' Paint Pockets Arrestor	1
PK245	24"x50' Paint Pockets Arrestor	1
PK305	30"x50' Paint Pockets Arrestor	1
PK365	36"x50' Paint Pockets Arrestor	1
PK405	40"x50' Paint Pockets Arrestor	1
PK455	45"x50' Paint Pockets Arrestor	1
PK485	48"x50' Paint Pockets Arrestor	1
PK605	60"x50' Paint Pockets Arrestor	1



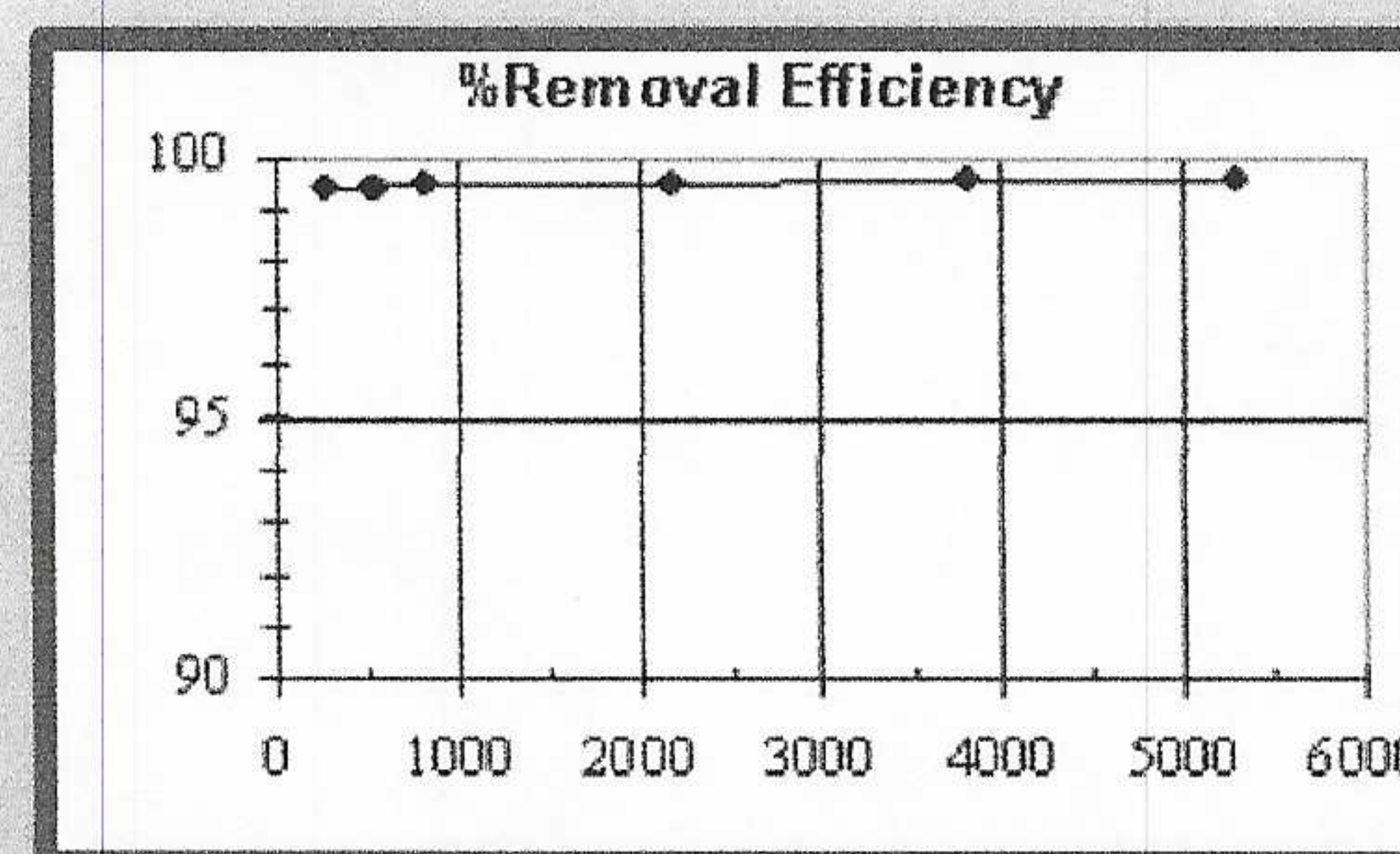
Paint Pockets Green

Product Application

Offers many of the same great attributes of standard Paint Pockets at a more affordable price. **Compliant with EPA 6H law.**

Product Specifications

- 1" white & green, multi-layer polyester media with unique diamond pocket design.
- 99.43% efficient with a holding capacity of 6.4 pounds in 20x20 pad.



Item #	Description	Set Qty
PKG2020	20"x20" Paint Pockets Arrestor (Green)	40
PKG2025	20"x25" Paint Pockets Arrestor (Green)	40
PKG206	20"x60' Paint Pockets Arrestor (Green)	1
PKG306	30"x60' Paint Pockets Arrestor (Green)	1
PKG366	36"x60' Paint Pockets Arrestor (Green)	1
PKG486	48"x60' Paint Pockets Arrestor (Green)	1
PKG606	60"x60' Paint Pockets Arrestor (Green)	1



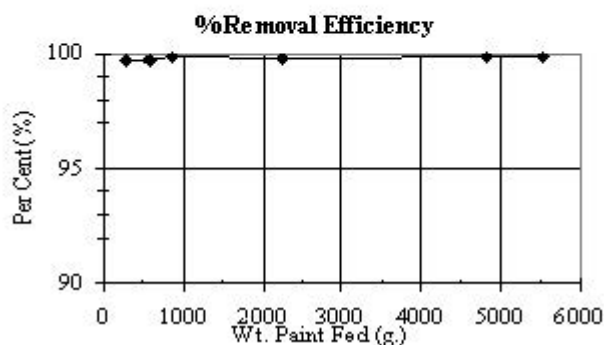
A Complete Line of Filters and Spray Booth Related Items Since 1967

> About Us > Ceiling Diffusion Media > Intake Filters > Paint Arrestors
> Prefilters > Protective Coatings > Accessories > Resources > Contact

Paint Pockets Premium Media

The best performing, single-stage overspray arrestor, bar none. Paint Pockets excels in arresting both liquid and powder coating overspray generated in industrial, automotive, and aerospace applications. Compliant with EPA 6H law.

- 1.5" white, multi-layer polyester media with unique diamond pocket design
- 99.83% efficient with a holding capacity of 6.9 pounds in 20×20 pad



Item #	Description	Set Qty.
PK2020	20"x20" Paint Pockets Arrestor	30
PK2025	20"x25" Paint Pockets Arrestor	30
PK205	20"x50' Paint Pockets Arrestor	1
PK245	24"x50' Paint Pockets Arrestor	1
PK305	30"x50' Paint Pockets Arrestor	1
PK365	36"x50' Paint Pockets Arrestor	1
PK405	40"x50' Paint Pockets Arrestor	1
PK455	45"x50' Paint Pockets Arrestor	1
PK485	48"x50' Paint Pockets Arrestor	1
PK605	60"x50' Paint Pockets Arrestor	1

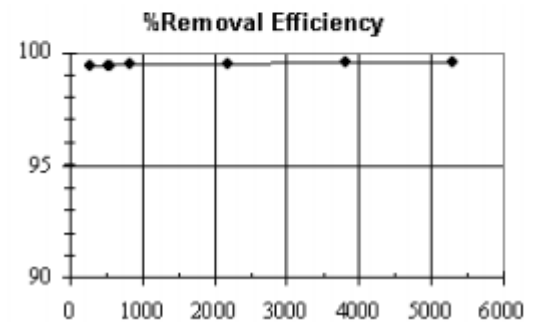
Paint Pockets Green


Offers many of the same great attributes of standard Paint Pockets at a more affordable price. Compliant with EPA 6H law.

- 1" white & green, multi-layer polyester media with unique diamond pocket design.
- 99.43% efficient with a holding capacity of 6.4 pounds in 20×20 pad.



Item #	Description	Set Qty.
PKG2020	20"x20" Paint Pockets Arrestor (Green)	40
PKG2025	20"x25" Paint Pockets Arrestor (Green)	40
PKG206	20"x60' Paint Pockets Arrestor (Green)	1
PKG306	30"x60' Paint Pockets Arrestor (Green)	1
PKG366	36"x60' Paint Pockets Arrestor (Green)	1
PKG486	48"x60' Paint Pockets Arrestor (Green)	1
PKG606	60"x60' Paint Pockets Arrestor (Green)	1


[Download Premium Paint Pockets Test Sheet](#)
[Download Green Paint Pockets Test Sheet](#)



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(641) 872-1137 (800) 848-5859 FAX: (641) 872-1663



PAINT ARRESTANCE FILTER TEST REPORT

Spray Removal Efficiency & Paint Holding Capacity

Tested for: **Paint Pockets® Co.**
 Filter Mfr.: **Paint Pockets® Co.**
 Filter Name: **PK Series**
 Report#./Test# **R 042 T 079**
 Report Date: **Jan. 8, 1997**

Test Information

FILTER DESCRIPTION:

Two layers, stiff poly w/large voids on soft poly pad

PAINT DESCRIPTION:

High Solids Baking Enamel (S.W. Permaclad 2400, red)

PAINT SPRAY METHOD:

Conventional Air Gun at 40 PSI

SPRAY FEED RATE:

140 gr./min. 130 cc./min.

AIR VELOCITY:

150 FPM

Test Results

INITIAL PRESSURE DROP of Clean Test Filter

0.08 in. water

FINAL PRESSURE DROP of Loaded Test Filter

0.30 in. water

WEIGHT GAIN on TEST FILTER & Test Frame Trough

4340 grams

PAINT HOLDING CAPACITY of TEST FILTER

3125 grams = 6.9 lbs.

PAINT RUN-OFF

1215 grams

WEIGHT GAIN - FINAL FILTER

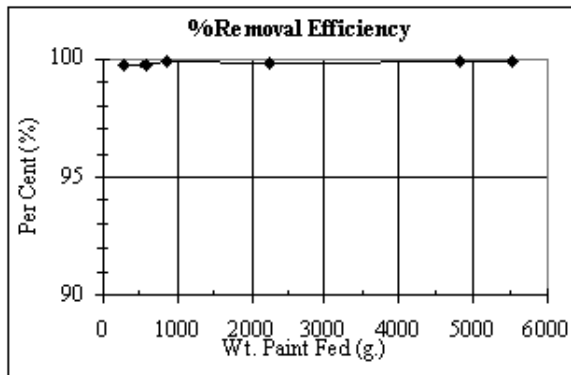
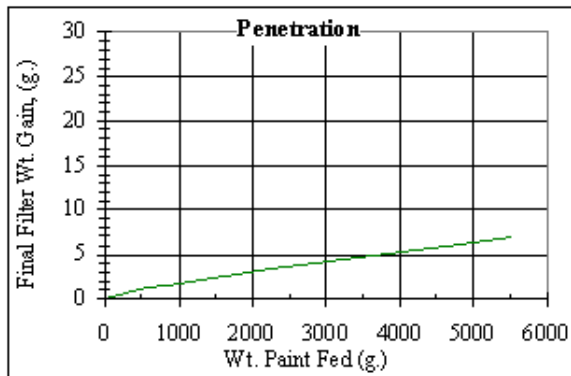
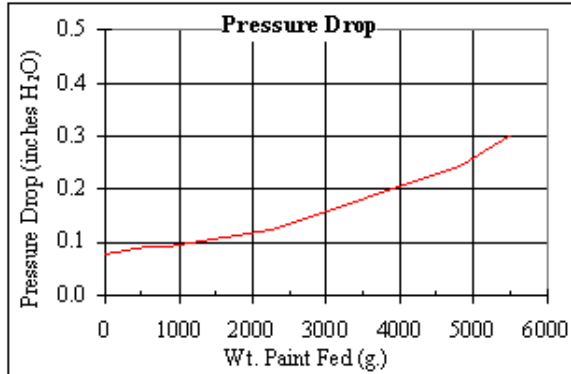
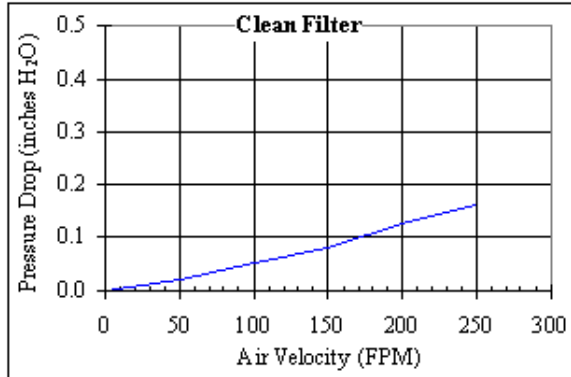
6.9 grams = PENETRATION

AVERAGE REMOVAL EFFICIENCY of TEST FILTER

99.84%

Test Engineer: P. Tuzinski

Supervising Engineer: K. C. Kwok, Ph.D.



PAINT ARRESTANCE FILTER TEST REPORT
Spray Removal Efficiency & Paint Holding Capacity
BASED ON 40 CFR PART 63 NATIONAL EMISSION STANDARD

Tested for: Com-Pleat Filter
Filter Mfr.: Com-Pleat filter
Filter Name: PAF-2020
Report#./Test#: R 103 T 203
Report Date: 24-Nov-09

Test Information

FILTER DESCRIPTION:

Accordian type paper filter

PAINT DESCRIPTION:

High Solids Baking Enamel (S.W. #1 Permaclad 2400, red)

PAINT SPRAY METHOD:

Conventional Air Gun at 40 PSI

SPRAY FEED RATE:

147 gr./min.

140 cc./min.

AIR VELOCITY:

150 FPM

Test Results

INITIAL PRESSURE DROP of Clean Test Filter

0.17 in. water

FINAL PRESSURE DROP of Loaded Test Filter

0.24 in. water

WEIGHT GAIN on TEST FILTER & Test Frame Trough

4204 grams

PAINT HOLDING CAPACITY of TEST FILTER

1124 grams = 2.5 lbs.

PAINT RUN-OFF

3435 grams

WEIGHT GAIN on FINAL FILTER

84.8 grams = **PENETRATION**

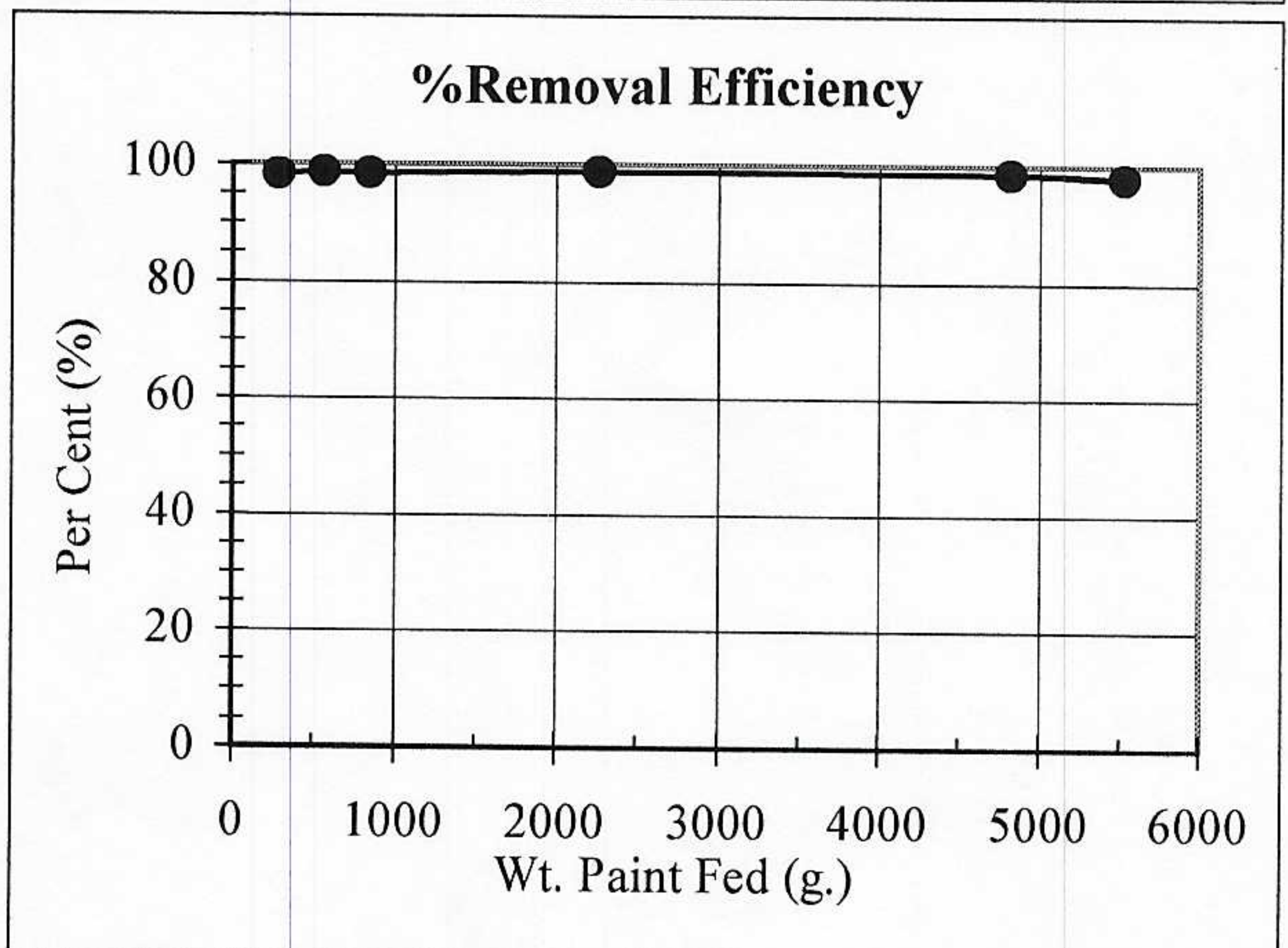
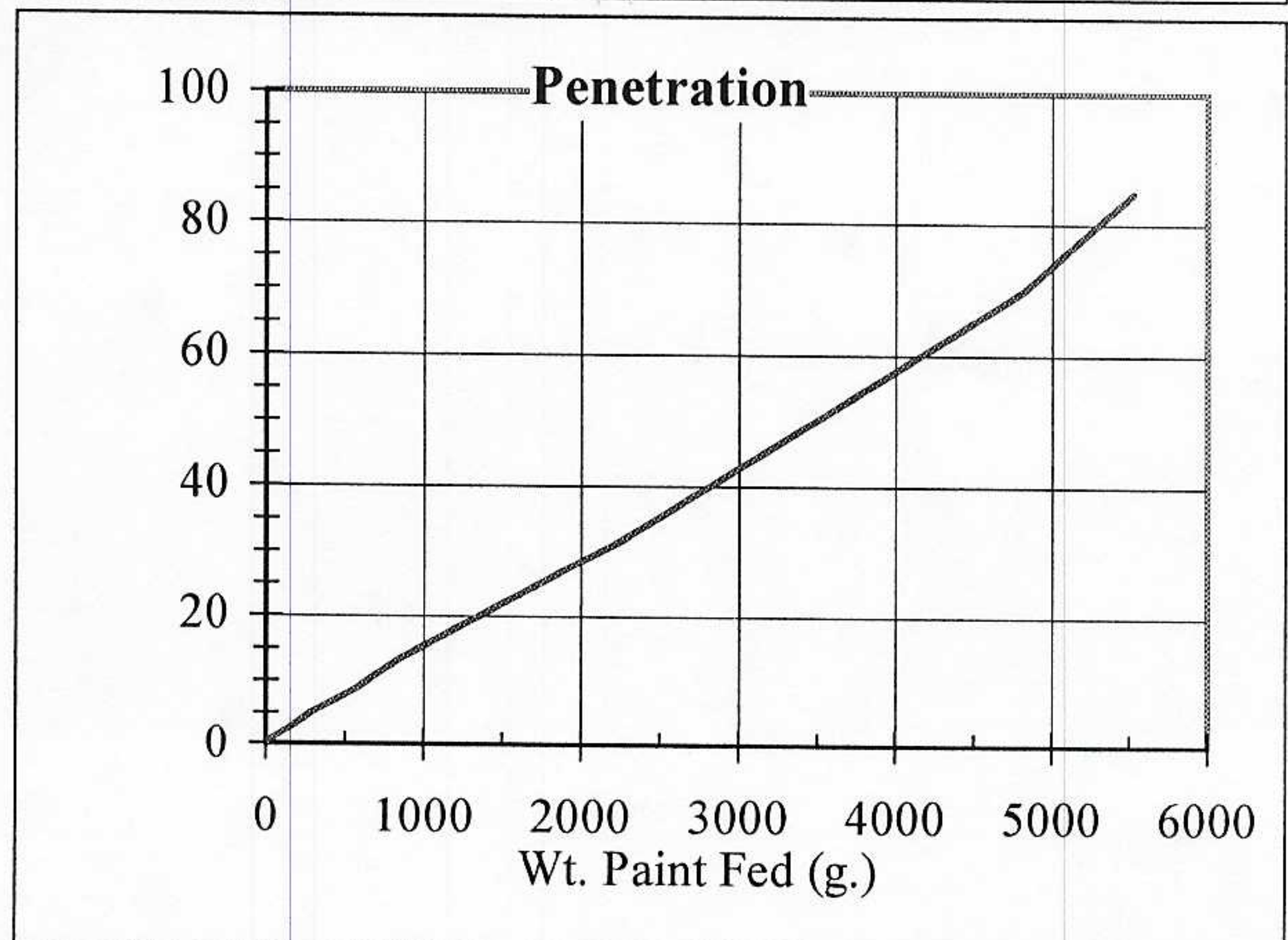
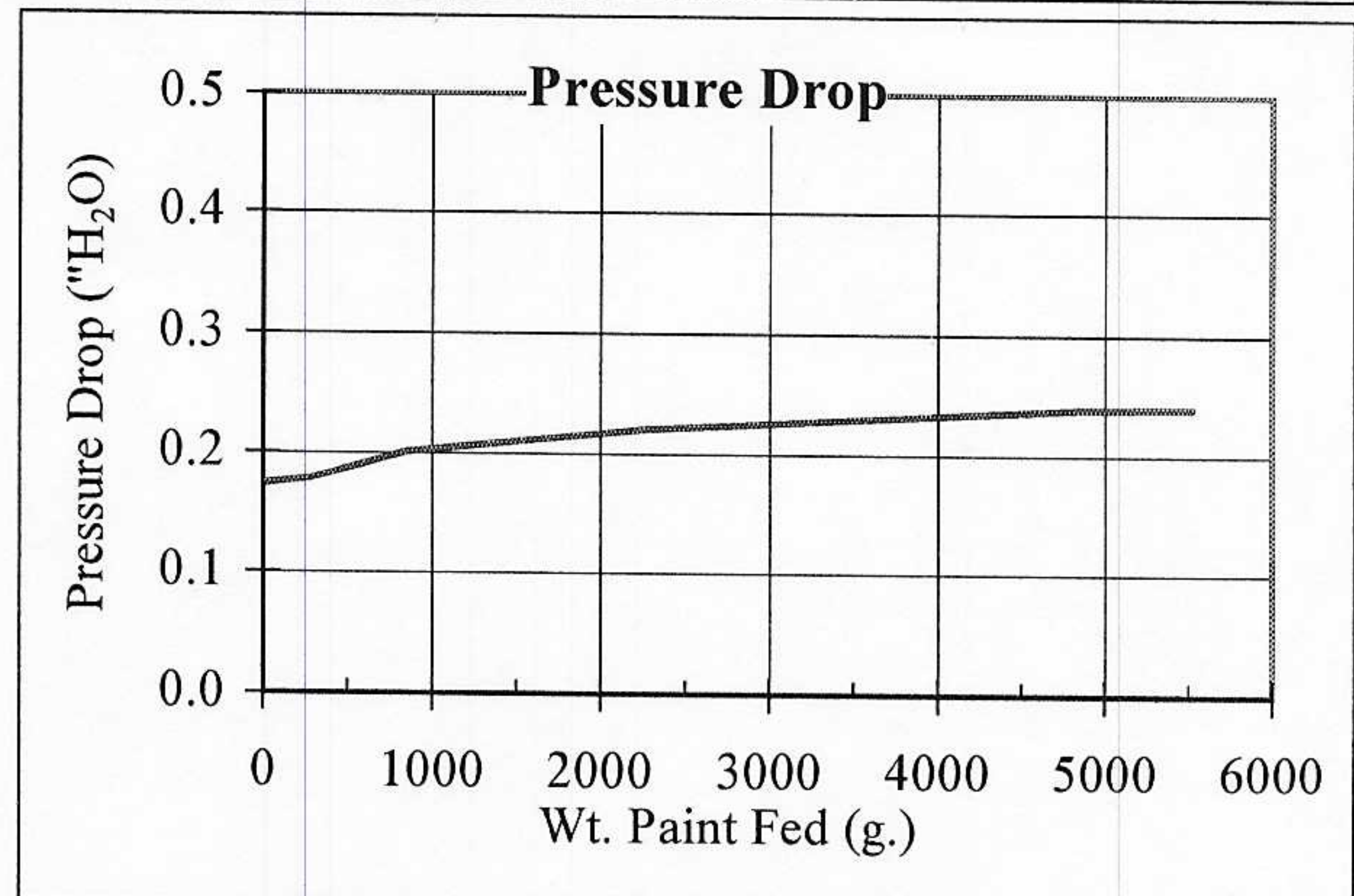
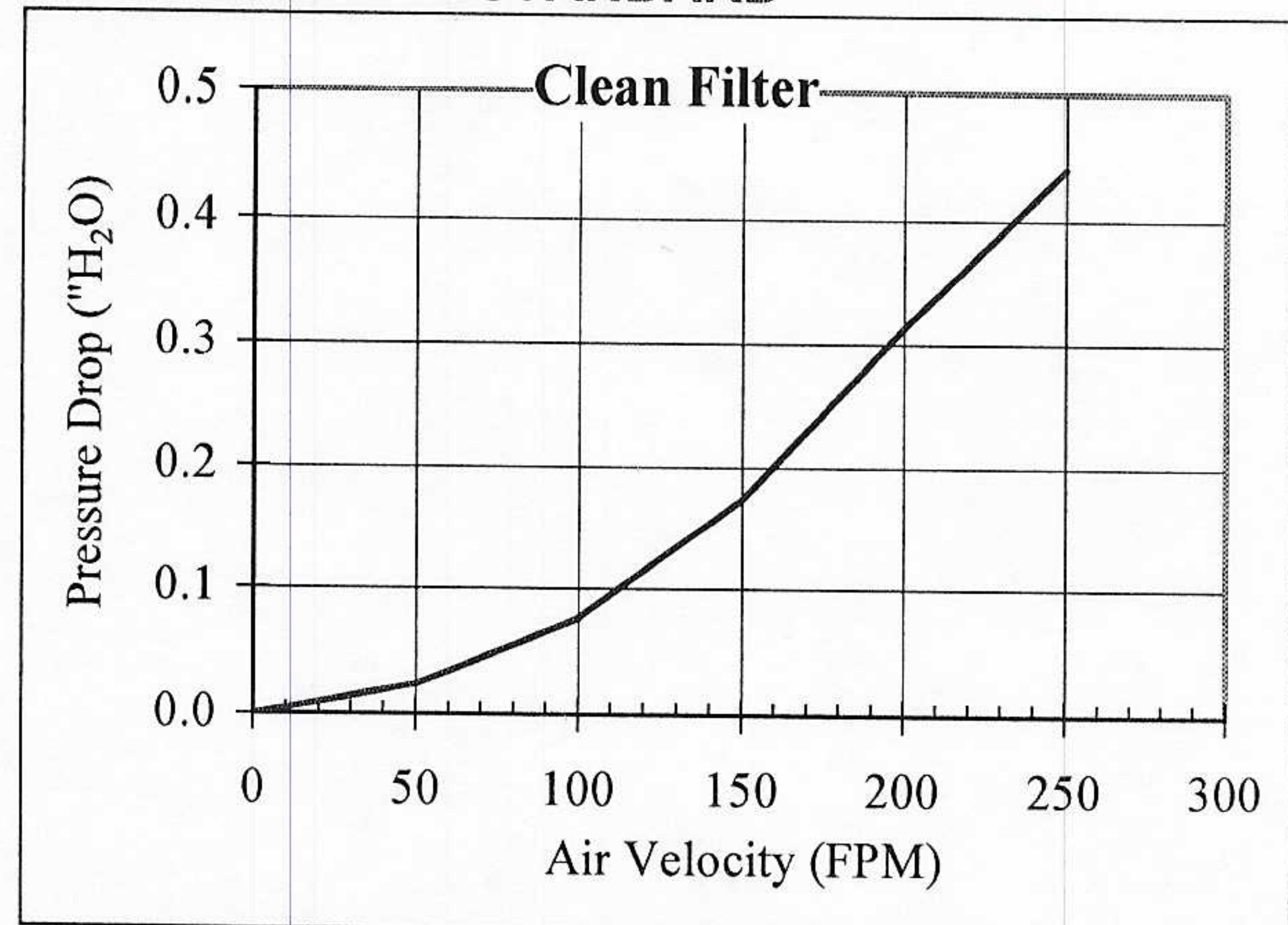
AVERAGE REMOVAL EFFICIENCY of TEST FILTER

98.17 %

ALL PLEAT FILTERS

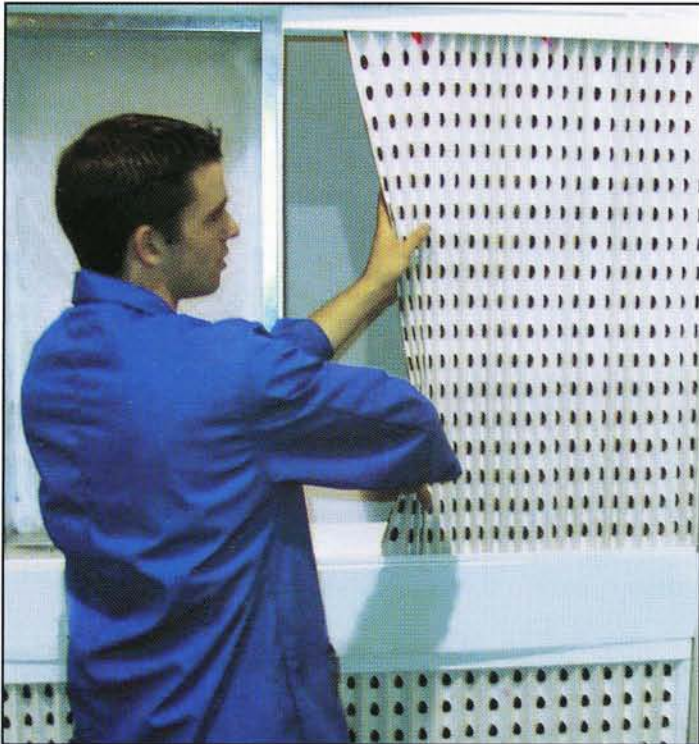
Test Engineer: Todd Kruger

Supervising Engineer: K. C. Kwok, Ph.D.



COM-PLEAT

SPRAY BOOTH FILTERS



The Com-Pleat PAF-90 provides many advantages over pad-type filters.

- Averages four times the life of other filters.
- Down time for filter replacement cut in half; Combined with longer life, actual spray booth down time reduced up to 85%.
- Lower shipping costs.
- Low static resistance.
- Storage problems minimized, takes approximately one eighth of the space.
- Improved distribution of air movement over booth space.
- No increase in noise level.

PAF-90

Standard white on brown construction combines high loading capacity with high efficiency filtration.

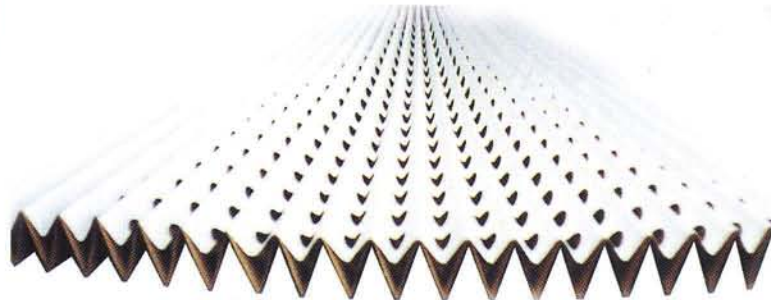
8 pleats per foot, 3' x 30'

PAF-90-W

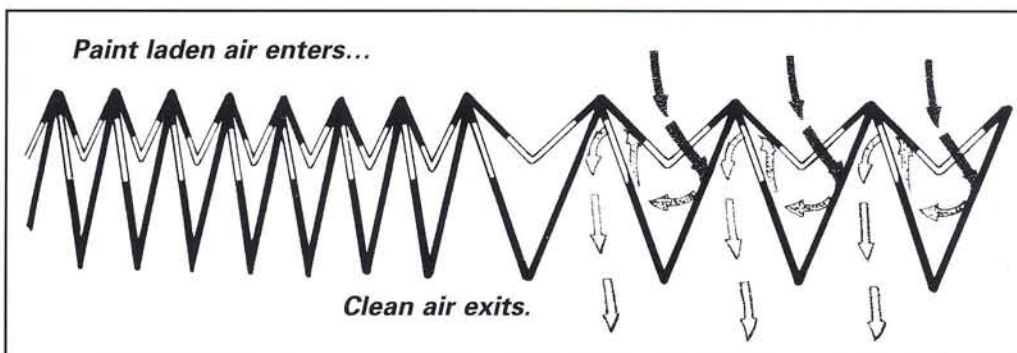
Waterborne Compatible

Our new white clay-coated media is water-resistant, adding strength and extending filter life.

8 pleats per foot, 3' x 30'



*"Accordion style spray booth filters provide the most economical combination of **efficiency** and **capacity** of any filter on the market."*



All Com-Pleat filters are designed with our unique **Reverse Memory Pleats** which naturally cause the filter to expand to 8 pleats per foot. This allows for maximum air flow and overspray loading capacity while eliminating the wasteful bunching seen in other accordion style filters.

COM-PLEAT Accordion-Style Paint Arrestor Filter

Technical Data

Recommended air velocity 100 - 200 FPM

Pressure drop at	100 FPM	0.08" WC
	150 FPM	0.12" WC
	200 FPM	0.16" WC

Maximum recommended pressure drop 0.50" WC

Filtration efficiency @ 150 FPM 91.0-98.1%
(ASHRAE test modified)

Holding capacity up to 4 lb/sq. ft.

240 pleats per case, marked at 8 pleats per foot

Specifications

Standard Sizes

PAF-90	36" x 30'	1 per case	White on brown construction
PAF-90-W	36" x 30'	1 per case	Waterborne compatible clay-coated white on brown
PAF-100-W	39" x 30'	1 per case	Waterborne compatible clay-coated white on brown
PAF-2020	20" x 20"	68 per case	Accordion style for 20" x 20" filter frame
PAF-2025	20" x 25"	56 per case	Accordion style for 20" x 25" filter frame

Pre-cut Lengths

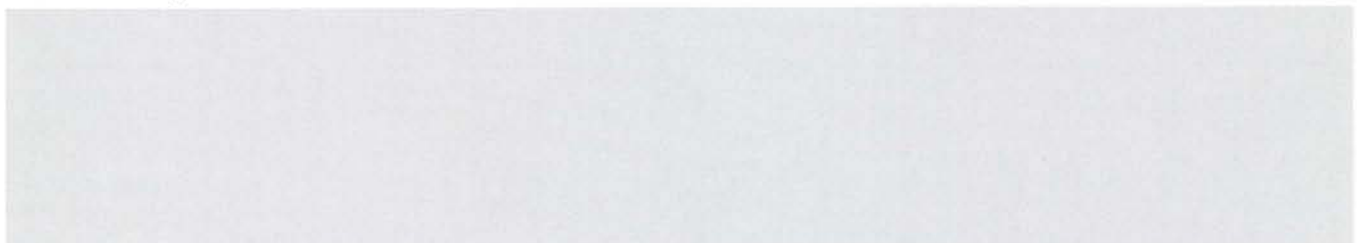
PAF-90-5	36" x 5'	6 per case
PAF-90-6	36" x 6'	5 per case
PAF-90-7	36" x 7'	4 per case
PAF-90-8	36" x 8'	4 per case
PAF-90-9	36" x 9'	3 per case
PAF-90-10	36" x 10'	3 per case
PAF-90-12	36" x 12'	2 per case
PAF-90-15	36" x 15'	2 per case

Virtually no one has a 30' wide booth. Pre-cut lengths ensure that the exact amount of filter media is used in each booth. Pre-cut lengths also eliminate the time needed to count the red dots that mark each foot, cut the filter, and either throw away or tape together the remaining pieces. With pre-cut lengths there is...

**No counting
No cutting
No waste!**

Call for custom pre-cut lengths and widths

Distributed by:



COM-PLEAT FILTERS INC.

9-247 Armstrong Avenue
Georgetown, ON
L7G 4X6

Tel.: 905-873-2070
U.S.A.: 888-857-1123
Fax: 905-873-9575

E-mail: info@com-pleat.com
Web: www.com-pleat.com



2820 S. English Station Road - Louisville, KY 40299
Tel: (502) 357-0132 Fax (502) 267-8379

Date: 18-Jul-11

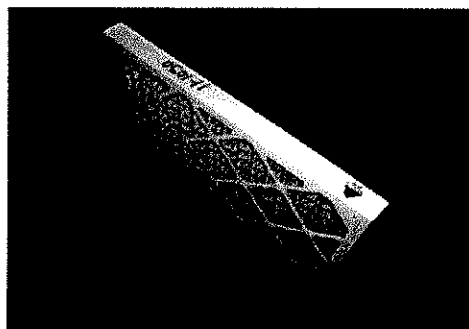
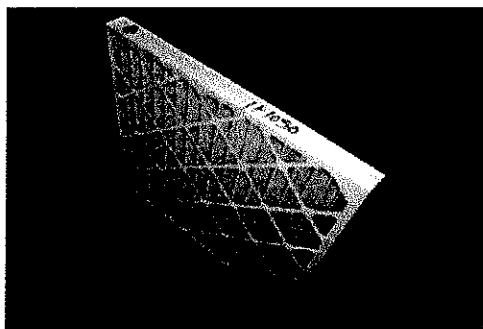
TEST NO.

11-1050

ASHRAE Standard 52.2-2007 TEST REPORT Initial Efficiency / Resistance

Filter Description

Manufacturer	Kleen Air
Filter Model	KA Series Pleat
Part Number	KA24242
Generic Filter Type	MERV8 Pleated
Nominal Dimensions (H x W x D)	24"x24"x2"
Pocket / Pleat Quantity	19 Pleats
Media Type	Fibrous
Est. Gross Media Area	10.97 Ft ²
Adhesive Type	N/A



Test Conditions

Loading Dust Type	N A	Test Air Temp (degrees F.)	79
Barometric Pressure (In. Hg.)	29.89	Relative Humidity (%)	58

Test Results

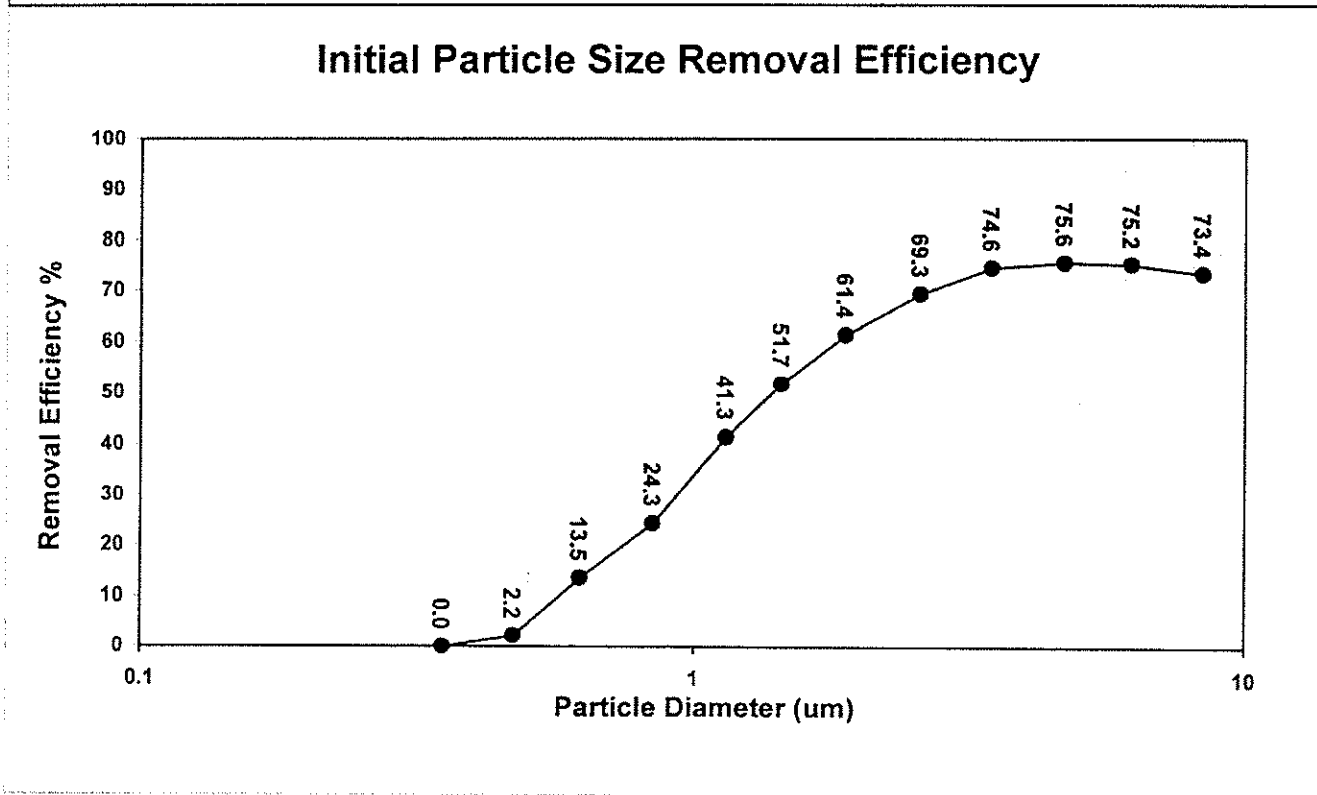
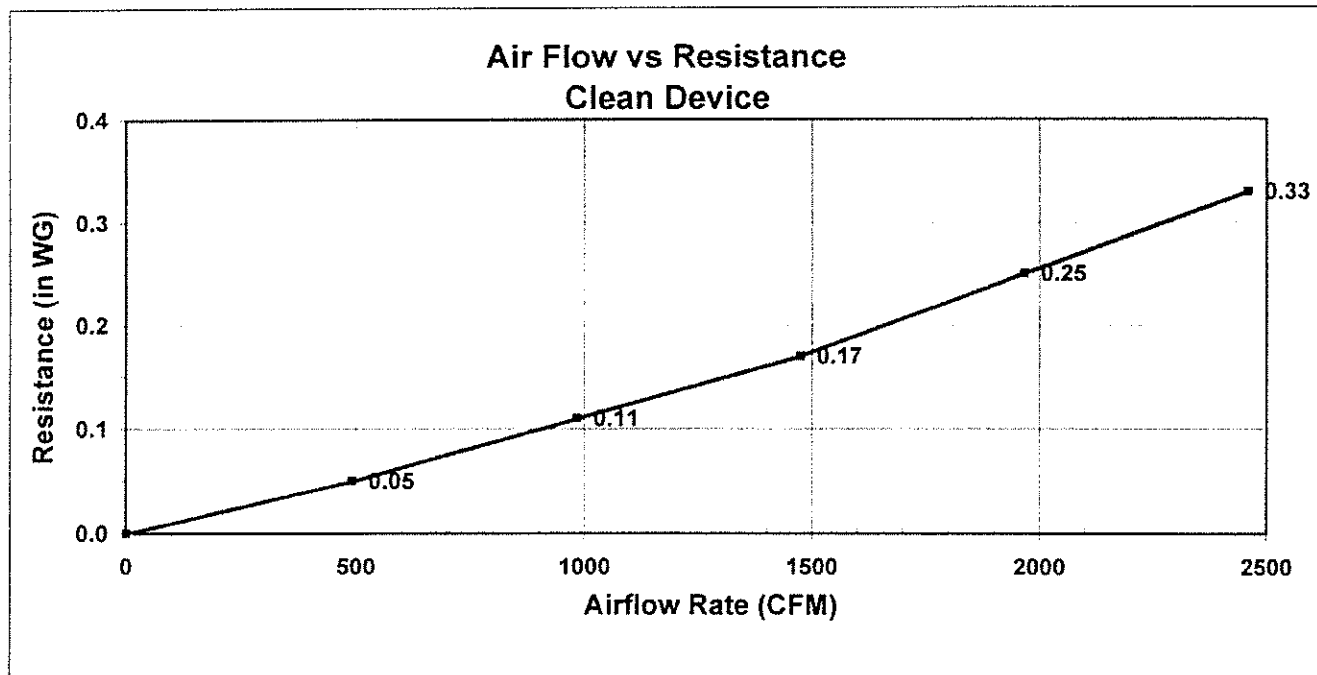
Airflow Rate (CFM)	1968
Nominal Face Velocity (fpm)	492
Initial Resistance (in WG)	0.25
E1 (%) Initial Efficiency 0.30 - 1.0 um	10
E2 (%) Initial Efficiency 1.0 - 3.0 um	56
E3 (%) Initial Efficiency 3.0 - 10.0 um	75
Estimated * Minimum Efficiency Reporting Value (MERV)	MERV 8 @ 1968 CFM
* If initial data is minimum	

Comments Tested For: Kleen Air Filter Service & Sales

Approval:

Page 1 of 3

Test No. 11-1050
Date: 18-Jul-11



Blue Heaven Technologies

2820 S. ENGLISH STATION ROAD - LOUISVILLE, KY 40299
Tel: (502) 357-0132

ASHRAE Standard 52.2 -2007**Test Report**

Test No. 11-1050

Date: 18-Jul-11

Data - Initial Resistance

Airflow (CFM)	Resistance (in WG)
0	0.00
492	0.05
984	0.11
1476	0.17
1968	0.25
2460	0.33

Data - Particle Removal Efficiency

Particle Size Range (um)	Geometric Mean Diam (um)	Initial Particle Removal Efficiency (%)
0.30 - 0.40	0.35	0.0
0.40 - 0.55	0.47	2.2
0.55 - 0.70	0.62	13.5
0.70 - 1.00	0.84	24.3
1.00 - 1.30	1.14	41.3
1.30 - 1.60	1.44	51.7
1.60 - 2.20	1.88	61.4
2.20 - 3.00	2.57	69.3
3.00 - 4.00	3.46	74.6
4.00 - 5.50	4.69	75.6
5.50 - 7.00	6.20	75.2
7.00 - 10.00	8.37	73.4

REGENERATIVE THERMAL OXIDIZER UNIT MACRO SPECIFICATIONS

Zee Manufacturing Ltd

Unit AES-12412

OPERATING SPECIFICATIONS	(All values established for required VOC destruction efficiency)
Guaranteed VOC Destruction Efficiency	98 %
Maximum Process Air Stream	25,000 SCFM
Approximate Flow During Warmup	6,250 SCFM
Flow Control Method	Variable Speed Drive on system fan motor controlled via pressure PI loop controller
Flow Control Pressure Set Point	-0.1 to -1.00" water column (Nominal, value established at start-up during system balancing)
Max. Negative Pressure Safety Control Set Point	-6" water column
Combustion Chamber Temperature Control Set Point	1,500°F



April 10, 2000

Mr. Kevin Janak
Source Environmental

Fax: 713-621-4588

Specification:	Pneumafil Reverse Air Filter	
Model Number	13.5-448-12	13.5-448-8
Maximum Air Flow:	67,200 cfm (max)	44,800 cfm(max)
Air to Cloth Ratio:	10:1 (max)	10:1 (max)
Media Area:	6,720 sq. ft.	4,480 sq ft.
Blower Horsepower:	15 hp	15 hp
Rotating Horsepower:	0.25 hp	0.25 hp
Pressure Drop	2-4" wc	2-4" wc
Bag Type:	16 oz. polyester	16 oz. polyester

Dear Mr. Janak;

These filters in like new condition are 99.96% efficient when applied to wood dust at an air-to-cloth ratio less than 10 to 1. If the inlet dust loading concentration does not exceed 5 grains per cubic foot, and it is typically no more than 3 grains per foot, then the outlet dust concentration is 0.0012 grains per cubic foot of air, which is lower than the EPA standard.

At 3 grains per cubic foot = (6879 mg/cu.m.) times 99.96% efficient equals an outlet dust concentration of 2.75 mg/cu.m, which is lower than the OSHA standard, 15mg/cu.m.

These conclusions listed above are based on testing done at various furniture plants in the United States with an average rating of 99.96% efficiency.

Please call me if you need additional information.

Sincerely,

A handwritten signature in dark ink, appearing to read "Marshall G. Long Jr.".

Marshall G. Long Jr.
Environmental Technologies Division

★TELEDYNE LAARS MIGHTY THERM

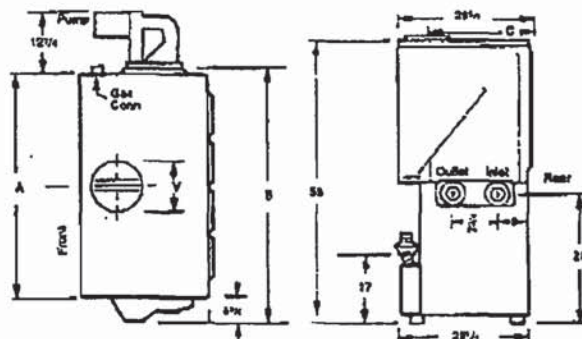
Hydronic Boilers

HH	Hydronic Heating Boiler
PH	Hydronic Heating Boiler with mounted pump

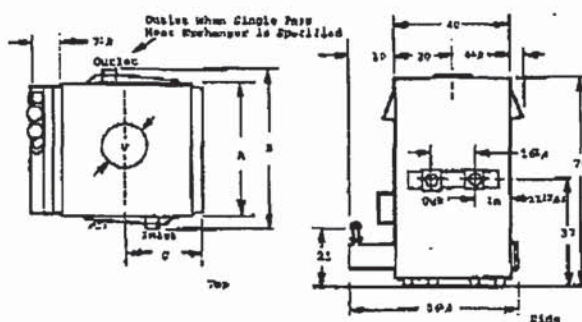
Submittal Data

ATT Kevin
2 PAGES
713 6214588
STANDARD
BURNER

Indoor
Sizes 500-1825



Indoor
Sizes 2000-5000



Standard Equipment

- ASME 160 lb. working pressure heat exchanger
- 24V control system
- Operating gas valve/pressure regulator
- Water flow sensing device
- Removable burner tray (500-1825)
- Built-in draft hood
- Glass lined cast iron headers
- Covered control box
- Redundant safety gas valve
- Operating control
- Manual reset high limit
- Automatic reset high limit (3050-5000)
- Manual "A" gas valve
- Manual pilot valve
- Manual shut-off valve
- Stainless steel burners
- External water side gaskets
- Flanged connections
- High gas pressure switch (3050-5000)
- Pressure relief valve (75 PSI)
- 115/24V transformer
- Terminal strip
- Temperature/pressure gauge
- On/off toggle switch
- 2 amp fuse
- Power on light

Dimensional Data

Indoor Model HH/PH*	Input- BTU/H x 1000	Output- BTU/H x 1000	IBR Net ¹ Rating BTU/H x 1000	Gas Connection Size (Inches) ²		Water Conn. Size (Inches) ²	Dimensions (Inches) ²				Shipping Weight (lbs)
				Natural	LP		A	B	C	V	
500	500	405	357	1	3/4/1	2	33 1/2	39 3/8	23 5/8	10	690
600	600	486	428	1	3/4/1	2	38 5/8	44 5/8	22 5/8	12	780
715	715	579	510	1	3/4/1	2	44 1/4	50 1/4	22 5/8	12	850
850	850	689	606	1 1/4	3/4/1 1/4	2	50 3/8	56 3/8	21 5/8	14	900
1010	1010	818	720	1 1/4	1 1/4	2 1/2	58	64	20 5/8	16	1020
1200	1200	972	858	1 1/4	1 1/4	2 1/2	68 1/4	72 1/4	20 5/8	16	1145
1430	1430	1158	1020	1 1/4	1 1/4	2 1/2	76	82	19 5/8	18	1290
1870	1870	1353	1191	1 1/4/1 1/2	1 1/4	2 1/2	85 3/8	91 3/8	19 5/8	18	1375
1825	1825	1478	1302	1 1/4/1 1/2	1 1/4	2 1/2	92 1/8	98 1/8	19 5/8	18	1425
2000	1999	1639	1425	1 1/2	1 1/4/1 1/2	4	55 1/2	63	24 1/2	22	1755
2450	2450	2009	1747	1 1/2/2	1 1/2	4	65 1/2	73	24 1/2	24	2010
3050	3050	2501	2175	1 1/2/2	1 1/2	4	78	85 1/2	24 1/2	26	2350
3500	3500	2870	2496	2	1 1/2	4	88	95 1/2	24 1/2	28	2510
4050	4050	3321	2888	2 1/2/2	2	4	100 1/2	108	24 1/2	30	2910
4500	4500	3690	3209	2 1/2	2	4	110 1/2	118	24 1/2	32	3075
5000	5000	4100	3565	2 1/2	2	4	123	130 1/2	24 1/2	34	3500

NOTES: 1. Input and output must be derated 4% per 1000 feet above sea level when installed above 2000 feet altitude. 2. Dimensions are nominal. 3. Units with pumps: Add 55 lbs. for sizes 500-1825.

4. For other boiler ratings: Boiler Horsepower: HP = Output / 33,475

Radiation Surface: EDR sq. ft. = Output / 150

IBR sq. ft. = Net IBR Rating / 150

5. When two gas connection sizes are shown, the smaller applies to the standard gas train, while the larger applies to optional trains, such as four stage or motorized gas valves. Consult factory for exact specifications.

*Model PH 1500-1825 only.

Design Temperature Rise Across Boiler

**Rate of
Flow and
Pressure
Drop**

Size	20° F		25° F		30° F		35° F	
	GPM	Hd. Loss (Ft.)	GPM	Hd. Loss (Ft.)	GPM	Hd. Loss (Ft.)	GPM	Hd. Loss (Ft.)
500	38	1.4	31	1.1	26	0.9	22	0.6
600	47	1.8	37	1.4	31	1.2	27	0.8
715	56	2.5	45	1.9	37	1.5	32	1.0
850	66	3.4	53	2.5	44	2.0	38	1.4
1010	79	4.7	63	3.4	53	2.7	45	1.9
1200	94	6.5	75	4.8	62	3.7	53	2.6
1430	112	8.9	89	6.5	74	5.0	64	3.5
1670	*	*	102	8.8	85	6.7	73	4.7
1825	*	*	114	10.0	95	8.0	81	5.5
2000-1P	164	3.9	131	2.3	109	1.5	94	1.0
2P	164	10.5	131	7.4	109	4.9	94	3
2450-1P	201	5.9	161	4.2	134	3.3	115	2.6
2P	201	16.4	161	10.2	134	7.7	115	5.7
3050-1P	250	9.3	200	6.2	167	4.5	143	3.8
2P	*	*	200	16.4	167	11.7	143	8.5
3500-1P	284	12.0	230	8.3	189	5.7	164	4.8
2P	*	*	*	*	189	15.8	164	11.3
4050-1P	332	17.2	266	11.6	222	8.1	190	5.8
2P	*	*	*	*	222	24	190	16
4500-1P	369	21.8	295	13.2	246	9.4	211	7.0
2P	*	*	*	*	*	*	211	20
5000-1P	410	27.0	328	17.2	273	12.2	234	9.0
2P	*	*	*	*	*	*	*	*

* Not recommended. Consult factory.

NOTE: Sizes 2000 to 5000: 1P designates single-pass heat exchanger, 2P designates two-pass heat exchanger.

Factory Provided Pumps - Model PH Boilers

**Motor
Electrical
Data**

Sizes	Power (HP)	Voltage/Phase	Current (Amps)
500-715	1/4	115/1	5.2
850-1010	1/3	115/1	7.2
1200-1825	3/4	115/1	13.8

**Minimum
Clearances
from
Adjacent
Construction**

Recommended Minimum Clearance From	Sizes 500-1825 (Inches)	Sizes 2000-5000 (Inches)
Top	30	24
Water Connection Side	12	24
Opposite Side	6	24
Front	Alcove	48
Rear	8	24
Vent	6	6

NOTE: Sizes 500 to 1825 must be installed on non-combustible floors or with base for combustible floors (Teledyne Laars optional base A.G.A. design certified). Sizes 2000 to 5000 require installation on non-combustible floors. At least 48" clearance should be provided in front of the boiler for maintenance accessibility (removal of burners, etc.).

PBYE

 **TELEDYNE LAARS**

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Listed in U.S.A. as Teledyne Laars Inc. 10526 5805



Printed on Recycled Paper

Designed, Manufactured and Certified By

TELEDYNE LAARS

Rochester, NH, U.S.A. • Oakville, Ontario, Canada • Moorpark, CA, U.S.A.

Model	HH4500IN18KCACXX	National Board No.	104198
Max Input	4,500,000 BTUH	Serial No.	C00G08428
Min. Input	1,350,000 BTUH	Min. Permissible Gas Supply Pressure For Input Adjustment	7 IN. W.C.
Output	3,690,000 BTUH	Max. Permissible Gas Supply Pressure	9 IN. W.C.
Altitude (ft.) From	0 TO 2000	Max. Gas Orifice Size	19 DMS
Gas Manifold Pressure	4 IN. W.C.	Min. Relief Valve Capacity	4500 LBS./HR.
Type Of Gas	NATURAL	Max. Working Pressure	160 P.S.I.

Electrical rating 120V 60Hz less than 12 amps.

Design certified under ANSI Z21.13b1994 and CGA 3.3 - 1976 Low Pressure Boilers

MAXIMUM WATER TEMPERATURE-240°F
MINIMUM CLEARANCE TO COMBUSTIBLE MATERIALS IS AS FOLLOWS:
 Top 24" Front (controls side) 24" Sides 24" Rear 24" (12" in Canada).

FOR INSTALLATION ON NON-COMBUSTIBLE FLOORS ONLY.

— INSTRUCTIONS —

- This boiler must be installed in accordance with local codes for gas burning appliances, if any, if not, follow ANSI Z223.1 or, in Canada, CAN/CGA B149.1 or 2 installation codes.
- This boiler needs fresh air for safe operation and must be installed so there are provisions for adequate combustion and ventilation air.
- This boiler must be properly vented.
- This boiler shall be installed in a space larger in comparison to the size of the boiler.
- Gas vent should be type B-1.

Inspection should be inspected every 120 days by removing header covers. If scale or other foreign matter is present, tubes and headers should be cleaned. Examine external surfaces of tubes for carbon deposits. If present, clean tubes and correct cause of bad combustion. All service or maintenance should be done by qualified personnel. For name of nearest authorized service organization call or write the factory.

GAS FIRED HOT WATER BOILER



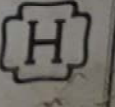
Category 1
To Light or Relight

- Turn off main electric switch.
- Turn off all manual gas valves and wait five minutes.
- Set aquastat or thermostat to lowest setting.
- Slowly turn main manual gas valve to on.
- Reset all safety valves (pressure switches and manual reset high limit).
- Open manual pilot valve. Turn on main electric switch.
- On units with manually ignited pilot(s), depress button on pilot safety device and light pilot. Keep depressed for 1 minute. Release button; if pilot goes out, repeat procedure until pilot remains lit. If multiple pilots are employed, repeat this procedure for each.
- Pilots will light automatically on intermittent ignition systems.
- Turn on all main manual valve(s) and set temperature controller to the desired setting. Set high temperature limit switch at max. permissible outlet water temperature.

— TO TURN OFF BOILER —

- Turn off main electric switch.
- Close all manual gas valves.

FOR YOUR SAFETY
 Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

AV C.P.N. F 1353 107473

Reducer	Season	BSI Question	Nations Reply
Reducer R7K310 USED BOTH SEASONS	WHEN HOTTER USED MORE	Are both of these reducers used	
Reducer R6X25 USED BOTH SEASONS	WHEN HOTTER USED MORE	simultaneously on the P-20 White Top Coat?	

DFC Direct Fired Gas Heating System

Technical Guide for:

**Outdoor Mounted Units
To 100,000 CFM
And 14M BTUH**



Applied Air

Keeps You

Warm



Applied Air



DFC Direct Fired Gas Heating System Technical Guide

Applied Air

In the business of commercial and industrial operations, efficient and low-cost heating is essential. Applied Air keeps you warm for less.

Since 1975, Applied Air has been providing cost-effective, reliable gas heating solutions. Our proven Direct Fired Gas Heating System adds warm, fresh and clean air to your work environment for greater comfort and productivity. Add evaporative cooling modules for year-round performance.

This Technical Guide will help you choose an Applied Air Direct Fired Gas Heating System to provide efficient, cost-effective heating for your kitchen, warehouse, factory or process operation. The Guide covers:

- Technical Specifications — Configure the right system components (e.g., burner, motors, drive, filter, options, etc.) to meet your needs.
- Installation Information — Plan details of on-site installation with dimensional information, unit weights and cabinet arrangement diagrams.

If you have questions, please contact Applied Air's Customer Service Department at 214-638-6010. We'll be glad to help.

To add evaporative cooling, refer to the Applied Air ECS Evaporative Cooling System brochure.

Applied Air

Keeps You

Warm

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Air Delivery Table

Single Blower Models										
Unit Model	SCFM	FPM Outlet Velocity	Total External Static Pressure (W.C.)							
			1/4" HP	3/8" HP	1/2" HP	3/4" HP	1" HP	1-1/4" HP	1-1/2" HP	2" HP
109	1600	1915	1	1	1	1	—	—	—	—
	1800	2155	1	1	1	1-1/2	1-1/2	1-1/2	—	—
	2000	2390	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	2	2	—
	2250	2690	1-1/2	1-1/2	1-1/2	2	2	2	2	3
	2500	2990	2	2	2	2	2	3	3	3
	2750	3290	2	2	2	3	3	3	3	3
	3000	3590	3	3	3	3	3	3	5	5
112	3250	2255	1-1/2	2	2	2	3	3	3	3
	3500	2430	2	2	2	3	3	3	3	5
	3750	2605	2	2	3	3	3	3	3	5
	4000	2775	3	3	3	3	3	3	5	5
	4250	2950	3	3	3	3	3	5	5	5
115	4500	2240	2	2	3	3	3	3	5	—
	5000	2485	3	3	3	3	3	5	5	5
	5500	2735	3	3	3	5	5	5	5	5
	6000	2985	5	5	5	5	5	5	5	7-1/2
118	6500	2265	3	5	5	5	5	5	5	7-1/2
	7000	2440	5	5	5	5	5	5	7-1/2	7-1/2
	7500	2615	5	5	5	5	5	7-1/2	7-1/2	7-1/2
	8000	2785	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2
	8500	2960	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10
120	9000	2145	5	5	5	5	7-1/2	7-1/2	7-1/2	—
	9500	2260	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	—
	10,000	2380	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	10
	10,500	2500	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10
	11,000	2620	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10
122	11,000	2155	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	—
	12,000	2355	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10	15
	13,000	2550	7-1/2	7-1/2	7-1/2	10	10	10	10	15
	14,000	2745	7-1/2	10	10	10	10	15	15	15
	15,000	2940	10	10	10	10	15	15	15	15
125	14,000	2085	7-1/2	7-1/2	7-1/2	7-1/2	10	—	—	—
	15,000	2235	7-1/2	7-1/2	7-1/2	10	10	10	15	—
	16,000	2385	7-1/2	7-1/2	7-1/2	10	10	10	15	—
	18,000	2685	10	10	10	10	15	15	15	15
	20,000	2980	10	15	15	15	15	15	20	20
130	22,000	2365	10	10	10	15	15	15	15	—
	24,000	2580	10	15	15	15	15	15	20	20
	26,000	2795	15	15	15	15	20	20	20	25
	28,000	3010	15	15	15	20	20	20	20	25
	30,000	3225	20	20	20	20	20	25	25	30

NOTE:

Horsepower selections are based on system external static pressure. One or more of the following must be added when applicable.

- A. Fresh Air Inlet Hood & Birdscreen .13" W.C.
- B. Fresh Air Inlet Hood with Filters .25" W.C.
- C. Motor Operated Inlet Damper .13" W.C.
- D. Motor Operated Discharge Damper .50" W.C.
- E. V-Bank Filter Section .25" W.C.
- F. Discharge Louver .13" W.C.

SELECTION GUIDE

1. Determine the required amount of replacement air (CFM) by computing the total amount of air being exhausted. (Restaurants should be sized for 90% of exhaust air to minimize food odors.)
2. Determine the total external static pressure by adding the pressure drops through all accessories and ducts.
3. Select unit size and motor horsepower from table.

Air Delivery Table

Twin Blower Models										
Unit Model	SCFM	FPM Outlet Velocity	Total External Static Pressure (W.C.)							
			1/4" HP	3/8" HP	1/2" HP	3/4" HP	1" HP	1-1/4" HP	1-1/2" HP	2" HP
215	9000	2240	5	5	5	5	7-1/2	—	—	—
	9500	2365	5	5	5	5	7-1/2	7-1/2	—	—
	10,000	2485	5	5	5	7-1/2	7-1/2	7-1/2	7-1/2	—
	10,500	2610	5	5	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	—
	11,000	2735	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10
	11,500	2860	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10
	12,000	2985	7-1/2	7-1/2	7-1/2	7-1/2	10	10	10	15
218	12,500	2175	7-1/2	7-1/2	7-1/2	7-1/2	7-1/2	—	—	—
	13,000	2265	7-1/2	7-1/2	7-1/2	7-1/2	10	10	—	—
	14,000	2440	7-1/2	7-1/2	7-1/2	10	10	10	15	—
	15,000	2615	7-1/2	10	10	10	10	15	15	15
	16,000	2785	10	10	10	10	15	15	15	15
	17,000	2960	10	10	10	15	15	15	15	20
220	18,000	2140	7-1/2	10	10	10	15	15	15	—
	19,000	2260	10	10	10	10	15	15	15	—
	20,000	2380	10	10	10	15	15	15	15	20
	21,000	2500	10	15	15	15	15	15	20	20
	22,000	2620	15	15	15	15	15	20	20	20
	23,000	2740	15	15	15	15	15	20	20	20
	24,000	2860	15	15	15	15	20	20	20	25
	25,000	2980	15	15	15	20	20	20	20	25
	26,000	3100	15	20	20	20	20	20	25	25
222	25,000	2450	15	15	15	15	20	20	20	25
	26,000	2550	15	15	15	20	20	20	20	25
	27,000	2650	15	15	15	20	20	20	25	25
	28,000	2750	15	20	20	20	20	25	25	30
	29,000	2850	20	20	20	20	25	25	25	30
	30,000	2950	20	20	20	20	25	25	25	30
	31,000	3040	20	20	20	25	25	25	30	30
225	30,000	2235	15	15	15	15	20	20	—	—
	32,000	2385	15	15	15	20	20	20	25	—
	34,000	2535	15	20	20	20	20	25	25	30
	36,000	2685	20	20	20	20	25	25	30	30
	38,000	2835	20	20	20	25	25	30	30	40
	40,000	2980	20	25	25	25	30	30	30	40
	42,000	3130	25	25	25	30	30	40	40	40
	44,000	3280	25	30	30	30	40	40	40	40
	46,000	3430	30	30	30	40	40	40	40	50
230	44,000	2365	20	20	20	25	25	30	—	—
	48,000	2580	20	25	25	25	30	30	40	—
	52,000	2800	25	25	30	30	40	40	40	50
	56,000	3010	30	30	30	40	40	40	40	50
	60,000	3225	40	40	40	40	40	50	50	50
	64,000	3440	40	40	40	50	50	50	50	60
233	60,000	2490	30	30	30	40	40	40	50	—
	65,000	2695	40	40	40	40	40	50	50	60
	70,000	2905	40	40	40	50	50	50	60	60
	75,000	3110	50	50	50	50	60	60	60	75
240	70,000	2305	30	30	40	40	40	50	50	60
	75,000	2470	40	40	40	40	50	50	60	60
	80,000	2635	40	40	40	50	50	60	60	75
	85,000	2795	40	50	50	50	60	60	60	75
	90,000	2960	50	50	50	60	60	60	75	75
	95,000	3125	50	60	60	60	75	75	75	100
	100,000	3290	60	60	60	75	75	75	100	100

Burner Performance Table

Single Blower Models — MBH Input

Unit Model	SCFM	70° Rise	80° Rise	90° Rise	100° Rise	110° Rise	120° Rise	130° Rise
109	1600	142	159	175	191	206	221	235
	1800	160	179	197	215	232	248	264
	2000	177	199	219	239	258	276	294
	2250	200	224	247	269	290	311	330
	2500	222	248	274	299	322	345	367
	2750	244	273	301	328	354	380	404
	3000	266	298	329	358	387	414	440
112	3250	288	323	356	388	419	449	477
	3500	311	348	384	418	451	483	514
	3750	333	373	411	448	483	518	550
	4000	355	397	438	478	516	552	587
	4250	377	422	466	508	548	587	624
115	4500	399	447	493	537	580	621	661
	5000	444	497	548	597	644	690	734
	5500	488	546	603	657	709	759	807
	6000	533	596	658	717	773	828	881
118	6500	577	646	712	776	838	897	954
	7000	621	696	767	836	902	966	1027
	7500	665	745	822	896	967	1035	1101
	8000	710	795	877	955	1031	1104	1174
	8500	754	845	932	1015	1096	1173	1248
120	9000	798	894	986	1075	1160	1242	1321
	9500	843	944	1041	1135	1224	1311	1394
	10,000	887	994	1096	1194	1289	1380	1468
	10,500	932	1043	1151	1254	1353	1449	1541
	11,000	976	1093	1205	1314	1418	1518	1615
122	11,000	976	1093	1205	1314	1418	1518	1615
	12,000	1065	1192	1315	1433	1547	1656	1761
	13,000	1153	1292	1425	1553	1676	1794	1908
	14,000	1242	1391	1534	1672	1804	1932	2055
	15,000	1331	1490	1644	1791	1933	2070	2202
125	14,000	1242	1391	1534	1672	1804	1932	2055
	15,000	1331	1490	1644	1791	1933	2070	2202
	16,000	1419	1590	1753	1911	2062	2208	2349
	18,000	1597	1788	1973	2150	2320	2484	2642
	20,000	1774	1987	2192	2388	2578	2760	2936
130	22,000	1952	2186	2411	2627	2836	3036	3229
	24,000	2129	2385	2630	2866	3093	3312	3523
	26,000	2307	2583	2849	3105	3351	3588	3816
	28,000	2484	2782	3069	3344	3609	3864	4110
	30,000	2661	2981	3288	3583	3867	4140	4404

SELECTION GUIDE

- Determine the temperature rise required through the heater by subtracting the winter design temperature from the desired indoor temperature.
- Select burner required.

$$BTUH = SCFM \times 1.32605 \times 29.92 \times 0.24 \times 60 \times \text{Temperature Rise}$$

$$.92 (460 + \text{Temperature Rise} + \text{Inlet Temperature})$$

where 1.32605 = density of air handled by the blower
29.92 = barometric pressure at sea level
0.24 = specific heat of the air handled by the blower
60 = conversion for minutes to hour
0.92 = average ratio of net and gross heating values of common fuel gases (92% sensible, 8% latent)
- Values shown in above MBH Input Tables are based on -40° F Inlet Temperature. MBH input shown on unit rating plate will be corrected for actual air density.
- Natural gas units are limited to 130° F temperature rise, propane units are limited to 100° F temperature rise.
- 2 speed motor and A200 controller are not available with ETL label.

Burner Performance Table

Twin Blower Models — MBH Input								
Unit Model	SCFM	70° Rise	80° Rise	90° Rise	100° Rise	110° Rise	120° Rise	130° Rise
215	9000	798	894	986	1075	1160	1242	1321
	9500	843	944	1041	1135	1224	1311	1394
	10,000	887	994	1096	1194	1289	1380	1468
	10,500	932	1043	1151	1254	1353	1449	1541
	11,000	976	1093	1205	1314	1418	1518	1615
	11,500	1020	1143	1260	1373	1482	1587	1688
	12,000	1065	1192	1315	1433	1547	1656	1761
218	12,500	1109	1242	1370	1493	1611	1725	1835
	13,000	1153	1292	1425	1553	1676	1794	1908
	14,000	1242	1391	1534	1672	1804	1932	2055
	15,000	1331	1490	1644	1791	1933	2070	2202
	16,000	1419	1590	1753	1911	2062	2208	2349
	17,000	1508	1689	1863	2030	2191	2346	2495
220	18,000	1597	1788	1973	2150	2320	2484	2642
	19,000	1686	1888	2082	2269	2449	2622	2789
	20,000	1774	1987	2192	2388	2578	2760	2936
	21,000	1863	2087	2301	2508	2707	2898	3082
	22,000	1952	2186	2411	2627	2836	3036	3229
	23,000	2040	2285	2521	2747	2964	3174	3376
	24,000	2129	2385	2630	2866	3093	3312	3523
	25,000	2218	2484	2740	2986	3222	3450	3670
	26,000	2307	2583	2849	3105	3351	3588	3816
222	25,000	2218	2484	2740	2986	3222	3450	3670
	26,000	2307	2583	2849	3105	3351	3588	3816
	27,000	2395	2683	2959	3224	3480	3726	3963
	28,000	2484	2782	3069	3344	3609	3864	4110
	29,000	2573	2881	3178	3463	3738	4002	4257
	30,000	2661	2981	3288	3583	3867	4140	4404
	31,000	2750	3080	3397	3702	3996	4278	4550
225	30,000	2661	2981	3288	3583	3867	4140	4404
	32,000	2839	3180	3507	3822	4124	4416	4697
	34,000	3016	3378	3726	4060	4382	4692	4991
	36,000	3194	3577	3945	4299	4640	4968	5284
	38,000	3371	3776	4164	4538	4898	5244	5578
	40,000	3549	3974	4384	4777	5156	5520	5871
	42,000	3726	4173	4603	5016	5413	5796	6165
	44,000	3903	4372	4822	5255	5671	6072	6458
	46,000	4081	4571	5041	5494	5929	6348	6752
230	44,000	3903	4372	4822	5255	5671	6072	6458
	48,000	4258	4769	5260	5732	6187	6624	7046
	52,000	4613	5167	5699	6210	6702	7176	7633
	56,000	4968	5564	6137	6688	7218	7728	8220
	60,000	5323	5962	6575	7165	7733	8280	8807
	64,000	5678	6359	7014	7643	8249	8832	9394
233	60,000	5323	5962	6575	7165	7733	8280	8807
	65,000	5766	6458	7123	7763	8378	8970	9541
	70,000	6210	6955	7671	8360	9022	9660	10,275
	75,000	6654	7452	8219	8957	9667	10,350	11,009
240	70,000	6210	6955	7671	8360	9022	9660	10,275
	75,000	6654	7452	8219	8957	9667	10,350	11,009
	80,000	7097	7949	8767	9554	10,311	11,040	12,743
	85,000	7541	8446	9315	10,151	10,955	11,730	12,477
	90,000	7984	8942	9863	10,784	11,600	12,420	13,211
	95,000	8428	9439	10,411	11,345	12,244	13,110	13,944
	100,000	8872	9936	10,959	11,942	12,889	13,800	14,678

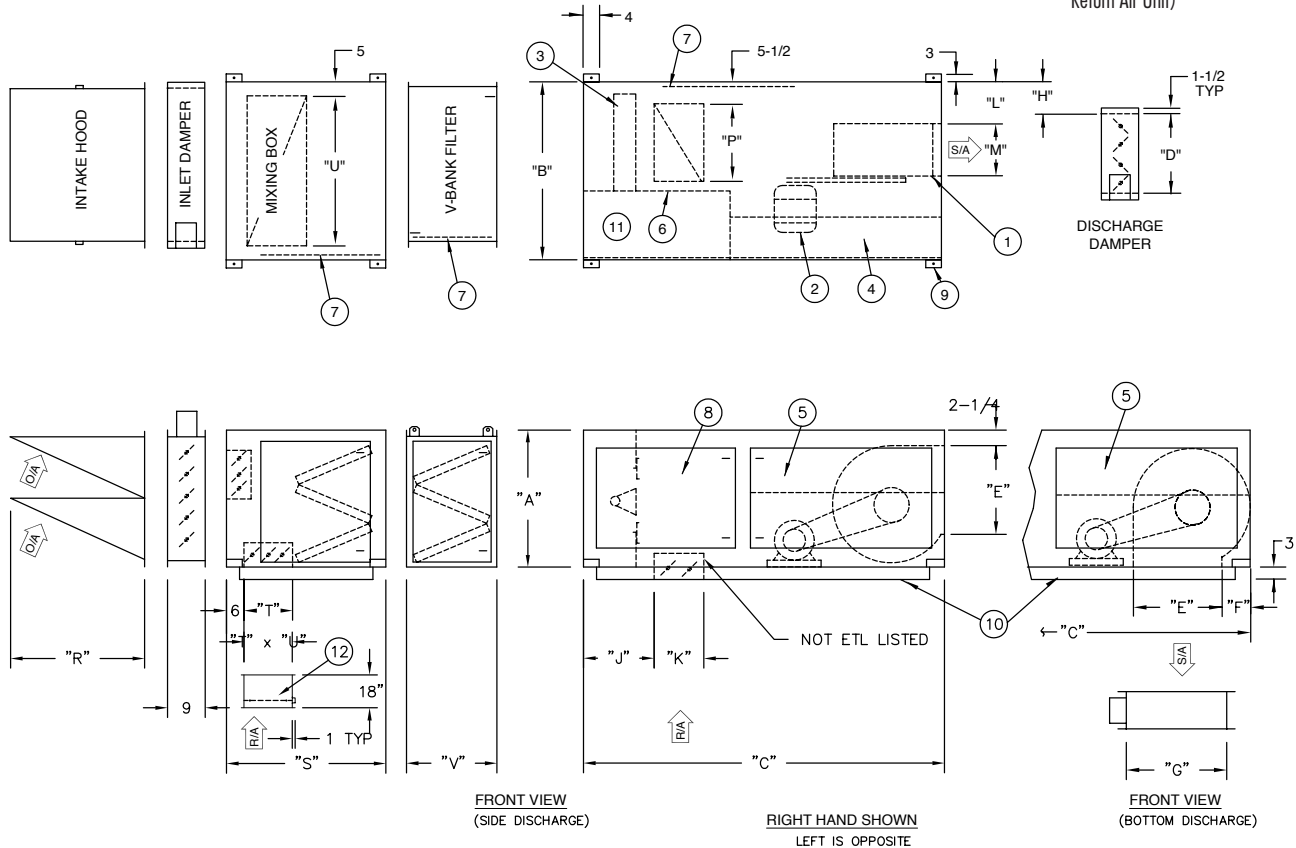
Dimensions

Single Blower Models — Sizes 109 Through 130

C000465A

UNIT COMPONENTS

- | | | | |
|---------------------------|---------------------------------------|-------------------------------------|---|
| 1. Centrifugal supply fan | 4. Control cabinet | 7. Access door | 10. Unit base |
| 2. Fan motor | 5. Hinged control cabinet access door | 8. Access door (piping compartment) | 11. Manifold compartment |
| 3. Line burner | 6. Observation port | 9. Lifting lug | 12. Return air flow station
(required for ETL listed
Return Air Unit) |



Model	Dimensions								
	A	B	C	D	E	F	G	H	J
109	36	52	77	17 ¹³ / ₁₆	10 ³ / ₈	15 ¹ / ₈	14 ⁷ / ₁₆	11 ⁹ / ₁₆	19
112	36	52	77	17 ¹³ / ₁₆	13 ⁹ / ₁₆	13 ⁹ / ₁₆	14 ⁷ / ₁₆	11 ⁹ / ₁₆	19
115	36	52	77	23 ¹⁵ / ₁₆	16	12 ³ / ₈	19 ⁷ / ₈	8 ⁵ / ₈	19
118	36	52	77	23 ¹⁵ / ₁₆	19	12 ³ / ₈	19 ⁷ / ₈	6 ¹⁵ / ₁₆	19
120	48	78	96	29 ¹ / ₂	24 ⁷ / ₈	13 ³ / ₁₆	28 ¹ / ₄	10 ⁵ / ₃₂	19
122	48	78	96	29 ¹ / ₂	27 ³ / ₈	13 ³ / ₁₆	28 ¹ / ₄	11 ¹³ / ₃₂	19
125	60	91	96	38 ⁷ / ₈	31 ³ / ₈	17 ⁹ / ₁₆	37 ³ / ₄	11 ¹¹ / ₁₆	12 ⁵ / ₁₆
130	60	91	96	38 ⁷ / ₈	36 ⁷ / ₈	17 ⁹ / ₁₆	37 ³ / ₄	14 ⁷ / ₁₆	12 ⁵ / ₁₆
Model	Dimensions								
	K	L	M	P	R	S	T	U	V
109	14 ¹ / ₄	14 ¹ / ₂	11 ¹⁵ / ₁₆	27 ³ / ₄	32	54	20 ¹ / ₄	42	22
112	14 ¹ / ₄	12 ¹ / ₂	15 ¹⁵ / ₁₆	27 ³ / ₄	32	54	20 ¹ / ₄	42	22
115	14 ¹ / ₄	11 ¹ / ₈	18 ¹⁵ / ₁₆	27 ³ / ₄	32	54	20 ¹ / ₄	42	22
118	14 ¹ / ₄	7 ⁷ / ₈	22 ¹ / ₁₆	27 ³ / ₄	32	54	20 ¹ / ₄	42	22
120	14 ¹ / ₄	12 ³ / ₈	25 ¹ / ₁₆	48	38 ¹ / ₂	60	20 ¹ / ₄	68	22
122	14 ¹ / ₄	12 ³ / ₈	27 ⁹ / ₁₆	48	38 ¹ / ₂	60	20 ¹ / ₄	68	22
125	20 ¹ / ₄	15 ³ / ₈	31 ¹ / ₂	49	53	65	26 ¹ / ₂	81	28
130	20 ¹ / ₄	15 ³ / ₈	37	49	53	65	26 ¹ / ₂	81	28

NOTE: All dimensions in inches subject to manufacturing tolerances.

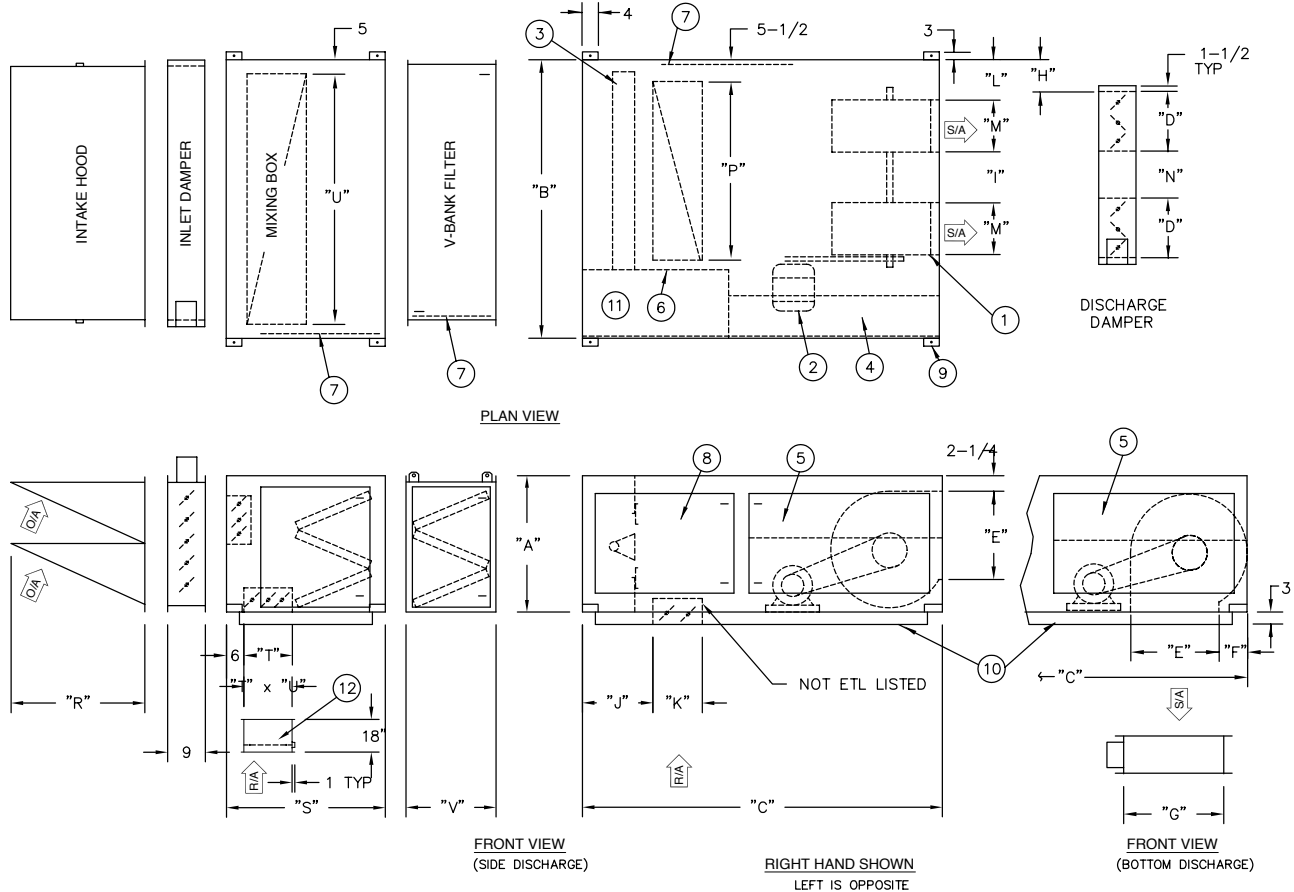
Dimensions

Twin Blower Models — Sizes 215 Through 230

C000466A

UNIT COMPONENTS

- | | | | |
|---------------------------|---------------------------------------|-------------------------------------|---|
| 1. Centrifugal supply fan | 4. Control cabinet | 7. Access door | 10. Unit base |
| 2. Fan motor | 5. Hinged control cabinet access door | 8. Access door (piping compartment) | 11. Manifold compartment |
| 3. Line burner | 6. Observation port | 9. Lifting lug | 12. Return air flow station
(required for ETL listed
Return Air Unit) |



Model	Dimensions									
	A	B	C	D	E	F	G	H	I	J
215	36	94	77	23 ¹⁵ / ₁₆	16	12 ³ / ₈	19 ⁷ / ₈	6 ¹⁵ / ₁₆	22 ¹ / ₄	19
218	36	94	77	23 ¹⁵ / ₁₆	19	12 ³ / ₈	19 ⁷ / ₈	6 ¹⁵ / ₁₆	16	19
220	48	130	96	29 ⁷ / ₁₆	24 ⁷ / ₈	13 ³ / ₁₆	28 ¹ / ₄	11 ⁷ / ₁₆	29 ⁵ / ₈	19
222	48	130	96	29 ⁷ / ₁₆	27 ³ / ₈	13 ³ / ₁₆	28 ¹ / ₄	11 ⁷ / ₁₆	24 ⁵ / ₈	19
225	60	154	96	38 ⁷ / ₈	31 ³ / ₈	17 ⁹ / ₁₆	37 ³ / ₄	14 ⁷ / ₁₆	37 ⁵ / ₈	12 ⁵ / ₁₆
230	60	154	96	38 ⁷ / ₈	36 ⁷ / ₈	17 ⁹ / ₁₆	37 ³ / ₄	14 ⁷ / ₁₆	26 ⁵ / ₈	12 ⁵ / ₁₆
Model	Dimensions									
	K	L	M	N	P	R	S	T	U	V
215	14 ¹ / ₄	7 ⁷ / ₈	18 ¹⁵ / ₁₆	14	65 ³ / ₄	32	54	20 ¹ / ₄	84	22
218	14 ¹ / ₄	7 ⁷ / ₈	22 ¹ / ₁₆	14	65 ³ / ₄	32	54	20 ¹ / ₄	84	22
220	14 ¹ / ₄	12 ³ / ₈	25 ¹ / ₁₆	22 ⁵ / ₈	87 ³ / ₈	44 ¹ / ₂	60	20 ¹ / ₄	120	22
222	14 ¹ / ₄	12 ³ / ₈	27 ⁹ / ₁₆	22 ⁵ / ₈	87 ³ / ₈	44 ¹ / ₂	60	20 ¹ / ₄	120	22
225	20 ¹ / ₄	15 ³ / ₈	31 ¹ / ₂	24 ⁵ / ₈	111 ³ / ₈	56 ¹ / ₂	65	26 ¹ / ₂	144	28
230	20 ¹ / ₄	15 ³ / ₈	37	24 ⁵ / ₈	111 ³ / ₈	56 ¹ / ₂	65	26 ¹ / ₂	144	28

NOTE: All dimensions in inches subject to manufacturing tolerances.

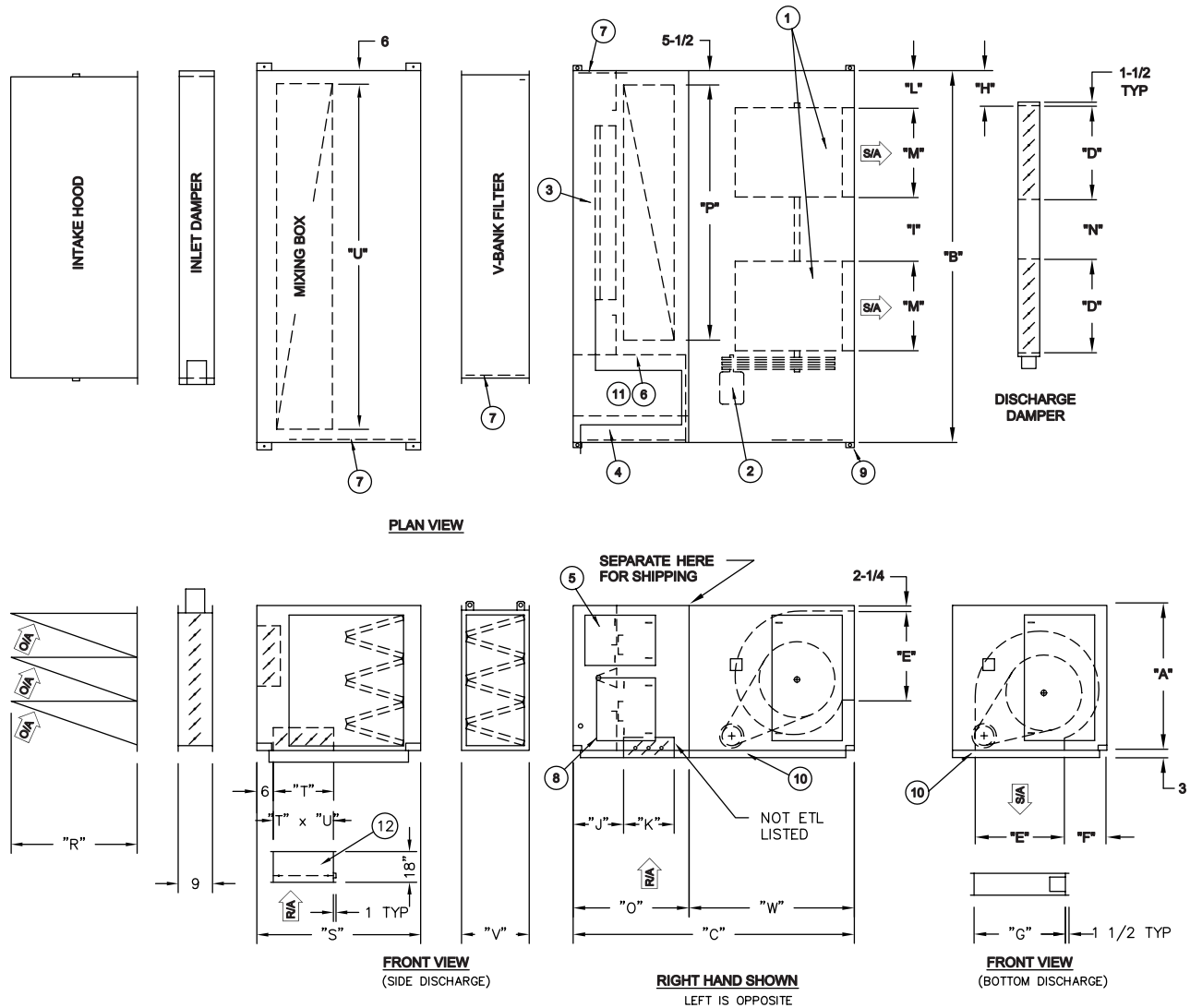
Dimensions

Twin Blower Models — Sizes 233 And 240

C000200B

UNIT COMPONENTS

- | | | | |
|---------------------------|---------------------------------------|-------------------------------------|---|
| 1. Centrifugal supply fan | 4. Control cabinet | 7. Access door | 10. Unit base |
| 2. Fan motor | 5. Hinged control cabinet access door | 8. Access door (piping compartment) | 11. Manifold compartment |
| 3. Line burner | 6. Observation port | 9. Lifting lug | 12. Return air flow station
(required for ETL listed
Return Air Unit) |



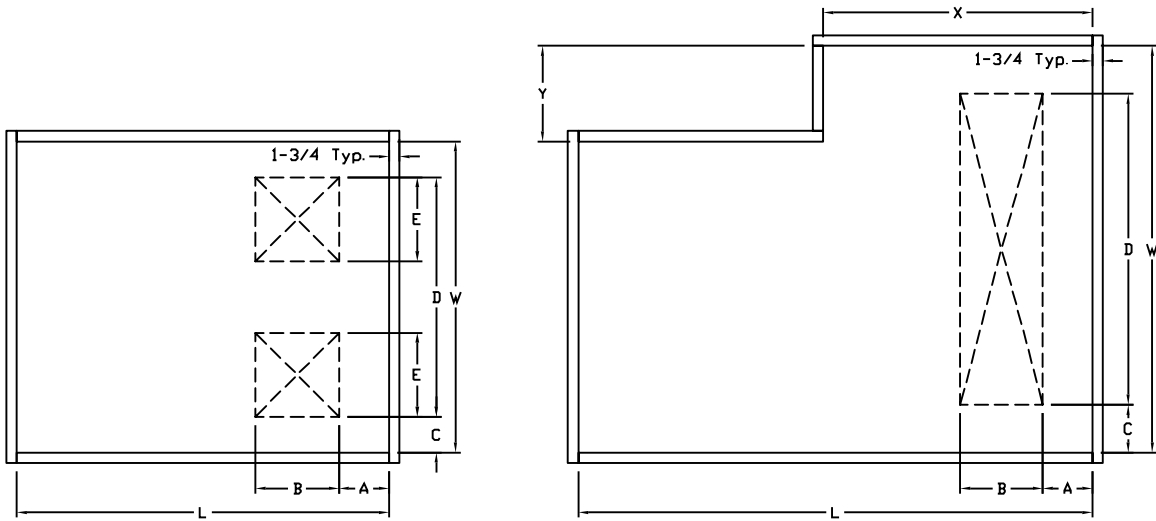
Model	Dimensions										
	A	B	C	D	E	F	G	H	I	J	K
233	68	175	117	41 ³ / ₄	43 ¹ / ₁₆	19 ⁷ / ₁₆	44	16 ¹ / ₁₆	36	20	20 ¹ / ₄
240	79 ¹ / ₄	210	131	55 ³ / ₄	41	33	42	19 ¹ / ₁₆	39 ⁷ / ₈	20	20 ¹ / ₄
Model	Dimensions										
	L	M	N	O	P	R	S	T	U	V	W
233	17	39 ⁷ / ₈	34 ¹ / ₈	45	130	56 ¹ / ₂	70	31 ¹ / ₄	163	28	72
240	20	53 ⁷ / ₈	38	45	166	51 ¹ / ₂	70	31 ¹ / ₄	198	28	86

NOTE: All dimensions in inches subject to manufacturing tolerances.

Dimensions

Roof Curbs For 100% Make-Up Air Units

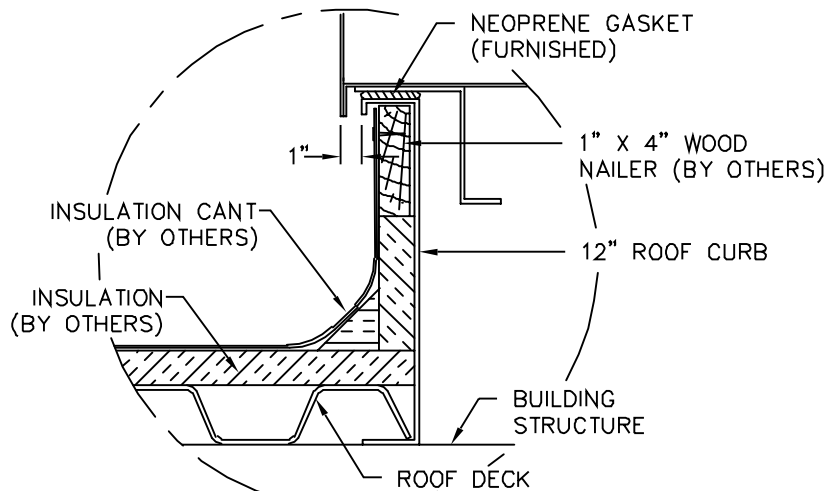
C000555



Model	Without Cooling							With Cooling							
	A	B	C	D	E	L	W	A	B	C	D	L	W	X	Y
109	12 ³ / ₈	10 ³ / ₈	22 ¹³ / ₁₆	11 ¹⁵ / ₁₆	N/A	71 ¹ / ₂	46 ¹ / ₂	3 ¹ / ₄	18	3 ¹ / ₄	40	153 ¹ / ₂	46 ¹ / ₂	76 ¹ / ₂	0
112	10 ¹³ / ₁₆	13 ³ / ₁₆	20 ¹³ / ₁₆	15 ¹⁵ / ₁₆	N/A	71 ¹ / ₂	46 ¹ / ₂	3 ¹ / ₄	18	3 ¹ / ₄	40	153 ¹ / ₂	46 ¹ / ₂	76 ¹ / ₂	0
115	9 ⁵ / ₈	16	19 ³ / ₁₆	18 ¹⁵ / ₁₆	N/A	71 ¹ / ₂	46 ¹ / ₂	3 ¹ / ₄	18	3 ¹ / ₄	52	181 ¹ / ₂	58 ¹ / ₂	104 ¹ / ₂	12
118	9 ⁵ / ₈	19	19 ³ / ₁₆	22 ¹ / ₁₆	N/A	71 ¹ / ₂	46 ¹ / ₂	3 ¹ / ₄	18	3 ¹ / ₄	52	181 ¹ / ₂	58 ¹ / ₂	104 ¹ / ₂	12
120	10 ⁷ / ₁₆	24 ⁷ / ₈	37 ¹³ / ₁₆	25 ¹ / ₁₆	N/A	90 ¹ / ₂	72 ¹ / ₂	3 ¹ / ₄	26	3 ¹ / ₄	86	214 ¹ / ₂	92 ¹ / ₂	118 ¹ / ₂	20
122	10 ⁷ / ₁₆	27 ³ / ₈	35 ⁵ / ₁₆	27 ⁷ / ₁₆	N/A	90 ¹ / ₂	72 ¹ / ₂	3 ¹ / ₄	26	3 ¹ / ₄	86	214 ¹ / ₂	92 ¹ / ₂	118 ¹ / ₂	20
125	14 ¹³ / ₁₆	31 ³ / ₈	41 ³ / ₈	31 ¹ / ₂	N/A	90 ¹ / ₂	85 ¹ / ₂	3 ¹ / ₄	34 ¹ / ₂	3 ¹ / ₄	104	246 ¹ / ₂	110 ¹ / ₂	150 ¹ / ₂	25
130	14 ¹³ / ₁₆	36 ⁷ / ₈	35 ⁵ / ₈	37	N/A	90 ¹ / ₂	85 ¹ / ₂	3 ¹ / ₄	34 ¹ / ₂	3 ¹ / ₄	104	246 ¹ / ₂	110 ¹ / ₂	150 ¹ / ₂	25
215	9 ⁵ / ₈	16	23 ¹ / ₄	60 ¹ / ₈	18 ¹⁵ / ₁₆	71 ¹ / ₂	88 ¹ / ₂	3 ¹ / ₄	18	3 ¹ / ₄	94	181 ¹ / ₂	100 ¹ / ₂	104 ¹ / ₂	12
218	9 ⁵ / ₈	19	23 ¹ / ₄	60 ¹ / ₈	22 ¹ / ₁₆	71 ¹ / ₂	88 ¹ / ₂	3 ¹ / ₄	18	3 ¹ / ₄	94	181 ¹ / ₂	100 ¹ / ₂	104 ¹ / ₂	12
220	10 ⁷ / ₁₆	24 ⁷ / ₈	35 ⁵ / ₈	79 ³ / ₄	25 ¹ / ₁₆	90 ¹ / ₂	124 ¹ / ₂	3 ¹ / ₄	26	3 ¹ / ₄	142	214 ¹ / ₂	148 ¹ / ₂	118 ¹ / ₂	24
222	10 ⁷ / ₁₆	27 ³ / ₈	35 ⁵ / ₈	79 ³ / ₄	27 ⁷ / ₁₆	90 ¹ / ₂	124 ¹ / ₂	3 ¹ / ₄	26	3 ¹ / ₄	142	214 ¹ / ₂	148 ¹ / ₂	118 ¹ / ₂	24
225	14 ¹³ / ₁₆	31 ³ / ₈	35 ¹ / ₄	100 ⁵ / ₈	31 ¹ / ₂	90 ¹ / ₂	148 ¹ / ₂	3 ¹ / ₄	34 ¹ / ₂	3 ¹ / ₄	167	246 ¹ / ₂	173 ¹ / ₂	150 ¹ / ₂	25
230	14 ¹³ / ₁₆	36 ⁷ / ₈	35 ¹ / ₄	100 ⁵ / ₈	37	90 ¹ / ₂	148 ¹ / ₂	3 ¹ / ₄	34 ¹ / ₂	3 ¹ / ₄	167	246 ¹ / ₂	173 ¹ / ₂	150 ¹ / ₂	25
233	16 ¹¹ / ₁₆	43 ¹ / ₁₆	39 ¹ / ₂	115 ³ / ₄	39 ⁷ / ₈	111 ¹ / ₂	169 ¹ / ₂	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
240	30 ¹ / ₄	41	39 ⁵ / ₈	147 ⁵ / ₈	53 ⁷ / ₈	125 ¹ / ₂	204 ¹ / ₂	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTES:

1. All dimensions in inches subject to manufacturing tolerances.
2. Curb to be shipped loose and assembled in the field.
3. Curb must be installed square and level.
4. Curb requires intermediate structural support and is not to be corner post mounted.
5. Gaskets to be shipped with unit.
6. Bolting accessories shipped with curb.
7. Curb drawings shown are for units which have controls on the "standard" side.
8. Available on horizontal units only.

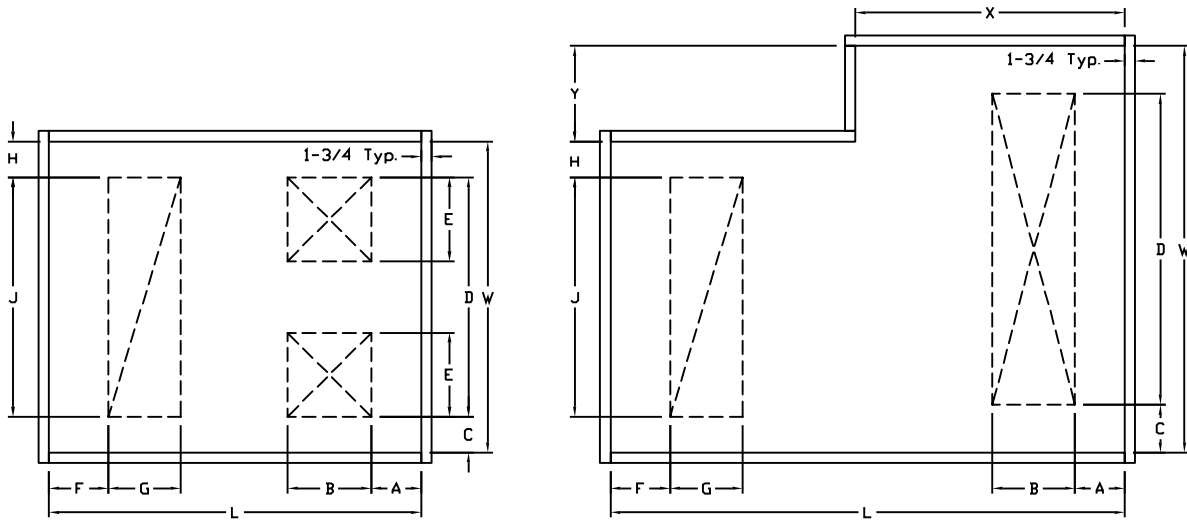


ROOF CURB DETAIL

Dimensions

Roof Curbs For Base Units With Return Air After Burner

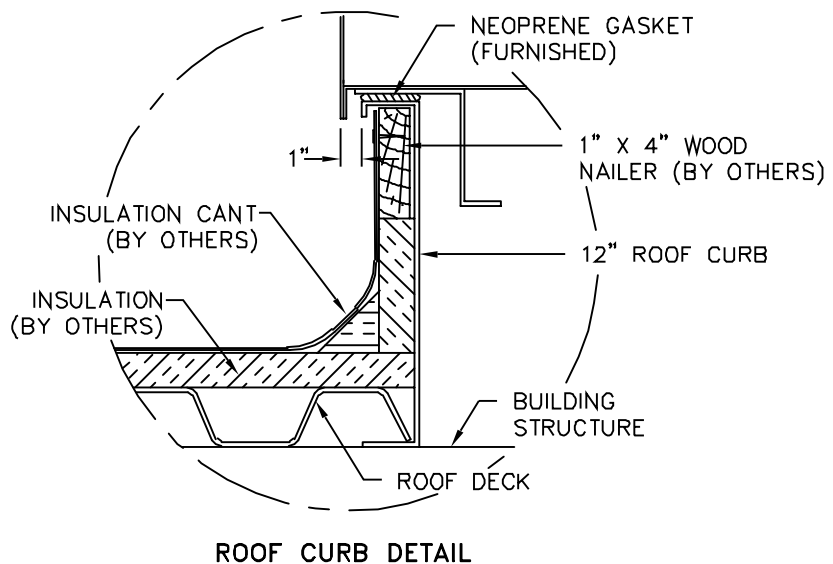
C000556



Model	Without Cooling							With Cooling							All Models				
	A	B	C	D	E	L	W	A	B	C	D	L	W	X	Y	F	G	H	J
109	12 ³ / ₈	10 ³ / ₈	22 ¹ / ₁₆	11 ⁵ / ₁₆	N/A	71 ¹ / ₂	46 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	40	153 ¹ / ₂	46 ¹ / ₂	76 ¹ / ₂	0	16 ¹ / ₄	14 ¹ / ₄	2 ³ / ₄	27 ³ / ₄
112	10 ¹³ / ₁₆	13 ⁹ / ₁₆	20 ¹³ / ₁₆	15 ⁵ / ₁₆	N/A	71 ¹ / ₂	46 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	40	153 ¹ / ₂	46 ¹ / ₂	76 ¹ / ₂	0	16 ¹ / ₄	14 ¹ / ₄	2 ³ / ₄	27 ³ / ₄
115	9 ⁵ / ₈	16	19 ⁹ / ₁₆	18 ⁵ / ₁₆	N/A	71 ¹ / ₂	46 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	52	181 ¹ / ₂	58 ¹ / ₂	104 ¹ / ₂	12	16 ¹ / ₄	14 ¹ / ₄	2 ³ / ₄	27 ³ / ₄
118	9 ⁵ / ₈	19	19 ⁹ / ₁₆	22 ¹ / ₁₆	N/A	71 ¹ / ₂	46 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	52	181 ¹ / ₂	58 ¹ / ₂	104 ¹ / ₂	12	16 ¹ / ₄	14 ¹ / ₄	2 ³ / ₄	27 ³ / ₄
120	10 ⁷ / ₁₆	24 ⁷ / ₈	37 ¹³ / ₁₆	25 ¹ / ₁₆	N/A	90 ¹ / ₂	72 ¹ / ₂	3 ³ / ₄	26	3 ³ / ₄	86	214 ¹ / ₂	92 ¹ / ₂	118 ¹ / ₂	20	16 ¹ / ₄	14 ¹ / ₄	2 ³ / ₄	48
122	10 ⁷ / ₁₆	27 ³ / ₈	35 ⁵ / ₁₆	27 ⁷ / ₁₆	N/A	90 ¹ / ₂	72 ¹ / ₂	3 ³ / ₄	26	3 ³ / ₄	86	214 ¹ / ₂	92 ¹ / ₂	118 ¹ / ₂	20	16 ¹ / ₄	14 ¹ / ₄	2 ³ / ₄	48
125	14 ¹ / ₁₆	31 ³ / ₈	41 ³ / ₈	31 ¹ / ₂	N/A	90 ¹ / ₂	85 ¹ / ₂	3 ³ / ₄	34 ¹ / ₂	3 ³ / ₄	104	246 ¹ / ₂	110 ¹ / ₂	150 ¹ / ₂	25	9 ⁹ / ₁₆	20 ¹ / ₄	2 ³ / ₄	49
130	14 ¹ / ₁₆	36 ⁷ / ₈	35 ⁵ / ₈	37	N/A	90 ¹ / ₂	85 ¹ / ₂	3 ³ / ₄	34 ¹ / ₂	3 ³ / ₄	104	246 ¹ / ₂	110 ¹ / ₂	150 ¹ / ₂	25	9 ⁹ / ₁₆	20 ¹ / ₄	2 ³ / ₄	49
215	9 ⁵ / ₈	16	23 ³ / ₄	60 ³ / ₈	18 ¹ / ₁₆	71 ¹ / ₂	88 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	94	181 ¹ / ₂	100 ¹ / ₂	104 ¹ / ₂	12	16 ¹ / ₄	14 ¹ / ₄	2 ³ / ₄	65 ³ / ₄
218	9 ⁵ / ₈	19	23 ³ / ₄	60 ³ / ₈	22 ¹ / ₁₆	71 ¹ / ₂	88 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	94	181 ¹ / ₂	100 ¹ / ₂	104 ¹ / ₂	12	16 ¹ / ₄	14 ¹ / ₄	2 ³ / ₄	65 ³ / ₄
220	10 ⁷ / ₁₆	24 ⁷ / ₈	35 ⁵ / ₈	79 ³ / ₄	25 ¹ / ₁₆	90 ¹ / ₂	124 ¹ / ₂	3 ³ / ₄	26	3 ³ / ₄	142	214 ¹ / ₂	148 ¹ / ₂	118 ¹ / ₂	24	16 ¹ / ₄	14 ¹ / ₄	2 ³ / ₄	87 ³ / ₈
222	10 ⁷ / ₁₆	27 ³ / ₈	35 ⁵ / ₈	79 ³ / ₄	27 ⁷ / ₁₆	90 ¹ / ₂	124 ¹ / ₂	3 ³ / ₄	26	3 ³ / ₄	142	214 ¹ / ₂	148 ¹ / ₂	118 ¹ / ₂	24	16 ¹ / ₄	14 ¹ / ₄	2 ³ / ₄	87 ³ / ₈
225	14 ¹³ / ₁₆	31 ³ / ₈	35 ¹ / ₄	100 ⁵ / ₈	31 ¹ / ₂	90 ¹ / ₂	148 ¹ / ₂	3 ³ / ₄	34 ¹ / ₂	3 ³ / ₄	167	246 ¹ / ₂	173 ¹ / ₂	150 ¹ / ₂	25	9 ⁹ / ₁₆	20 ¹ / ₄	2 ³ / ₄	111 ³ / ₈
230	14 ¹³ / ₁₆	36 ⁷ / ₈	35 ¹ / ₄	100 ⁵ / ₈	37	90 ¹ / ₂	148 ¹ / ₂	3 ³ / ₄	34 ¹ / ₂	3 ³ / ₄	167	246 ¹ / ₂	173 ¹ / ₂	150 ¹ / ₂	25	9 ⁹ / ₁₆	20 ¹ / ₄	2 ³ / ₄	111 ³ / ₈
233	16 ¹¹ / ₁₆	43 ¹ / ₁₆	39 ¹ / ₂	115 ³ / ₄	39 ⁷ / ₈	111 ¹ / ₂	169 ¹ / ₂	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17 ¹ / ₄	20 ¹ / ₄	2 ³ / ₄	130
240	30 ¹ / ₄	41	39 ³ / ₈	147 ⁵ / ₈	53 ⁷ / ₈	125 ¹ / ₂	204 ¹ / ₂	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17 ¹ / ₄	20 ¹ / ₄	2 ³ / ₄	166

NOTES:

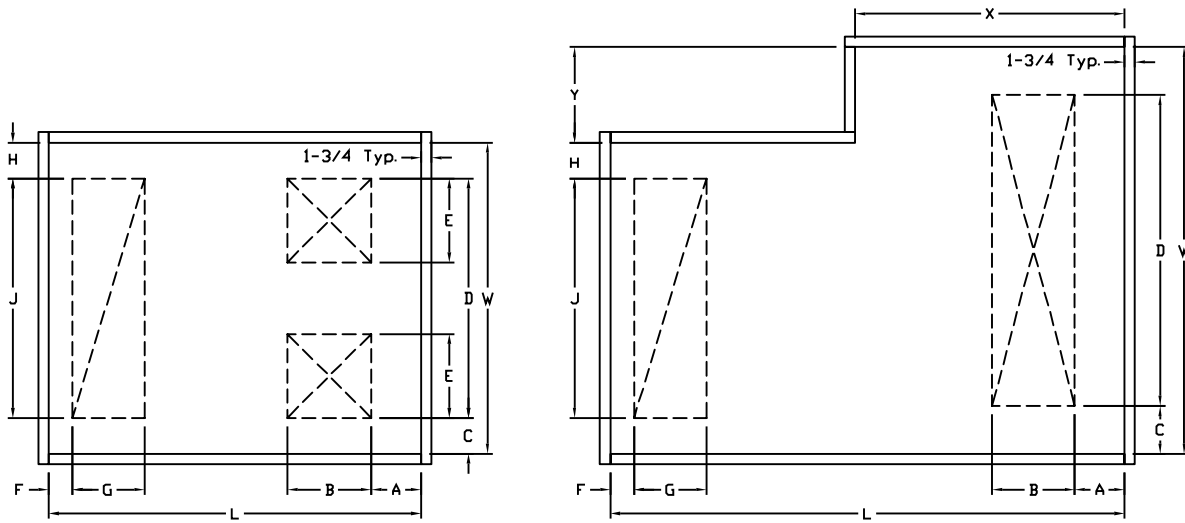
1. All dimensions in inches subject to manufacturing tolerances.
2. Curb to be shipped loose and assembled in the field.
3. Curb must be installed square and level.
4. Curb requires intermediate structural support and is not to be corner post mounted.
5. Gaskets to be shipped with unit.
6. Bolting accessories shipped with curb.
7. Curb drawings shown are for units which have controls on the "standard" side.
8. Available on horizontal units only.



Dimensions

Roof Curbs For Base Units With Return Air Before Burner

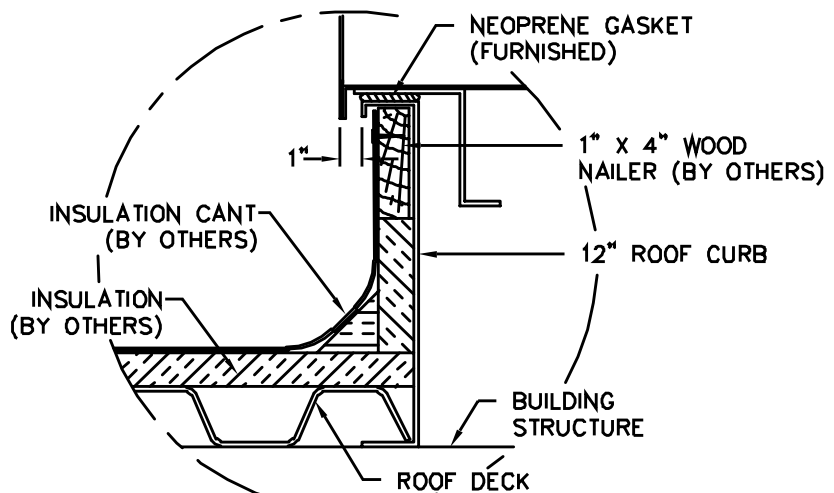
C000557



Model	Without Cooling							With Cooling								All Models			
	A	B	C	D	E	L	W	A	B	C	D	L	W	X	Y	F	G	H	J
109	12 ³ / ₈	10 ³ / ₈	22 ¹³ / ₁₆	11 ¹⁵ / ₁₆	N/A	125 ¹ / ₂	46 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	40	207 ¹ / ₂	46 ¹ / ₂	76 ¹ / ₂	0	3 ³ / ₄	20 ¹ / ₄	2 ¹ / ₄	42
112	10 ¹³ / ₁₆	13 ⁹ / ₁₆	20 ¹³ / ₁₆	15 ¹⁵ / ₁₆	N/A	125 ¹ / ₂	46 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	40	207 ¹ / ₂	46 ¹ / ₂	76 ¹ / ₂	0	3 ³ / ₄	20 ¹ / ₄	2 ¹ / ₄	42
115	9 ⁵ / ₈	16	19 ⁹ / ₁₆	18 ¹⁵ / ₁₆	N/A	125 ¹ / ₂	46 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	52	235 ¹ / ₂	58 ¹ / ₂	104 ¹ / ₂	12	3 ³ / ₄	20 ¹ / ₄	2 ¹ / ₄	42
118	9 ⁵ / ₈	19	19 ⁹ / ₁₆	22 ¹ / ₁₆	N/A	125 ¹ / ₂	46 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	52	235 ¹ / ₂	58 ¹ / ₂	104 ¹ / ₂	12	3 ³ / ₄	20 ¹ / ₄	2 ¹ / ₄	42
120	10 ⁷ / ₁₆	24 ⁷ / ₈	37 ¹³ / ₁₆	25 ¹ / ₁₆	N/A	150 ¹ / ₂	72 ¹ / ₂	3 ³ / ₄	26	3 ³ / ₄	86	274 ¹ / ₂	92 ¹ / ₂	118 ¹ / ₂	20	3 ³ / ₄	20 ¹ / ₄	2 ¹ / ₄	68
122	10 ⁷ / ₁₆	27 ³ / ₈	35 ¹ / ₁₆	27 ⁹ / ₁₆	N/A	150 ¹ / ₂	72 ¹ / ₂	3 ³ / ₄	26	3 ³ / ₄	86	274 ¹ / ₂	92 ¹ / ₂	118 ¹ / ₂	20	3 ³ / ₄	20 ¹ / ₄	2 ¹ / ₄	68
125	14 ¹³ / ₁₆	31 ³ / ₈	41 ³ / ₈	31 ¹ / ₂	N/A	155 ¹ / ₂	85 ¹ / ₂	3 ³ / ₄	34 ¹ / ₂	3 ³ / ₄	104	311 ¹ / ₂	110 ¹ / ₂	150 ¹ / ₂	25	3 ³ / ₄	26 ¹ / ₂	2 ¹ / ₄	81
130	14 ¹³ / ₁₆	36 ⁷ / ₈	35 ³ / ₈	37	N/A	155 ¹ / ₂	85 ¹ / ₂	3 ³ / ₄	34 ¹ / ₂	3 ³ / ₄	104	311 ¹ / ₂	110 ¹ / ₂	150 ¹ / ₂	25	3 ³ / ₄	26 ¹ / ₂	2 ¹ / ₄	81
215	9 ⁵ / ₈	16	23 ³ / ₄	60 ³ / ₈	18 ¹⁵ / ₁₆	125 ¹ / ₂	88 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	94	235 ¹ / ₂	100 ¹ / ₂	104 ¹ / ₂	12	3 ³ / ₄	20 ¹ / ₄	2 ¹ / ₄	84
218	9 ⁵ / ₈	19	23 ³ / ₄	60 ³ / ₈	22 ¹ / ₁₆	125 ¹ / ₂	88 ¹ / ₂	3 ³ / ₄	18	3 ³ / ₄	94	235 ¹ / ₂	100 ¹ / ₂	104 ¹ / ₂	12	3 ³ / ₄	20 ¹ / ₄	2 ¹ / ₄	84
220	10 ⁷ / ₁₆	24 ⁷ / ₈	35 ³ / ₈	79 ³ / ₄	25 ¹ / ₁₆	150 ¹ / ₂	124 ¹ / ₂	3 ³ / ₄	26	3 ³ / ₄	142	274 ¹ / ₂	148 ¹ / ₂	118 ¹ / ₂	24	3 ³ / ₄	20 ¹ / ₄	2 ¹ / ₄	120
222	10 ⁷ / ₁₆	27 ³ / ₈	35 ³ / ₈	79 ³ / ₄	27 ⁹ / ₁₆	150 ¹ / ₂	124 ¹ / ₂	3 ³ / ₄	26	3 ³ / ₄	142	274 ¹ / ₂	148 ¹ / ₂	118 ¹ / ₂	24	3 ³ / ₄	20 ¹ / ₄	2 ¹ / ₄	120
225	14 ¹³ / ₁₆	31 ³ / ₈	35 ³ / ₄	100 ⁵ / ₈	31 ¹ / ₂	155 ¹ / ₂	148 ¹ / ₂	3 ³ / ₄	34 ¹ / ₂	3 ³ / ₄	167	311 ¹ / ₂	173 ¹ / ₂	150 ¹ / ₂	25	3 ³ / ₄	26 ¹ / ₂	2 ¹ / ₄	144
230	14 ¹³ / ₁₆	36 ⁷ / ₈	35 ³ / ₄	100 ⁵ / ₈	37	155 ¹ / ₂	148 ¹ / ₂	3 ³ / ₄	34 ¹ / ₂	3 ³ / ₄	167	311 ¹ / ₂	173 ¹ / ₂	150 ¹ / ₂	25	3 ³ / ₄	26 ¹ / ₂	2 ¹ / ₄	144
233	16 ¹¹ / ₁₆	43 ¹ / ₁₆	39 ¹ / ₂	115 ³ / ₄	39 ⁷ / ₈	181 ¹ / ₂	169 ¹ / ₂	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3 ³ / ₄	31 ¹ / ₄	3 ³ / ₄	163
240	30 ¹ / ₄	41	39 ³ / ₈	147 ⁵ / ₈	53 ³ / ₈	195 ¹ / ₂	204 ¹ / ₂	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3 ³ / ₄	31 ¹ / ₄	3 ³ / ₄	198

NOTES:

1. All dimensions in inches subject to manufacturing tolerances.
2. Curb to be shipped loose and assembled in the field.
3. Curb must be installed square and level.
4. Curb requires intermediate structural support and is not to be corner post mounted.
5. Gaskets to be shipped with unit.
6. Bolting accessories shipped with curb.
7. Curb drawings shown are for units which have controls on the "standard" side.
8. Available on horizontal units only.



ROOF CURB DETAIL

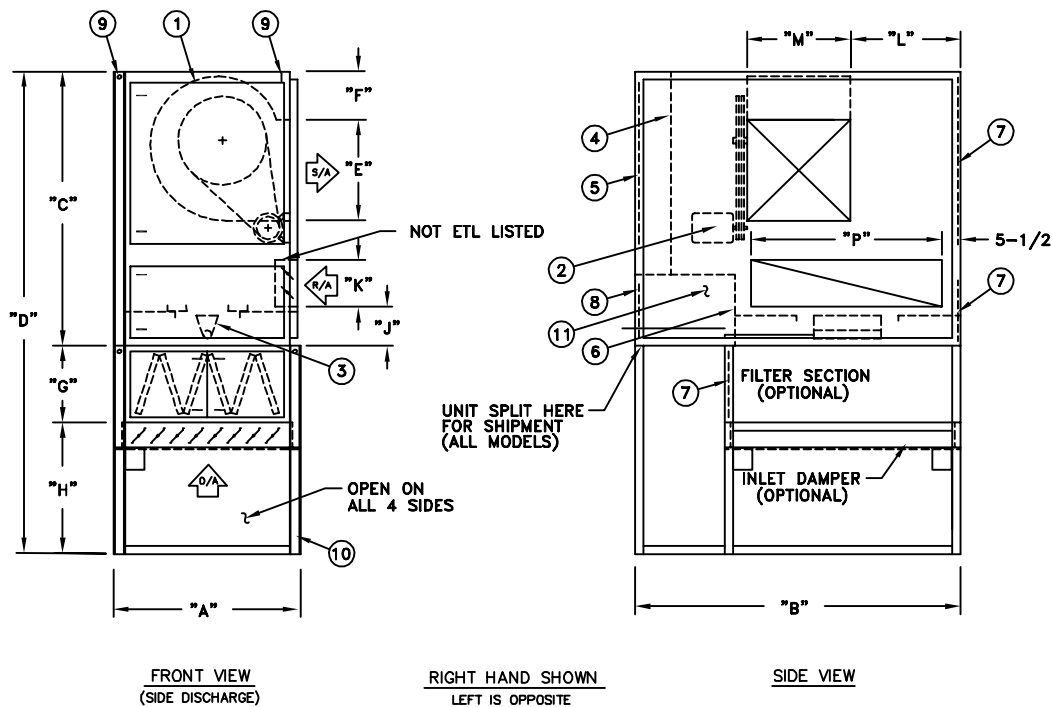
Dimensions

Vertical Models — Sizes 109 Through 130

C000496

UNIT COMPONENTS

- | | | | |
|---------------------------|---------------------------------------|-------------------------------------|--------------------------|
| 1. Centrifugal supply fan | 4. Control cabinet | 7. Access door | 10. Unit support stand |
| 2. Fan motor | 5. Hinged control cabinet access door | 8. Access door (piping compartment) | 11. Manifold compartment |
| 3. Line burner | 6. Observation port | 9. Lifting lug | |



Model	Dimensions						
	A	B	C	D	E	F	G
109	42	52	77	135	10 ³ / ₈	15 ¹ / ₈	22
112	42	52	77	135	13 ⁹ / ₁₆	13 ⁹ / ₁₆	22
115	42	52	77	135	16	12 ³ / ₈	22
118	42	52	77	135	19	12 ³ / ₈	22
120	56	78	96	166	24 ⁷ / ₈	13 ³ / ₁₆	22
122	56	78	96	166	27 ³ / ₈	13 ³ / ₁₆	22
125	68	91	96	172	31 ³ / ₈	17 ⁹ / ₁₆	28
130	68	91	96	172	36 ⁷ / ₈	17 ⁹ / ₁₆	28
Model	Dimensions						
	H	J	K	L	M	P	
109	36	19	14 ¹ / ₄	14 ¹ / ₂	11 ¹⁵ / ₁₆	27 ³ / ₄	
112	36	19	14 ¹ / ₄	12 ¹ / ₂	15 ¹⁵ / ₁₆	27 ³ / ₄	
115	36	19	14 ¹ / ₄	11 ¹ / ₈	18 ¹⁵ / ₁₆	27 ³ / ₄	
118	36	19	14 ¹ / ₄	7 ⁷ / ₈	22 ¹ / ₁₆	27 ³ / ₄	
120	48	19	14 ¹ / ₄	12 ³ / ₈	25 ¹ / ₁₆	48	
122	48	19	14 ¹ / ₄	12 ³ / ₈	27 ⁹ / ₁₆	48	
125	48	12 ⁵ / ₁₆	20 ¹ / ₄	15 ³ / ₈	31 ¹ / ₂	49	
130	48	12 ⁵ / ₁₆	20 ¹ / ₄	15 ³ / ₈	37	49	

NOTE: All dimensions in inches subject to manufacturing tolerances.

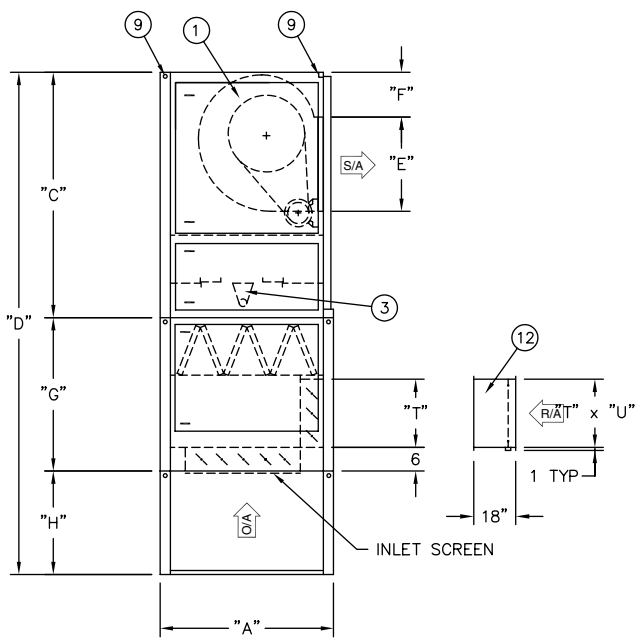
Dimensions

Vertical Models — Sizes 109 Through 130 with Mixing Box

C000550A

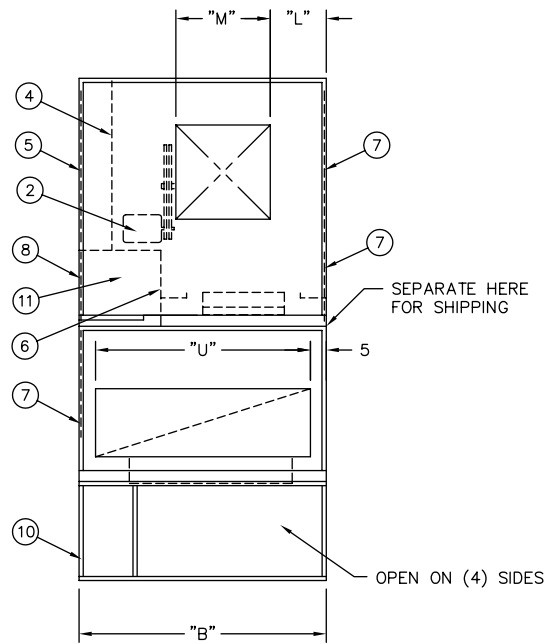
UNIT COMPONENTS

- | | | | |
|---------------------------|---------------------------------------|-------------------------------------|---|
| 1. Centrifugal supply fan | 4. Control cabinet | 7. Access door | 10. Unit support stand |
| 2. Fan motor | 5. Hinged control cabinet access door | 8. Access door (piping compartment) | 11. Manifold compartment |
| 3. Line burner | 6. Observation port | 9. Lifting lug | 12. Return air flow station
(required for ETL listed
Return Air Unit) |



FRONT VIEW
(SIDE DISCHARGE)

RIGHT HAND SHOWN
LEFT IS OPPOSITE



SIDE VIEW

Model	Dimensions					
	A	B	C	D	E	F
109	42	52	77	167	10 ³ / ₈	15 ¹ / ₈
112	42	52	77	167	13 ⁹ / ₁₆	13 ⁹ / ₁₆
115	42	52	77	167	16	12 ³ / ₈
118	42	52	77	167	19	12 ³ / ₈
120	56	78	96	204	24 ⁷ / ₈	13 ³ / ₁₆
122	56	78	96	204	27 ³ / ₈	13 ³ / ₁₆
125	68	91	96	209	31 ³ / ₈	17 ⁹ / ₁₆
130	68	91	96	209	36 ⁷ / ₈	17 ⁹ / ₁₆
Model	Dimensions					
	G	H	L	M	T	U
109	54	36	14 ¹ / ₂	11 ¹⁵ / ₁₆	20 ¹ / ₄	42
112	54	36	12 ¹ / ₂	15 ¹⁵ / ₁₆	20 ¹ / ₄	42
115	54	36	11 ¹ / ₈	18 ¹⁵ / ₁₆	20 ¹ / ₄	42
118	54	36	7 ⁷ / ₈	22 ¹ / ₁₆	20 ¹ / ₄	42
120	60	48	12 ³ / ₈	25 ¹ / ₁₆	20 ¹ / ₄	68
122	60	48	12 ³ / ₈	27 ⁹ / ₁₆	20 ¹ / ₄	68
125	65	48	15 ³ / ₈	31 ¹ / ₂	26 ¹ / ₂	81
130	65	48	15 ³ / ₈	37	26 ¹ / ₂	81

NOTE: All dimensions in inches subject to manufacturing tolerances.

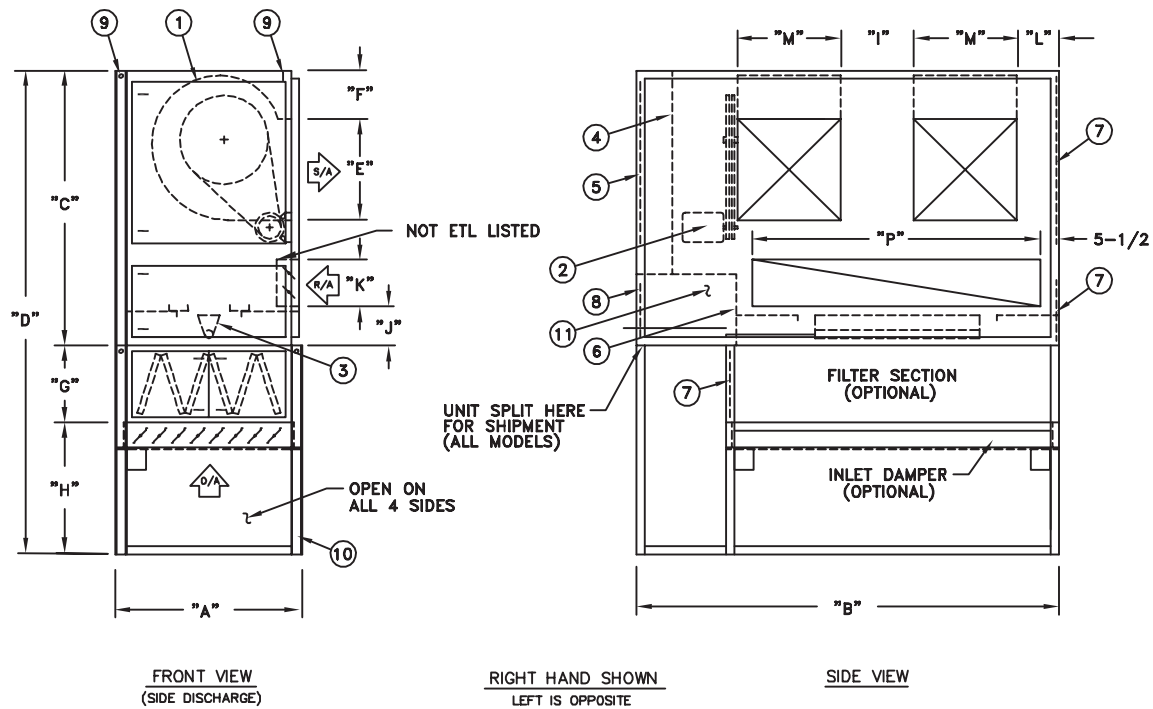
Dimensions

Vertical Models — Sizes 215 Through 230

C000464

UNIT COMPONENTS

- | | | | |
|---------------------------|---------------------------------------|-------------------------------------|--------------------------|
| 1. Centrifugal supply fan | 4. Control cabinet | 7. Access door | 10. Unit support stand |
| 2. Fan motor | 5. Hinged control cabinet access door | 8. Access door (piping compartment) | 11. Manifold compartment |
| 3. Line burner | 6. Observation port | 9. Lifting lug | |



Model	Dimensions							
	A	B	C	D	E	F	G	H
215	42	94	77	135	16	12 ³ / ₈	22	36
218	42	94	77	135	19	12 ³ / ₈	22	36
220	56	130	96	166	24 ⁷ / ₈	13 ³ / ₁₆	22	48
222	56	130	96	166	27 ³ / ₈	13 ³ / ₁₆	22	48
225	68	154	96	172	31 ³ / ₈	17 ⁹ / ₁₆	28	48
230	68	154	96	172	36 ⁷ / ₈	17 ⁹ / ₁₆	28	48
Model	Dimensions							
	I	J	K	L	M	P		
215	22 ¹ / ₄	19	14 ¹ / ₄	7 ⁷ / ₈	18 ¹⁵ / ₁₆	65 ³ / ₄		
218	16	19	14 ¹ / ₄	7 ⁷ / ₈	22 ¹ / ₁₆	65 ³ / ₄		
220	29 ⁵ / ₈	19	14 ¹ / ₄	12 ³ / ₈	25 ¹ / ₁₆	87 ³ / ₈		
222	24 ⁵ / ₈	19	14 ¹ / ₄	12 ³ / ₈	27 ⁹ / ₁₆	87 ³ / ₈		
225	37 ⁵ / ₈	12 ⁵ / ₁₆	20 ¹ / ₄	15 ³ / ₈	31 ¹ / ₂	111 ³ / ₈		
230	26 ⁵ / ₈	12 ⁵ / ₁₆	20 ¹ / ₄	15 ³ / ₈	37	111 ³ / ₈		

NOTE: All dimensions in inches subject to manufacturing tolerances.

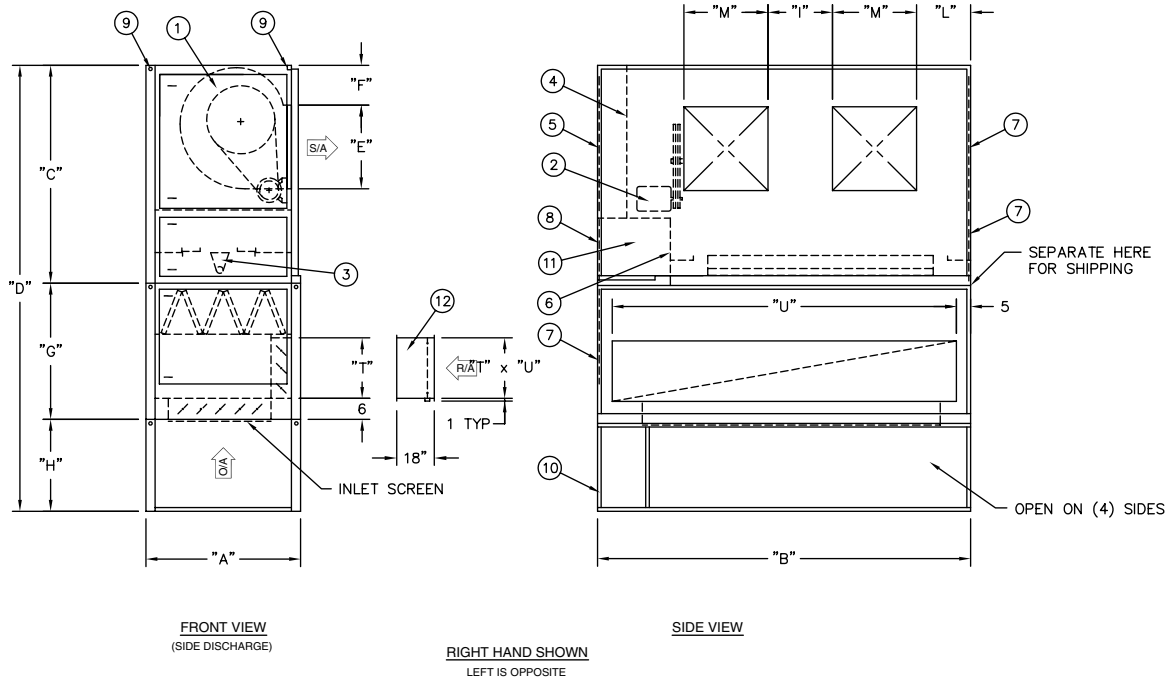
Dimensions

Vertical Models — Sizes 215 Through 230 with Mixing Box

C000551A

UNIT COMPONENTS

- | | | | |
|---------------------------|---------------------------------------|-------------------------------------|---|
| 1. Centrifugal supply fan | 4. Control cabinet | 7. Access door | 10. Unit support stand |
| 2. Fan motor | 5. Hinged control cabinet access door | 8. Access door (piping compartment) | 11. Manifold compartment |
| 3. Line burner | 6. Observation port | 9. Lifting lug | 12. Return air flow station
(required for ETL listed
Return Air Unit) |



Model	Dimensions						
	A	B	C	D	E	F	G
215	42	94	77	167	16	12 ³ / ₈	54
218	42	94	77	167	19	12 ³ / ₈	54
220	56	130	96	204	24 ⁷ / ₈	13 ³ / ₁₆	60
222	56	130	96	204	27 ³ / ₈	13 ³ / ₁₆	60
225	68	154	96	209	31 ³ / ₈	17 ⁹ / ₁₆	65
230	68	154	96	209	36 ⁷ / ₈	17 ⁹ / ₁₆	65

Model	Dimensions					
	H	I	L	M	T	U
215	36	22 ¹ / ₄	7 ⁷ / ₈	18 ¹⁵ / ₁₆	20 ¹ / ₄	84
218	36	16	7 ⁷ / ₈	22 ¹ / ₁₆	20 ¹ / ₄	84
220	48	29 ⁵ / ₈	12 ³ / ₈	25 ¹ / ₁₆	20 ¹ / ₄	120
222	48	24 ⁵ / ₈	12 ³ / ₈	27 ⁹ / ₁₆	20 ¹ / ₄	120
225	48	37 ⁵ / ₈	15 ³ / ₈	31 ¹ / ₂	26 ¹ / ₂	144
230	48	26 ⁵ / ₈	15 ³ / ₈	37	26 ¹ / ₂	144

NOTE: All dimensions in inches subject to manufacturing tolerances.

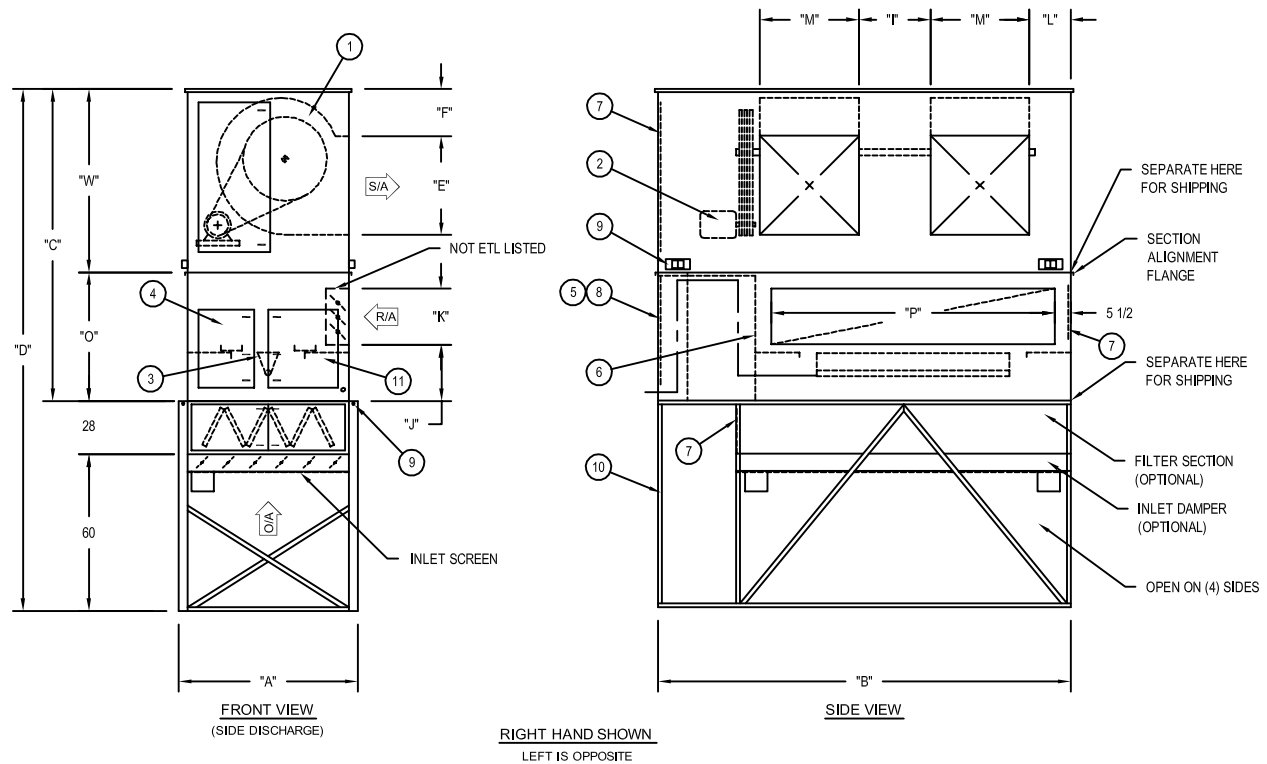
Dimensions

Vertical Models — Sizes 233 and 240

C000463

UNIT COMPONENTS

- | | | | |
|---------------------------|---------------------------------------|-------------------------------------|--------------------------|
| 1. Centrifugal supply fan | 4. Control cabinet | 7. Access door | 10. Unit support stand |
| 2. Fan motor | 5. Hinged control cabinet access door | 8. Access door (piping compartment) | 11. Manifold compartment |
| 3. Line burner | 6. Observation port | 9. Lifting lug | |



Model	Dimensions						
	A	B	C	D	E	F	I
233	76	175	117	205	43 ¹ / ₁₆	19 ⁷ / ₁₆	36
240	87 ¹ / ₄	210	131	219	41	33	39 ⁷ / ₈
Model	Dimensions						
	J	K	L	M	O	P	W
233	20	20 ¹ / ₄	17	39 ⁷ / ₈	45	130	72
240	20	20 ¹ / ₄	20	53 ⁷ / ₈	45	166	86

NOTE: All dimensions in inches subject to manufacturing tolerances.

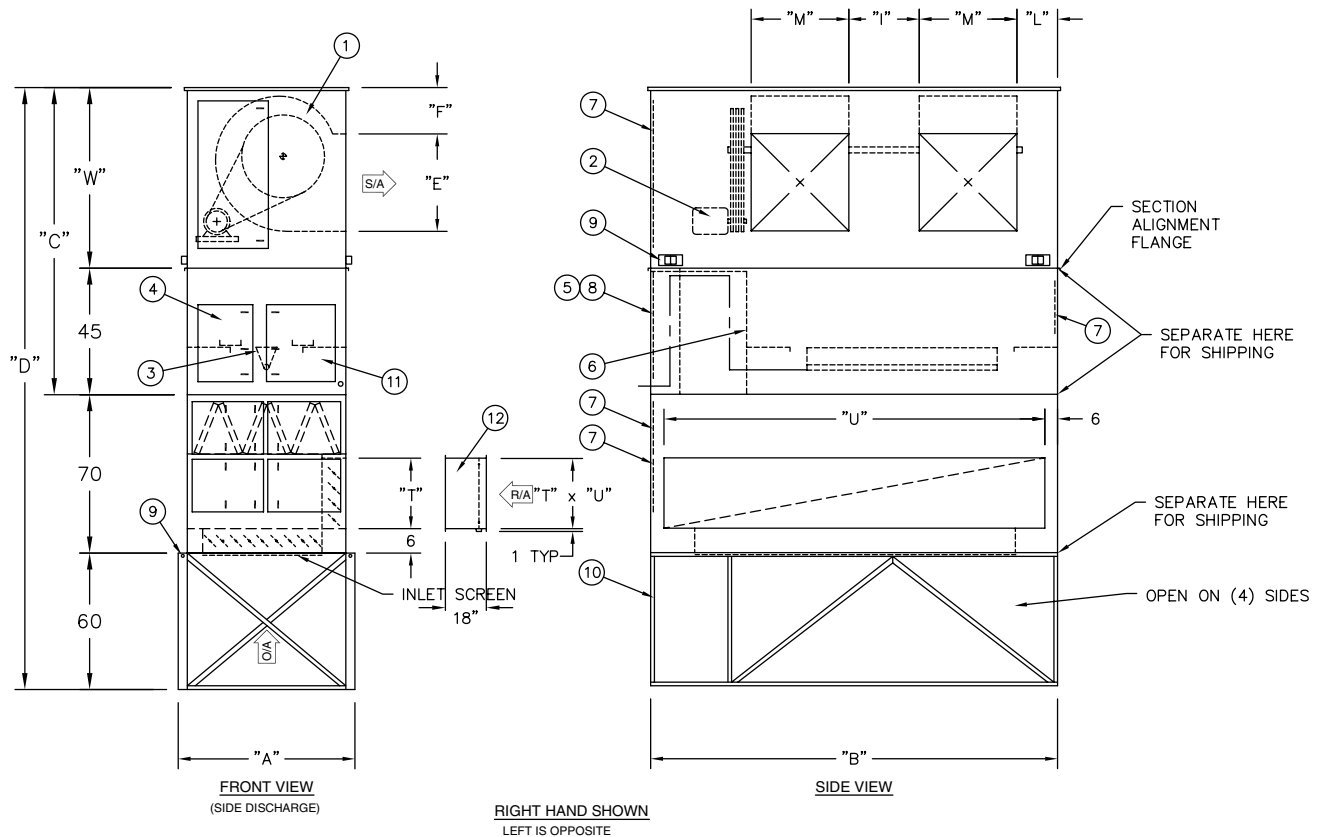
Dimensions

Vertical Models — Sizes 233 and 240 with Mixing Box

C000549A

UNIT COMPONENTS

- | | | | |
|---------------------------|---------------------------------------|-------------------------------------|---|
| 1. Centrifugal supply fan | 4. Control cabinet | 7. Access door | 10. Unit support stand |
| 2. Fan motor | 5. Hinged control cabinet access door | 8. Access door (piping compartment) | 11. Manifold compartment |
| 3. Line burner | 6. Observation port | 9. Lifting lug | 12. Return air flow station
(required for ETL listed
Return Air Unit) |



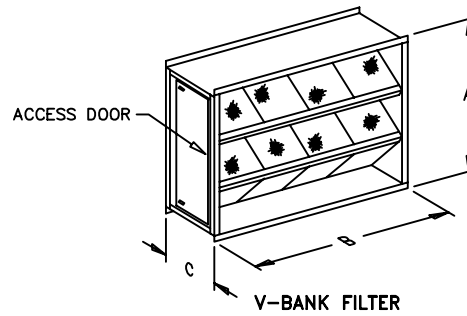
Model	Dimensions					
	A	B	C	D	E	F
233	76	175	117	247	43 ¹ / ₁₆	19 ⁷ / ₁₆
240	87 ¹ / ₄	210	131	261	41	33
Model	Dimensions					
	I	L	M	T	U	W
233	36	17	39 ⁷ / ₈	31 ¹ / ₄	163	72
240	39 ⁷ / ₈	20	58 ⁷ / ₈	31 ¹ / ₄	198	86

NOTE: All dimensions in inches subject to manufacturing tolerances.

Dimensions

V-Bank Filter and Filter Information

C000469



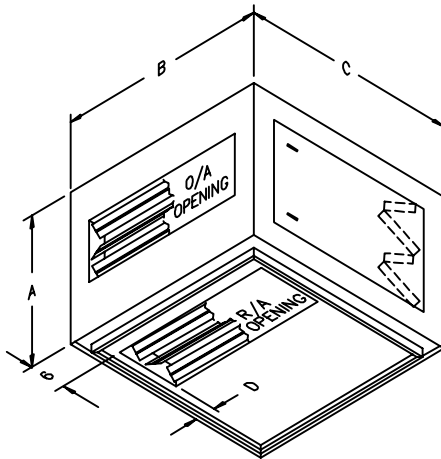
Dimension	MODEL										
	109-112	115-118	120	122	125	130	215-218	220-222	225-230	233	240
A	36	36	48	48	60	60	36	48	60	68	79 ¹ / ₄
B	47 ¹ / ₄	47 ¹ / ₄	62 ³ / ₈	62 ³ / ₈	63	63	91 ¹ / ₂	101 ⁵ / ₈	121 ³ / ₈	141 ¹ / ₂	177
C	22	22	22	22	28	28	22	22	28	28	28

Model	109-112	115-118	120-122	125-130	215-218	220-222	225-230	233	240
Filter Qty.	(9)	(9)	(15)	(18)	(18)	(25)	(36)	(49)	(88)
Filter Size	15 x 20 x 2	15 x 20 x 2	20 x 20 x 2	20 x 25 x 2	15 x 20 x 2	20 x 20 x 2	20 x 25 x 2	20 x 25 x 2	16 x 25 x 2

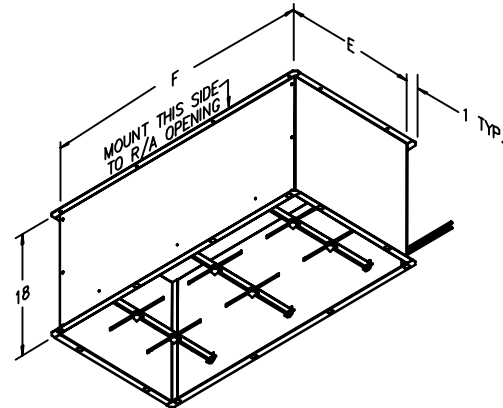
NOTE: All dimensions in inches subject to manufacturing tolerances.

Mixing Box and Filter Information

C000469



MIXING BOX



RETURN AIR FLOW STATION

Dimension	Model										
	109-112	115-118	120	122	125	130	215-218	220-222	225-230	233	240
A	36	36	48	48	60	60	36	48	60	68	79 ¹ / ₄
B	52	52	78	78	91	91	94	130	154	175	210
C	54	54	60	60	65	65	54	60	65	70	70
D	5	5	5	5	5	5	5	5	5	6	6
E	20 ¹ / ₄	20 ¹ / ₄	20 ¹ / ₄	20 ¹ / ₄	26 ¹ / ₂	26 ¹ / ₂	20 ¹ / ₄	20 ¹ / ₄	26 ¹ / ₂	31 ¹ / ₄	31 ¹ / ₄
F	42	42	68	68	81	81	84	120	144	163	198

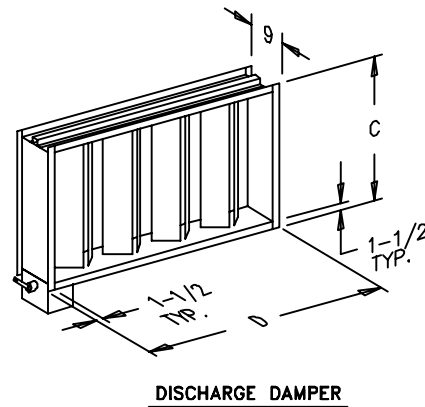
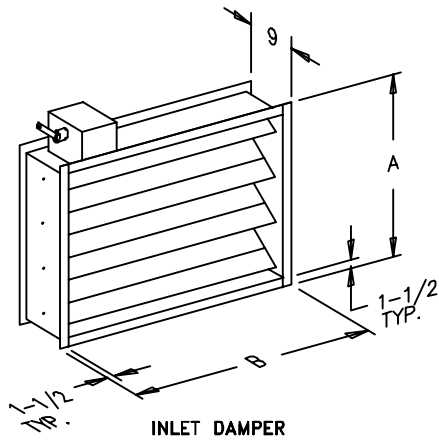
Model	109-118	120	122	125	130	215-218	220-222	225-230	233	240
R/A - I.D.	42 x 20 ¹ / ₄	68 x 20 ¹ / ₄	68 x 20 ¹ / ₄	81 x 26 ¹ / ₂	81 x 26 ¹ / ₂	84 x 20 ¹ / ₄	120 x 20 ¹ / ₄	144 x 26 ¹ / ₂	163 x 31 ¹ / ₄	198 x 31 ¹ / ₄
O/A - I.D.	42 x 20 ¹ / ₄	44 x 32 ¹ / ₄	44 x 32 ¹ / ₄	51 x 44 ¹ / ₄	51 x 44 ¹ / ₄	84 x 20 ¹ / ₄	96 x 32 ¹ / ₄	114 x 44 ¹ / ₄	130 x 52	165 x 52

NOTES: 1) Refer to V-bank information above for filter quantity and size.
2) All dimensions in inches subject to manufacturing tolerances.

Dimensions

Dampers

C000468



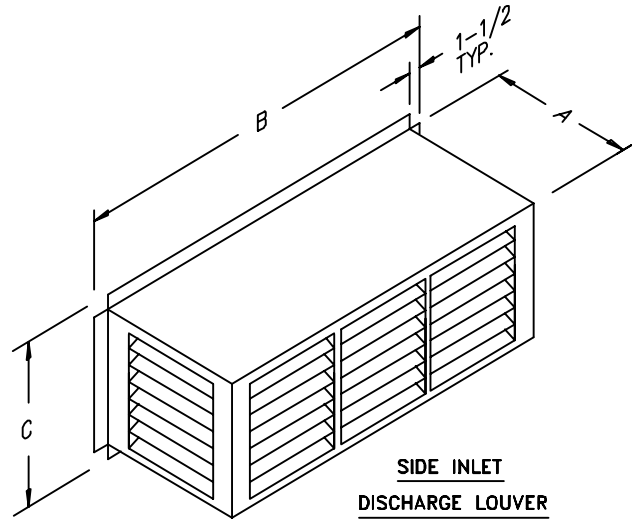
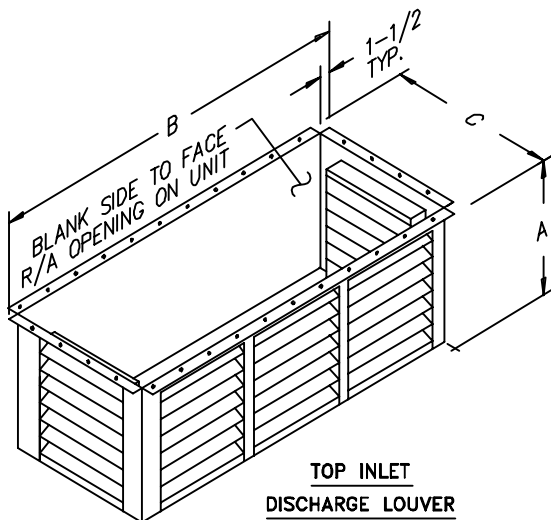
Dimension	Model								
	109-112	115-118	120-122	125-130	215-218	220-222	225-230	233	240*
A	36	36	48	60	36	48	60	68	79 ¹ / ₄
B	47 ¹ / ₄	47 ¹ / ₄	62 ³ / ₈	63	91 ¹ / ₂	101 ⁵ / ₈	121 ³ / ₈	141 ¹ / ₂	177
C	17 ⁷ / ₁₆	22 ⁷ / ₈	31 ¹ / ₄	40 ³ / ₄	22 ⁷ / ₈	31 ¹ / ₄	40 ³ / ₄	47	45
D	20 ¹³ / ₁₆	26 ¹⁵ / ₁₆	32 ¹ / ₂	41 ⁷ / ₈	64 ⁷ / ₈	84 ¹ / ₂	105 ³ / ₈	120 ⁵ / ₈	58 ³ / ₄

*On 240 discharge damper ONLY, there are two (2) dampers side by side. Dimensions shown are for each damper. Overall width of 240 discharge damper is 152¹/₂".

NOTE: All dimensions in inches subject to manufacturing tolerances.

Discharge Louvers

C000468



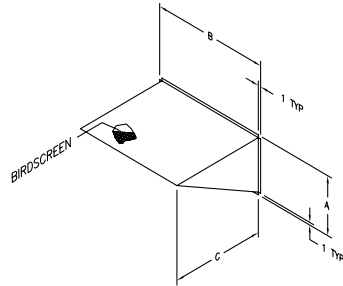
Dimension	Model								
	109-112	115-118	120-122	125-130	215-218	220-222	225-230	233	240
A	21	24	45	45	24	45	45	45	45
B	20 ¹³ / ₁₆	26 ¹⁵ / ₁₆	32 ¹ / ₂	41 ⁷ / ₈	64 ⁷ / ₈	84 ¹ / ₂	105 ³ / ₈	120 ⁵ / ₈	152 ¹ / ₂
C	26	23	31 ¹ / ₄	40 ³ / ₄	23	31 ¹ / ₄	40 ³ / ₄	47	45

NOTE: All dimensions in inches subject to manufacturing tolerances.

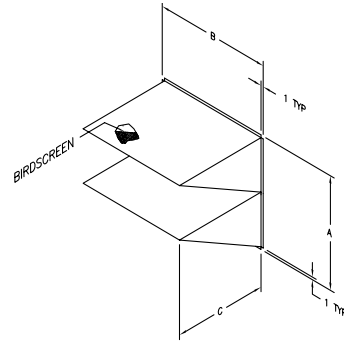
Dimensions

Intake Hoods and Filter Information

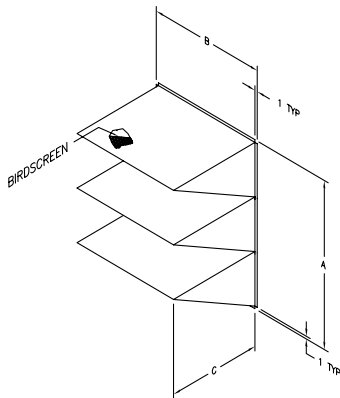
C000482A



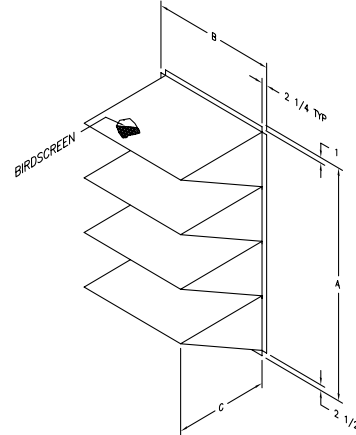
FOR MODELS 109-112



FOR MODELS 115-118, 120-122, 215-218, 220-222



FOR MODELS 125-130, 225-230, 233



FOR MODEL 240

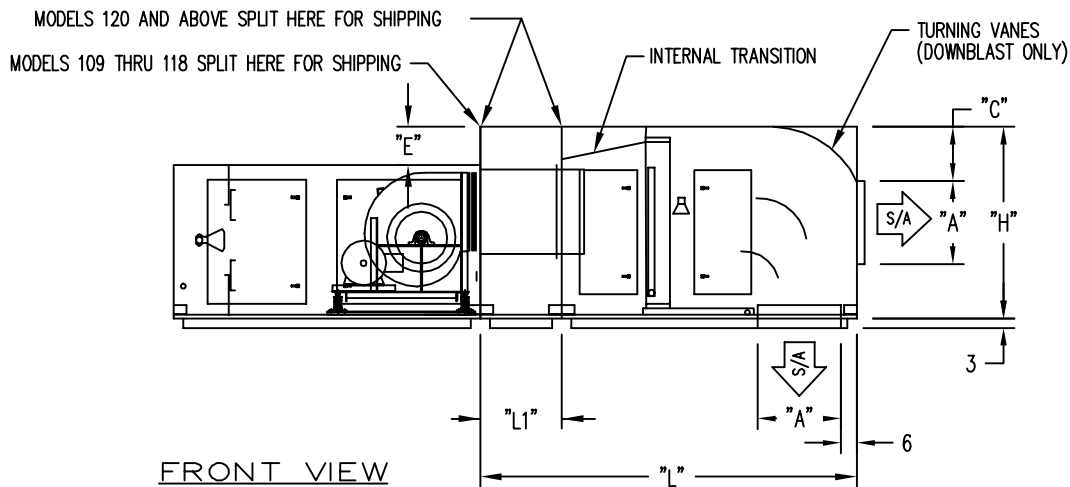
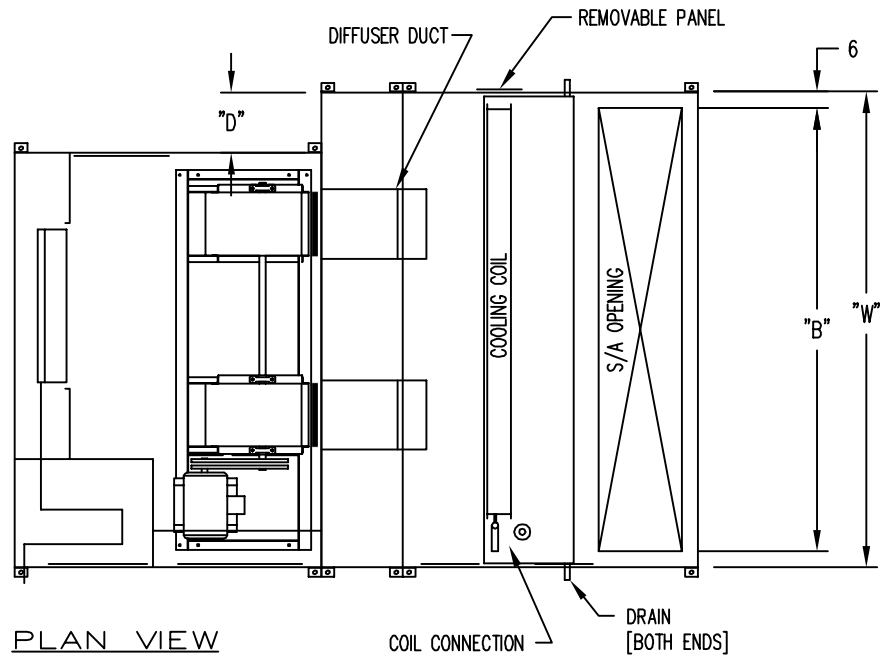
Dimension	Model								
	109-112	115-118	120-122	125-130	215-218	220-222	225-230	233	240
A	36	36	48	60	36	48	60	68	79
B	47 ¹ / ₄	47 ¹ / ₄	62 ³ / ₈	63	91 ¹ / ₂	101 ⁵ / ₈	121 ³ / ₈	140 ¹ / ₂	177
C	32	32	38 ¹ / ₂	53	32	44 ¹ / ₂	56 ¹ / ₂	56 ¹ / ₂	51 ¹ / ₂
Filter Qty. & Size	(4) 16 x 20	(8) 16 x 20	(12) 20 x 20	(30) 15 x 20	(16) 16 x 20	(18) 20 x 25	(66) 15 x 20	(69) 16 x 20	(64) 20 x 25

NOTE: All dimensions in inches subject to manufacturing tolerances.

Dimensions

Cooling Coil Section

P000882



Notes:

1. Shipped separate and assembled in the field.
2. Dual blower unit shown, single blower unit similar.

Model	Dimensions									Max Coil Size FH x FL
	L	L1	W	H	A	B	C	D	E	
109-112	82	—	52	42	18	40	12	0	6	33 x 40
115-118	110	—	64	60	18	52	21	12	24	51 x 51
120-122	124	24	98	60	26	86	17	20	12	51 x 85
125-130	156	56	116	93	34 ¹ / ₂	104	29	25	33	84 x 103
215-218	110	17	106	60	18	94	21	12	24	51 x 93
220-222	124	24	154	72	26	142	23	24	24	63 x 141
225-230	156	56	179	93	34 ¹ / ₂	167	29	25	33	84 x 166 @ 50,000
233	—	—	—	—	—	—	—	—	—	
240	—	—	—	—	—	—	—	—	—	

NOTE: All dimensions in inches subject to manufacturing tolerances.

Performance Table

Four Row DX Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	4 Row DX		
					Total MBH (1)	LAT	Air P.D. (3)
109	1) 21 x 24	1,600	457	0.31	66.75	68.8/66.6	0.39
	1) 24 x 24	1,800	450	0.34	75.32	68.7/66.5	0.38
	1) 24 x 24	2,000	500	0.36	81.98	69.2/66.8	0.45
	1) 27 x 27	2,250	444	0.39	107.40	67.0/64.8	0.37
	1) 27 x 27	2,500	494	0.43	116.44	67.5/65.2	0.45
	1) 27 x 33	2,750	444	0.47	152.08	64.6/62.5	0.37
	1) 27 x 33	3,000	485	0.49	162.03	65.1/62.9	0.43
112	1) 27 x 36	3,250	481	0.35	181.41	64.5/62.4	0.43
	1) 27 x 40	3,500	467	0.36	173.81	66.4/64.3	0.41
	1) 30 x 40	3,750	450	0.38	177.75	67.1/64.9	0.38
	1) 30 x 40	4,000	480	0.40	186.56	67.4/65.1	0.42
	1) 33 x 40	4,250	464	0.42	210.33	66.5/64.3	0.40
115	1) 36 x 38	4,500	474	0.35	256.55	64.1/62.0	0.42
	1) 36 x 42	5,000	476	0.37	249.13	66.4/64.2	0.42
	1) 39 x 43	5,500	472	0.39	283.55	65.9/63.7	0.41
	1) 39 x 47	6,000	471	0.43	324.54	65.0/62.9	0.41
118	1) 42 x 48	6,500	464	0.35	352.37	65.0/62.9	0.40
	1) 45 x 48	7,000	467	0.37	382.79	64.0/62.7	0.41
	1) 45 x 51	7,500	471	0.38	419.74	64.4/62.3	0.41
	1) 48 x 51	8,000	471	0.40	443.59	64.6/62.5	0.41
	1) 48 x 51	8,500	500	0.43	463.18	65.0/62.8	0.45
120	1) 39 x 66	9,000	503	0.34	485.25	65.2/63.0	0.46
	1) 42 x 66	9,500	494	0.35	515.03	65.1/62.9	0.45
	1) 42 x 68	10,000	504	0.36	545.65	65.0/62.8	0.46
	1) 45 x 68	10,500	494	0.37	576.37	64.9/62.7	0.45
	1) 45 x 71	11,000	496	0.38	613.08	64.6/62.4	0.45
122	1) 45 x 71	11,000	496	0.34	613.08	64.6/62.4	0.45
	1) 45 x 78	12,000	492	0.36	689.82	64.0/61.9	0.44
	1) 48 x 79	13,000	494	0.37	749.09	64.0/61.8	0.45
	1) 45 x 85	14,000	494	0.39	819.55	63.6/61.5	0.45
	1) 51 x 85	15,000	498	0.42	876.03	63.7/61.6	0.45
	2) 30 x 68	14,000	494	0.33	768.50	64.9/62.7	0.45
125	2) 30 x 72	15,000	500	0.35	837.88	64.6/62.4	0.45
	2) 30 x 77	16,000	499	0.36	912.86	64.2/62.0	0.45
	2) 33 x 79	18,000	497	0.39	1034.90	64.0/61.9	0.45
	2) 36 x 80	20,000	500	0.43	1151.28	64.0/61.8	0.45
	2) 36 x 88	22,000	500	0.36	1123.82	66.1/63.8	0.45
130	2) 36 x 96	24,000	500	0.38	1283.00	65.3/63.1	0.45
	2) 39 x 96	26,000	500	0.40	1389.92	65.3/63.1	0.45
	2) 39 x 103	28,000	502	0.43	1541.84	64.8/62.6	0.46
	2) 42 x 103	30,000	499	0.46	1654.46	64.8/62.6	0.45

(1) Nominal cooling capacity based on 4 row/8 FPI DX coil with 45° suction temperature and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss _____ " W.C.

B. Coil Air P.D. _____ " W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop _____ " W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Four Row DX Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	4 Row DX		
					Total MBH (1)	LAT	Air P.D. (3)
215	1) 42 x 62	9,000	498	0.35	472.57	65.6/63.4	0.45
	1) 42 x 65	9,500	501	0.36	509.32	65.3/63.1	0.46
	1) 42 x 68	10,000	504	0.37	545.65	65.0/62.8	0.46
	1) 42 x 72	10,500	500	0.38	586.52	64.6/62.4	0.45
	1) 42 x 76	11,000	496	0.39	626.29	64.2/62.0	0.45
	1) 42 x 79	11,500	499	0.41	660.35	64.0/61.9	0.45
	1) 42 x 80	12,000	514	0.43	684.48	64.2/62.0	0.48
218	1) 45 x 80	12,500	500	0.34	719.55	64.0/61.8	0.45
	1) 45 x 83	13,000	501	0.35	753.89	63.8/61.7	0.46
	1) 45 x 90	14,000	498	0.36	724.49	65.9/63.6	0.45
	1) 48 x 90	15,000	500	0.38	775.31	65.9/63.6	0.45
	1) 51 x 93	16,000	486	0.40	847.85	65.4/63.3	0.43
	1) 51 x 93	17,000	516	0.43	886.57	65.8/63.5	0.48
220	2) 30 x 86	18,000	502	0.34	903.82	66.4/64.1	0.46
	2) 30 x 91	19,000	501	0.35	987.60	65.8/63.6	0.46
	2) 30 x 96	20,000	500	0.36	1069.16	65.3/63.1	0.45
	2) 30 x 101	21,000	499	0.37	1149.16	64.9/62.7	0.45
	2) 30 x 106	22,000	498	0.38	1227.38	64.6/62.4	0.45
	2) 30 x 111	23,000	497	0.39	1304.04	64.3/62.1	0.45
	2) 30 x 111	24,000	519	0.41	1342.96	64.6/62.3	0.48
	2) 30 x 120	25,000	500	0.43	1446.28	63.9/61.8	0.45
	2) 30 x 125	26,000	499	0.44	1519.00	63.7/61.6	0.45
222	2) 30 x 120	25,000	500	0.36	1446.28	63.9/61.8	0.45
	2) 30 x 125	26,000	499	0.37	1519.00	63.7/61.6	0.45
	2) 30 x 130	27,000	498	0.38	1590.44	63.5/61.4	0.45
	2) 30 x 135	28,000	498	0.39	1537.80	64.9/62.7	0.45
	2) 30 x 141	29,000	494	0.41	1624.16	64.5/62.3	0.45
	2) 31 1/2 x 139	30,000	493	0.42	1671.42	64.6/62.4	0.44
	2) 31 1/2 x 139	31,000	510	0.44	1701.50	64.8/62.6	0.47
225	2) 39 x 111	30,000	499	0.35	1699.20	64.3/62.1	0.45
	2) 39 x 118	32,000	501	0.36	1842.66	64.0/61.8	0.46
	2) 39 x 125	34,000	502	0.37	1982.60	63.7/61.6	0.46
	2) 39 x 133	36,000	500	0.38	2127.22	63.5/61.4	0.45
	2) 39 x 140	38,000	501	0.41	2113.16	64.6/62.5	0.46
	2) 39 x 147	40,000	502	0.43	2260.98	64.3/62.2	0.46
	2) 39 x 155	42,000	500	0.45	2415.24	64.0/61.9	0.46
	2) 42 x 151	44,000	500	0.47	2512.38	64.1/62.0	0.45
	2) 42 x 158	46,000	499	0.48	2660.82	63.9/61.8	0.45
230	2) 42 x 151	44,000	500	0.36	2512.38	64.1/62.0	0.45
	2) 42 x 166	48,000	496	0.38	2815.64	63.6/61.5	0.45
	2) 42 x 166	50,000	516	0.39	2894.58	63.9/61.7	0.48

(1) Nominal cooling capacity based on 4 row/8 FPI DX coil with 45° suction temperature and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss _____" W.C.

B. Coil Air P.D. _____" W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop _____" W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Six Row DX Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	6 Row DX		
					Total MBH (1)	LAT	Air P.D. (3)
109	1) 21 x 24	1,600	457	0.31	107.03	59.6/58.8	0.59
	1) 24 x 24	1,800	450	0.34	121.02	59.5/58.7	0.57
	1) 24 x 24	2,000	500	0.36	131.23	60.1/59.2	0.68
	1) 27 x 27	2,250	444	0.39	157.03	58.6/57.8	0.56
	1) 27 x 27	2,500	494	0.43	170.23	59.3/58.4	0.67
	1) 27 x 33	2,750	444	0.47	183.15	59.7/58.9	0.56
	1) 27 x 33	3,000	485	0.49	196.04	60.2/59.3	0.65
112	1) 27 x 36	3,250	481	0.35	219.51	59.5/58.6	0.64
	1) 27 x 40	3,500	467	0.36	244.97	58.6/57.8	0.61
	1) 30 x 40	3,750	450	0.38	262.28	58.6/57.8	0.57
	1) 30 x 40	4,000	480	0.40	275.82	59.0/58.1	0.64
	1) 33 x 40	4,250	464	0.42	297.36	58.6/57.6	0.60
115	1) 36 x 38	4,500	474	0.35	306.73	59.2/58.4	0.61
	1) 36 x 42	5,000	476	0.37	349.25	58.6/57.8	0.63
	1) 39 x 43	5,500	472	0.39	389.13	58.3/57.5	0.62
	1) 39 x 47	6,000	471	0.43	401.25	59.7/58.8	0.62
118	1) 42 x 48	6,500	464	0.35	438.69	59.4/58.6	0.60
	1) 45 x 48	7,000	467	0.37	471.96	59.5/58.6	0.61
	1) 45 x 51	7,500	471	0.38	515.33	59.0/58.2	0.62
	1) 48 x 51	8,000	471	0.40	549.69	59.0/58.2	0.62
	1) 48 x 51	8,500	500	0.43	576.37	59.4/58.5	0.68
120	1) 39 x 66	9,000	503	0.34	579.05	60.6/59.7	0.69
	1) 42 x 66	9,500	494	0.35	613.63	60.5/59.6	0.67
	1) 42 x 68	10,000	504	0.36	651.95	60.3/59.4	0.69
	1) 45 x 68	10,500	494	0.37	687.35	60.2/59.3	0.67
	1) 45 x 71	11,000	496	0.38	732.48	59.8/58.9	0.67
122	1) 45 x 71	11,000	496	0.34	732.48	59.8/58.9	0.67
	1) 45 x 78	12,000	492	0.36	825.31	59.0/58.2	0.66
	1) 48 x 79	13,000	494	0.37	896.82	59.0/58.1	0.67
	1) 45 x 85	14,000	494	0.39	983.19	58.5/57.7	0.67
	1) 51 x 85	15,000	498	0.42	1051.45	58.6/57.7	0.68
125	2) 30 x 68	14,000	494	0.33	916.46	60.2/59.3	0.67
	2) 30 x 72	15,000	500	0.35	1001.52	59.7/58.9	0.68
	2) 30 x 77	16,000	499	0.36	1093.12	59.2/58.3	0.68
	2) 33 x 79	18,000	497	0.39	1239.56	59.0/58.2	0.68
	2) 36 x 80	20,000	500	0.43	1381.78	59.0/58.1	0.68
130	2) 36 x 88	22,000	500	0.36	1552.12	58.4/57.6	0.68
	2) 36 x 96	24,000	500	0.38	1716.36	58.1/57.2	0.68
	2) 39 x 96	26,000	500	0.40	1859.40	58.1/57.2	0.68
	2) 39 x 103	28,000	502	0.43	1846.80	60.0/59.1	0.69
	2) 42 x 103	30,000	499	0.46	1837.26	61.6/60.7	0.69

(1) Nominal cooling capacity based on 6 row/8 FPI DX coil with 45° suction temperature and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss _____ " W.C.

B. Coil Air P.D. _____ " W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop _____ " W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Six Row DX Coil Data							
Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	6 Row DX		
					Total MBH (1)	LAT	Air P.D. (3)
215	1) 42 x 62	9,000	498	0.35	549.69	61.7/60.7	0.68
	1) 42 x 65	9,500	501	0.36	607.31	60.7/59.8	0.69
	1) 42 x 68	10,000	504	0.37	651.95	60.3/59.4	0.69
	1) 42 x 72	10,500	500	0.38	701.06	59.7/58.9	0.68
	1) 42 x 76	11,000	496	0.39	749.29	59.3/58.4	0.67
	1) 42 x 79	11,500	499	0.41	791.24	59.0/58.2	0.68
	1) 42 x 80	12,000	514	0.43	822.89	59.1/58.3	0.72
218	1) 45 x 80	12,500	500	0.34	862.65	59.0/58.1	0.68
	1) 45 x 83	13,000	501	0.35	905.04	58.8/57.9	0.69
	1) 45 x 90	14,000	498	0.36	993.00	58.3/57.4	0.68
	1) 48 x 90	15,000	500	0.38	1062.17	58.3/57.5	0.68
	1) 51 x 93	16,000	486	0.40	1146.98	58.0/57.2	0.65
	1) 51 x 93	17,000	516	0.43	1201.00	58.4/57.5	0.72
220	2) 30 x 86	18,000	502	0.34	1262.58	58.6/57.7	0.69
	2) 30 x 91	19,000	501	0.35	1347.22	58.3/57.5	0.69
	2) 30 x 96	20,000	500	0.36	1430.30	58.1/57.2	0.68
		21,000		0.37	CF		
		22,000		0.38			
		23,000		0.39			
		24,000		0.41			
		25,000		0.43			
222		26,000		0.44	CF		
		25,000		0.36			
		26,000		0.37			
		27,000		0.38			
		28,000		0.39			
		29,000		0.41			
		30,000		0.42			
225		31,000		0.44	CF		
		30,000		0.35			
		32,000		0.36			
		34,000		0.37			
		36,000		0.38			
		38,000		0.41			
		40,000		0.43			
		42,000		0.45			
230		44,000		0.47	CF		
		46,000		0.48			
		44,000		0.36			
		48,000		0.38			
		50,000		0.39			

(1) Nominal cooling capacity based on 6 row/8 FPI DX coil with 45° suction temperature and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss _____ " W.C.

B. Coil Air P.D. _____ " W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop _____ " W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Four Row CW Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	4 Row CW				
					Total MBH (1)	LAT	Air P.D. (3)	GPM	FPD (ft)
109	1) 21 x 24	1,600	457	0.31	83.35	65.6/63.5	0.39	16.7	3.28
	1) 24 x 24	1,800	450	0.34	94.20	65.5/63.5	0.38	18.8	3.20
	1) 24 x 24	2,000	500	0.36	100.06	66.4/64.1	0.45	20.0	3.57
	1) 27 x 27	2,250	444	0.39	121.61	65.0/62.9	0.37	24.3	4.23
	1) 27 x 27	2,500	494	0.43	129.92	65.8/63.6	0.45	26.0	4.76
	1) 27 x 33	2,750	444	0.47	157.67	63.9/61.9	0.37	31.5	7.11
	1) 27 x 33	3,000	485	0.49	165.98	64.7/62.5	0.43	33.0	7.72
112	1) 27 x 36	3,250	481	0.35	150.67	67.5/65.2	0.46	30.0	1.25
	1) 27 x 40	3,500	467	0.36	170.61	66.7/64.5	0.41	34.0	1.61
	1) 30 x 40	3,750	450	0.38	185.61	66.4/64.3	0.38	37.0	1.55
	1) 30 x 40	4,000	480	0.40	192.87	66.9/64.7	0.42	38.5	1.67
	1) 33 x 40	4,250	464	0.42	207.91	66.7/64.5	0.40	41.5	1.61
115	1) 36 x 38	4,500	474	0.35	214.78	67.1/64.8	0.42	43.0	1.44
	1) 36 x 42	5,000	476	0.37	245.65	66.6/64.4	0.42	49.0	1.88
	1) 39 x 43	5,500	472	0.39	273.01	66.5/64.3	0.41	54.4	1.98
	1) 39 x 47	6,000	471	0.43	305.26	66.1/63.9	0.41	61.0	2.50
118	1) 42 x 48	6,500	464	0.35	334.88	65.8/63.7	0.40	67.0	2.61
	1) 45 x 48	7,000	467	0.37	359.91	65.9/63.7	0.41	72.0	2.62
	1) 45 x 51	7,500	471	0.38	390.67	65.7/63.5	0.41	78.0	3.09
	1) 48 x 51	8,000	471	0.40	416.40	65.7/63.5	0.41	83.0	3.07
	1) 51 x 51	8,500	471	0.43	442.19	65.7/63.5	0.41	88.0	3.06
120	1) 39 x 66	9,000	503	0.34	488.31	65.1/62.9	0.46	98.0	6.58
	1) 42 x 66	9,500	494	0.35	517.72	65.0/62.8	0.45	103.0	6.31
	1) 42 x 68	10,000	504	0.36	551.01	64.8/62.6	0.46	110.0	7.17
	1) 45 x 68	10,500	494	0.37	583.47	64.6/62.5	0.45	117.0	7.08
	1) 45 x 71	11,000	496	0.38	614.90	64.5/62.4	0.45	123.0	7.88
122	1) 45 x 71	11,000	496	0.34	614.90	64.5/62.4	0.45	123.0	7.88
	1) 45 x 78	12,000	492	0.36	683.97	64.2/62.0	0.44	137.0	9.94
	1) 48 x 79	13,000	494	0.37	741.07	64.2/62.0	0.45	148.0	10.22
	1) 48 x 85	14,000	494	0.39	808.06	63.9/61.8	0.45	162.0	12.40
	1) 51 x 85	15,000	498	0.42	863.09	64.0/61.9	0.45	173.0	12.52
125	2) 30 x 68	14,000	494	0.33	691.30	66.6/64.3	0.45	138.0	2.17
	2) 30 x 72	15,000	500	0.35	750.46	66.4/64.1	0.45	150.0	2.57
	2) 30 x 77	16,000	499	0.36	814.74	66.1/63.9	0.45	162.0	3.02
	2) 33 x 79	18,000	497	0.39	1012.98	64.4/62.3	0.46	202.0	3.82
	2) 36 x 80	20,000	500	0.43	1127.12	64.4/62.2	0.46	226.0	3.49
130	2) 36 x 88	22,000	500	0.36	1264.46	64.0/61.9	0.46	252.0	5.06
	2) 36 x 96	24,000	500	0.38	1405.18	63.0/61.5	0.46	280.0	6.34
	2) 39 x 96	26,000	500	0.40	1523.18	63.7/61.5	0.46	304.0	6.36
	2) 39 x 103	28,000	502	0.43	1658.30	63.4/61.3	0.47	330.0	7.59
	2) 42 x 103	30,000	499	0.46	1782.18	63.4/61.3	0.46	356.0	7.62

(1) Nominal cooling capacity based on 4 row/8 FPI CW coil with 45°EWT, 55° LWT, and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss _____ " W.C.

B. Coil Air P.D. _____ " W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop _____ " W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Four Row CW Coil Data

Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	4 Row CW				
					Total MBH (1)	LAT	Air P.D. (3)	GPM	FPD (ft)
215	1) 42 x 62	9,000	492	0.35	481.50	65.3/63.1	0.45	96.0	5.43
	1) 42 x 65	9,500	501	0.36	514.30	65.1/62.9	0.46	103.0	6.27
	1) 42 x 68	10,000	504	0.37	490.19	66.8/64.4	0.46	98.0	2.22
	1) 42 x 72	10,500	500	0.38	525.33	66.4/64.1	0.45	105.0	2.57
	1) 42 x 76	11,000	496	0.39	560.49	66.1/63.9	0.45	112.0	2.94
	1) 42 x 79	11,500	499	0.41	590.73	66.0/63.7	0.45	118.0	3.28
	1) 42 x 80	12,000	514	0.43	611.02	66.2/63.9	0.48	122.0	3.49
218	1) 45 x 80	12,500	500	0.34	644.41	65.9/63.7	0.45	129.0	3.41
	1) 45 x 83	13,000	501	0.35	675.48	65.8/63.6	0.46	135.0	3.76
	1) 45 x 90	14,000	498	0.36	742.98	65.5/63.2	0.45	148.0	4.58
	1) 48 x 90	15,000	500	0.38	794.23	65.5/63.3	0.45	158.0	4.58
	1) 51 x 93	16,000	486	0.40	865.12	65.1/62.9	0.43	173.0	4.90
	1) 51 x 93	17,000	516	0.43	895.44	65.6/63.4	0.48	178.0	5.16
220	2) 30 x 86	18,000	502	0.34	869.42	67.0/64.7	0.46	174.0	1.82
	2) 30 x 91	19,000	501	0.35	933.28	66.7/64.4	0.46	186.0	2.10
	2) 30 x 96	20,000	500	0.36	1000.62	66.4/64.1	0.45	200.0	2.44
	2) 30 x 101	21,000	499	0.37	1064.86	66.2/63.9	0.45	212.0	2.95
	2) 30 x 106	22,000	498	0.38	1132.42	66.0/63.7	0.45	226.0	3.16
	2) 30 x 111	23,000	497	0.39	1200.04	65.7/63.5	0.45	240.0	3.59
	2) 30 x 116	24,000	497	0.41	1264.74	65.6/63.3	0.45	252.0	3.99
	2) 30 x 120	25,000	500	0.43	1324.70	65.5/63.3	0.45	264.0	3.67
	2) 30 x 125	26,000	499	0.44	1395.50	65.3/63.0	0.45	280.0	4.98
222	2) 30 x 120	25,000	500	0.36	1324.70	65.5/63.3	0.45	264.0	3.67
	2) 30 x 125	26,000	499	0.37	1395.50	65.3/63.0	0.45	280.0	4.98
	2) 30 x 130	27,000	498	0.38	1457.68	65.2/63.0	0.45	290.0	5.39
	2) 30 x 135	28,000	498	0.39	1549.50	64.7/62.5	0.45	310.0	6.18
	2) 30 x 141	29,000	494	0.41	1621.16	64.5/62.4	0.45	324.0	6.83
	2) 31 1/2 x 139	30,000	493	0.42	1675.10	64.5/62.4	0.44	336.0	6.63
	2) 31 1/2 x 141	31,000	503	0.44	1718.74	64.7/62.5	0.46	342.0	4.53
225	2) 39 x 111	30,000	499	0.35	1559.20	65.8/63.6	0.45	310.0	3.55
	2) 39 x 118	32,000	501	0.36	1685.38	65.6/63.3	0.46	336.0	4.21
	2) 39 x 125	34,000	502	0.37	1815.88	65.4/63.1	0.46	362.0	4.93
	2) 39 x 133	36,000	500	0.38	1956.82	65.0/62.8	0.45	390.0	5.79
	2) 39 x 140	38,000	501	0.41	2107.46	64.7/62.5	0.46	420.0	6.77
	2) 39 x 147	40,000	502	0.43	2236.58	64.5/62.4	0.46	446.0	7.71
	2) 39 x 155	42,000	500	0.45	2377.04	64.3/62.1	0.46	476.0	8.88
	2) 42 x 151	44,000	500	0.47	2482.12	64.4/62.2	0.45	498.0	8.33
	2) 42 x 158	46,000	499	0.48	2614.64	64.2/62.1	0.45	499.0	9.33
230	2) 42 x 151	44,000	500	0.36	2482.12	64.4/62.2	0.45	498.0	8.33
	2) 42 x 166	48,000	496	0.38	2753.88	64.0/61.9	0.45	550.0	10.42
	2) 42 x 166	50,000	516	0.39	2813.78	64.5/62.2	0.48	562.0	10.83

(1) Nominal cooling capacity based on 4 row/8 FPI CW coil with 45° EWT, 55° LWT, and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss _____ " W.C.

B. Coil Air P.D. _____ " W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop _____ " W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Six Row CW Coil Data									
Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss ⁽²⁾ (3)	6 Row CW				
					Total MBH ⁽¹⁾	LAT	Air P.D. ⁽³⁾	GPM	FPD (ft)
109	1) 21 x 24	1,600	457	0.31	95.27	62.1/61.2	0.59	19.0	1.00
	1) 24 x 24	1,800	450	0.34	107.95	61.9/61.1	0.57	21.6	0.99
	1) 24 x 24	2,000	500	0.36	115.38	62.8/61.8	0.68	26.0	1.11
	1) 27 x 27	2,250	444	0.39	140.26	61.2/60.3	0.56	28.0	1.31
	1) 27 x 27	2,500	494	0.43	150.02	62.0/61.1	0.67	30.0	1.48
	1) 27 x 33	2,750	444	0.47	180.59	60.0/59.2	0.56	36.0	2.17
	1) 27 x 33	3,000	485	0.49	191.14	60.8/59.9	0.65	68.0	2.39
112	1) 27 x 36	3,250	481	0.35	212.50	60.2/59.3	0.64	42.6	3.01
	1) 27 x 40	3,500	467	0.36	235.74	59.5/58.7	0.61	47.0	3.71
	1) 30 x 40	3,750	450	0.38	255.30	59.2/58.4	0.57	51.0	3.56
	1) 30 x 40	4,000	480	0.40	267.48	59.7/58.8	0.64	53.5	3.87
	1) 33 x 40	4,250	464	0.42	286.55	59.5/58.6	0.60	57.0	3.66
115	1) 36 x 38	4,500	474	0.35	299.17	59.8/59.0	0.62	60.0	3.37
	1) 36 x 42	5,000	476	0.37	338.18	59.4/58.6	0.63	67.5	4.30
	1) 39 x 43	5,500	472	0.39	374.89	59.2/58.4	0.62	75.0	4.54
	1) 39 x 47	6,000	471	0.43	415.61	58.8/58.0	0.62	83.0	5.62
118	1) 42 x 48	6,500	464	0.35	454.29	58.6/57.8	0.60	91.0	5.84
	1) 45 x 48	7,000	467	0.37	487.50	58.7/57.9	0.61	97.0	5.79
	1) 45 x 51	7,500	471	0.38	528.11	58.4/57.6	0.62	105.0	6.82
	1) 48 x 51	8,000	471	0.40	568.41	58.2/57.4	0.62	114.0	7.04
	1) 51 x 51	8,500	471	0.43	601.36	58.3/57.5	0.62	120.0	6.92
120	1) 39 x 66	9,000	503	0.34	603.74	59.6/58.8	0.69	120.0	4.59
	1) 42 x 66	9,500	494	0.35	642.20	59.5/58.6	0.67	128.0	4.52
	1) 42 x 68	10,000	504	0.36	675.44	59.5/58.6	0.69	135.0	5.03
	1) 45 x 68	10,500	494	0.37	713.59	59.3/58.5	0.67	143.0	4.93
	1) 45 x 71	11,000	496	0.38	751.54	59.2/58.3	0.67	150.0	5.46
122	1) 45 x 71	11,000	496	0.34	751.54	59.2/58.3	0.67	150.0	5.46
	1) 45 x 78	12,000	492	0.36	842.59	58.5/57.7	0.66	168.0	6.96
	1) 48 x 79	13,000	494	0.37	913.52	58.5/57.7	0.67	182.0	7.19
	1) 48 x 85	14,000	494	0.39	993.95	58.3/57.4	0.67	198.0	8.64
	1) 51 x 85	15,000	498	0.42	1062.76	58.3/57.5	0.68	212.0	8.75
125	2) 30 x 68	14,000	494	0.33	951.70	59.3/58.5	0.67	190.0	4.90
	2) 30 x 72	15,000	500	0.35	1023.92	59.2/58.4	0.68	204.0	3.79
	2) 30 x 77	16,000	499	0.36	1105.24	58.9/58.1	0.68	220.0	6.70
	2) 33 x 79	18,000	497	0.39	1331.98	57.2/56.4	0.69	266.0	8.01
	2) 36 x 80	20,000	500	0.43	1480.84	57.2/56.4	0.70	296.0	8.35
130	2) 36 x 88	22,000	500	0.36	1564.46	58.2/57.4	0.68	312.0	9.58
	2) 36 x 96	24,000	500	0.38	1821.12	56.5/55.7	0.70	364.0	13.12
	2) 39 x 96	26,000	500	0.40	1876.34	57.9/57.0	0.68	376.0	12.06
	2) 39 x 103	28,000	502	0.43	2036.22	57.7/56.8	0.69	408.0	14.44
	2) 42 x 103	30,000	499	0.46	2297.58	56.3/55.5	0.69	460.0	15.66

⁽¹⁾ Nominal cooling capacity based on 6 row/8 FPI CW coil with 45°EWT, 55° LWT, and 95°/77° entering air temperature.

⁽²⁾ Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

⁽³⁾ Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss _____ " W.C.

B. Coil Air P.D. _____ " W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop _____ " W.C.

Refer to Blower HP Charts for Total External Static pressure available.

Performance Table

Six Row CW Coil Data									
Model No.	Coil Face Area Qty) FH x FL	SCFM	Face Velocity (FPM)	Cabinet Loss (2) (3)	6 Row CW				
					Total MBH (1)	LAT	Air P.D. (3)	GPM	FPD (ft)
215	1) 42 x 62	9,000	498	0.35	598.85	59.8/58.9	0.68	119.0	3.87
	1) 42 x 65	9,500	501	0.36	637.10	59.6/58.8	0.69	127.0	4.43
	1) 42 x 68	10,000	504	0.37	675.44	59.5/58.6	0.69	135.0	5.03
	1) 42 x 72	10,500	500	0.38	718.19	59.2/58.3	0.68	144.0	5.78
	1) 42 x 76	11,000	496	0.39	760.42	58.9/58.1	0.67	152.0	6.51
	1) 42 x 79	11,500	499	0.41	801.86	58.7/57.9	0.68	160.0	7.25
	1) 42 x 80	12,000	514	0.43	837.96	58.7/57.8	0.72	168.0	7.95
218	1) 45 x 80	12,500	500	0.34	879.17	58.5/57.7	0.68	175.0	7.56
	1) 45 x 83	13,000	501	0.35	916.59	58.5/57.6	0.69	183.0	8.33
	1) 45 x 90	14,000	498	0.36	1002.10	58.1/57.2	0.68	200.0	10.12
	1) 48 x 90	15,000	500	0.38	1073.22	58.1/57.2	0.68	215.0	10.27
	1) 51 x 93	16,000	486	0.40	1155.22	57.8/57.0	0.65	230.0	10.56
	1) 51 x 93	17,000	516	0.43	1207.03	58.3/57.4	0.72	240.0	11.38
220	2) 30 x 86	18,000	502	0.34	1276.26	58.3/57.5	0.69	256.0	9.22
	2) 30 x 91	19,000	501	0.35	1357.80	58.1/57.3	0.69	270.0	10.40
	2) 30 x 96	20,000	500	0.36	1442.08	57.9/57.0	0.68	288.0	11.97
	2) 30 x 101	21,000	499	0.37	1526.44	57.7/56.8	0.68	306.0	13.67
	2) 30 x 106	22,000	498	0.38	1605.04	57.6/56.7	0.68	322.0	15.33
		23,000		0.39	CF				
		24,000		0.41					
		25,000		0.43					
		26,000		0.44					
222		25,000		0.36	CF				
		26,000		0.37					
		27,000		0.38					
		28,000		0.39					
		29,000		0.41					
		30,000		0.42					
		31,000		0.44					
225		30,000		0.35	CF				
		32,000		0.36					
		34,000		0.37					
		36,000		0.38					
		38,000		0.41					
		40,000		0.43					
		42,000		0.45					
		44,000		0.47					
		46,000		0.48					
230		44,000		0.36	CF				
		48,000		0.38					
		50,000		0.39					

(1) Nominal cooling capacity based on 6 row/8 FPI CW coil with 45° EWT, 55° LWT, and 95°/77° entering air temperature.

(2) Cabinet Loss includes loss for centrifugal blower plenum effect and diffuser(s). This factor must be added to all units.

(3) Calculating Cooling Coil Section Pressure Drop:

A. Cabinet Loss _____ " W.C.

B. Coil Air P.D. _____ " W.C.

C. Downturn Plenum (if applicable) 0.10" W.C.

Cooling Coil Section Pressure Drop _____ " W.C.

Refer to Blower HP Charts for Total External Static pressure available.

MDT Control System

C000635

Application:

Modulating Discharge
Temperature Control

Includes:

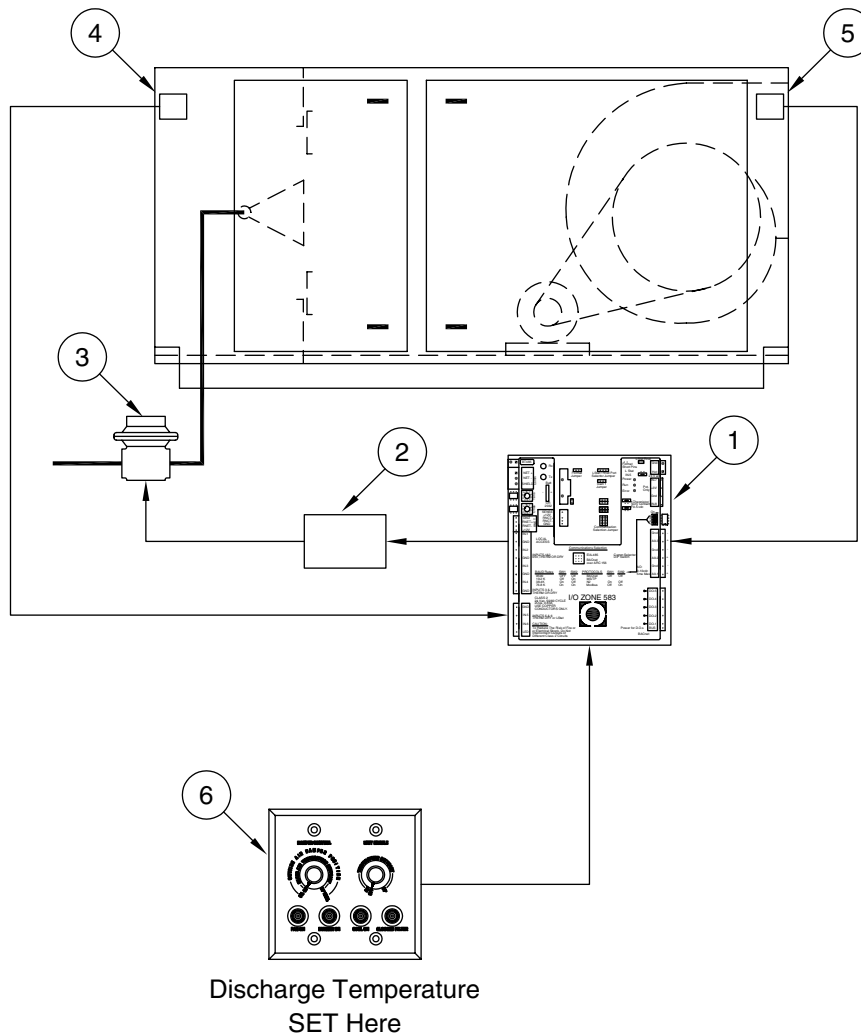
Discharge air sensor (5) mounted in unit discharge with remote mounted 4 x 4 box cover (6) including manual potentiometer to enable unit and adjust temperature setpoint, Fan On Light, Burner On Light, and Cool On Light. Additional potentiometer is provided if optional return damper section for manual or mixed air control is ordered.

COMPONENT I.D.

1. Unit DDC Controller
2. Signal Conditioner

3. Modulating Gas Valve
4. Inlet Air Sensor

5. Discharge Air Sensor
6. Remote Control Station



MRT Control System

C000634

Application:

Modulating Room
Temperature Control

Includes:

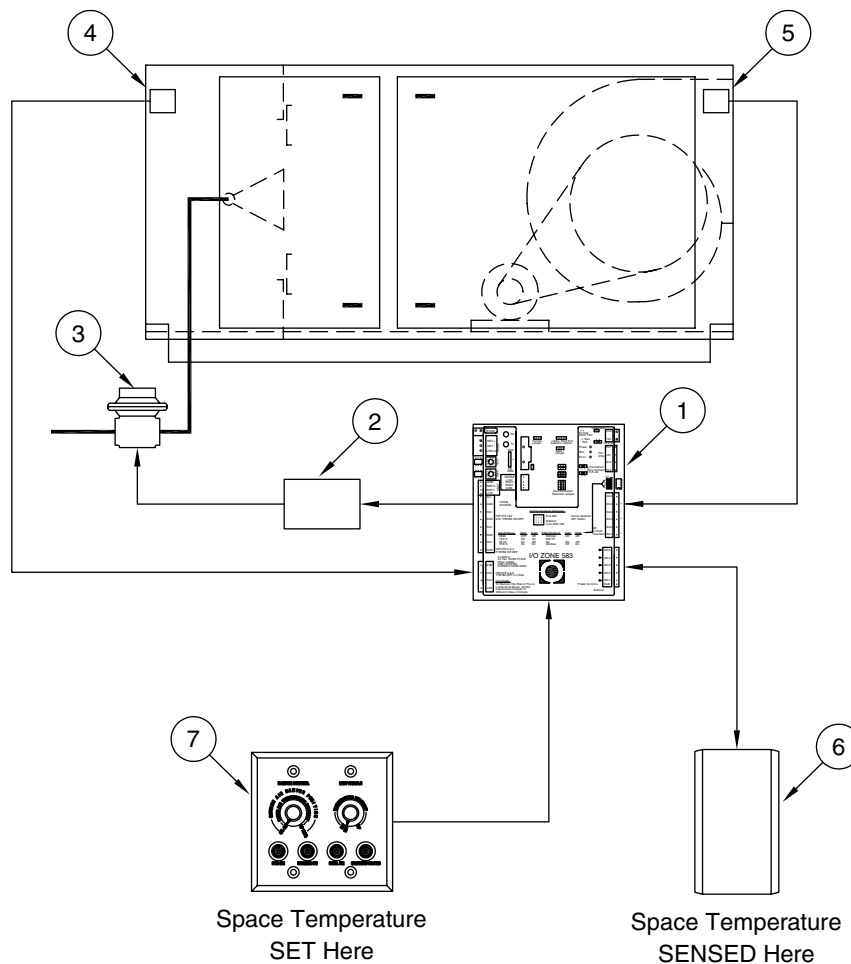
Discharge air sensor (5) mounted in unit discharge with remote mounted 4 x 4 box cover (7) including manual potentiometer to enable unit and adjust temperature setpoint, Fan On Light, Burner On Light, and Cool On Light. Also includes RS-std room sensor (6) (does not allow remote room setpoint adjustment). Additional potentiometer is provided if optional return damper section for manual or mixed air control is ordered.

COMPONENT I.D.

1. Unit DDC Controller
2. Signal Conditioner

3. Modulating Gas Valve
4. Inlet Air Sensor

5. Discharge Air Sensor
6. Remote Control Station



MRT Pro Control Systems

C000633

Application:

Modulating Room Temperature Control with RS-Pro room sensor allowing after hours unit enable, room setpoint adjustment, and digital temperature readout.

Includes:

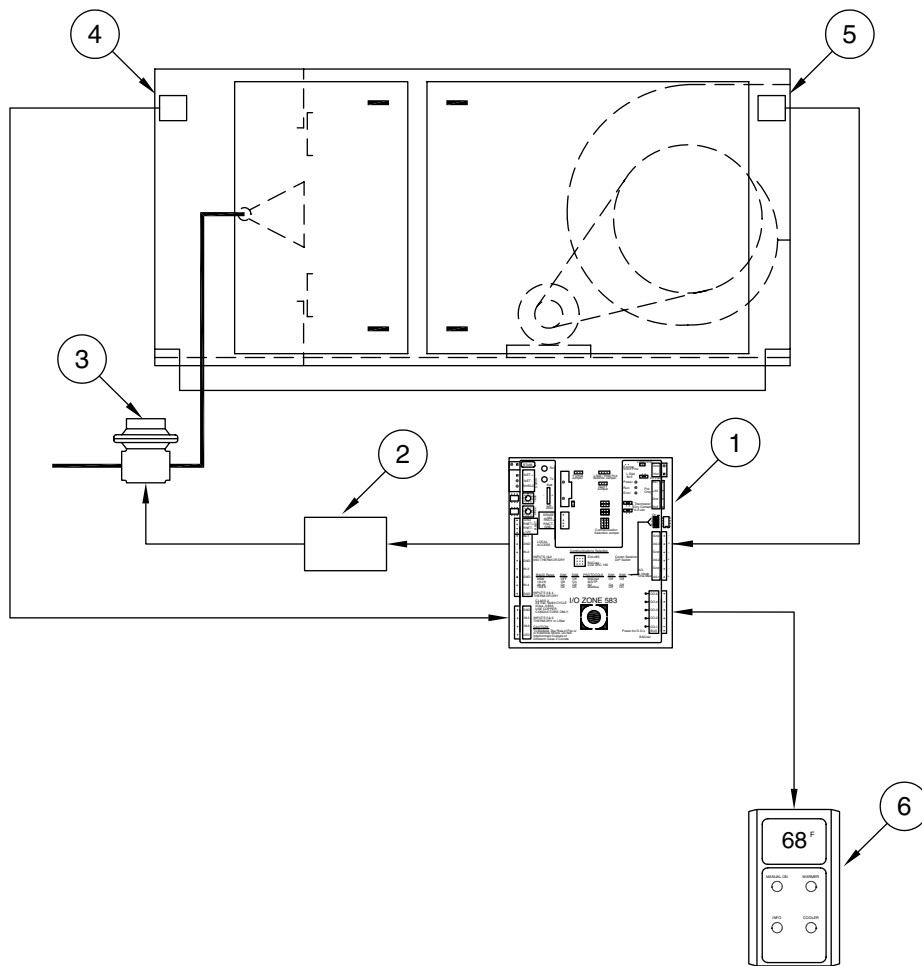
Discharge air sensor (5) mounted in unit discharge with remote mounted RS-Pro room sensor (6) with push buttons for room setpoint adjustment and digital temperature readout. On units with optional return air damper section a remote mounted 4 x 4 box cover is provided with potentiometer for manual or mixed air control.

COMPONENT I.D.

1. Unit DDC Controller
2. Signal Conditioner

3. Modulating Gas Valve
4. Inlet Air Sensor

5. Discharge Air Sensor
6. Room Thermostat



Space Temperature
SET And SENSED Here

Control Systems

MRT Expert Control System

C000632

Application:

Modulating Room Temperature Control with BACView controller allowing after hours unit enable, room setpoint adjustment, operating feedback, monitoring of alarm status and digital temperature readout with RS-std room sensor.

Includes:

Discharge air sensor (5) mounted in unit discharge with remote mounted BACView controller (7) to set space temp, operating schedules, and optional damper control setpoints. Service information, operating feedback and alarm status can also be monitored. Also includes a RS-std room sensor (6).

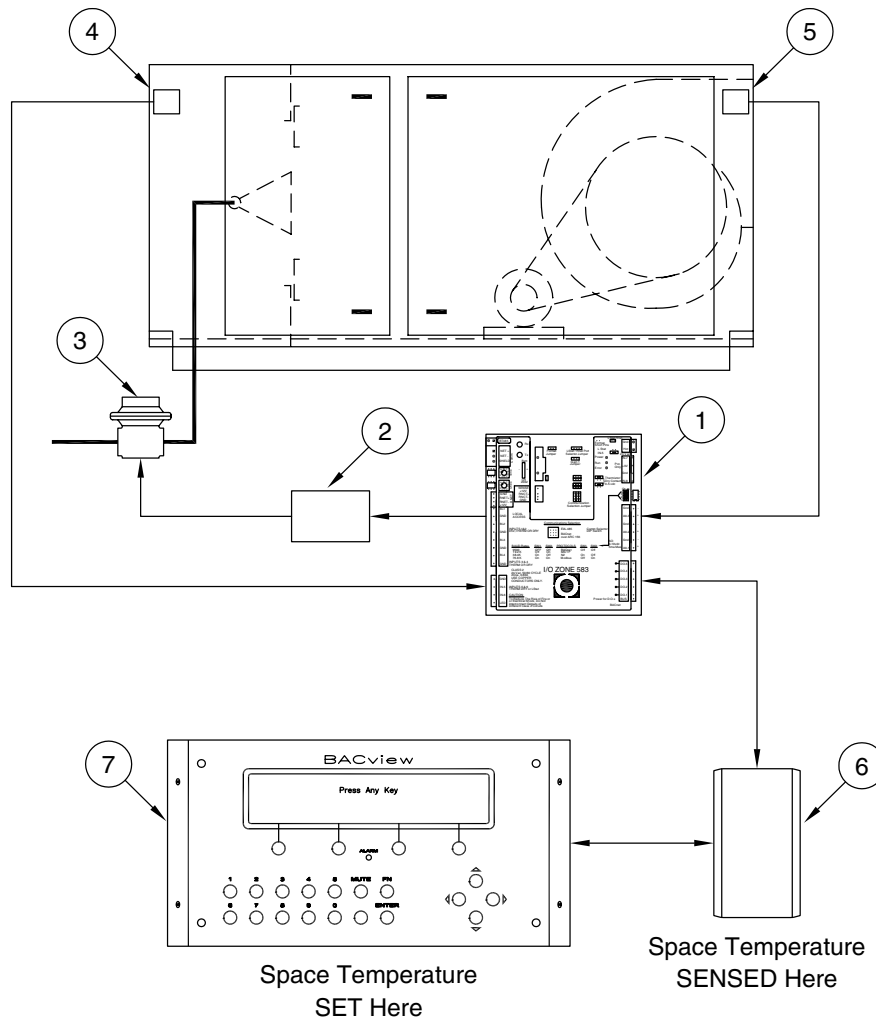
COMPONENT I.D.

1. Unit DDC Controller
2. Signal Conditioner

3. Modulating Gas Valve
4. Inlet Air Sensor

5. Discharge Air Sensor
6. Room Thermostat

7. BACView Interface



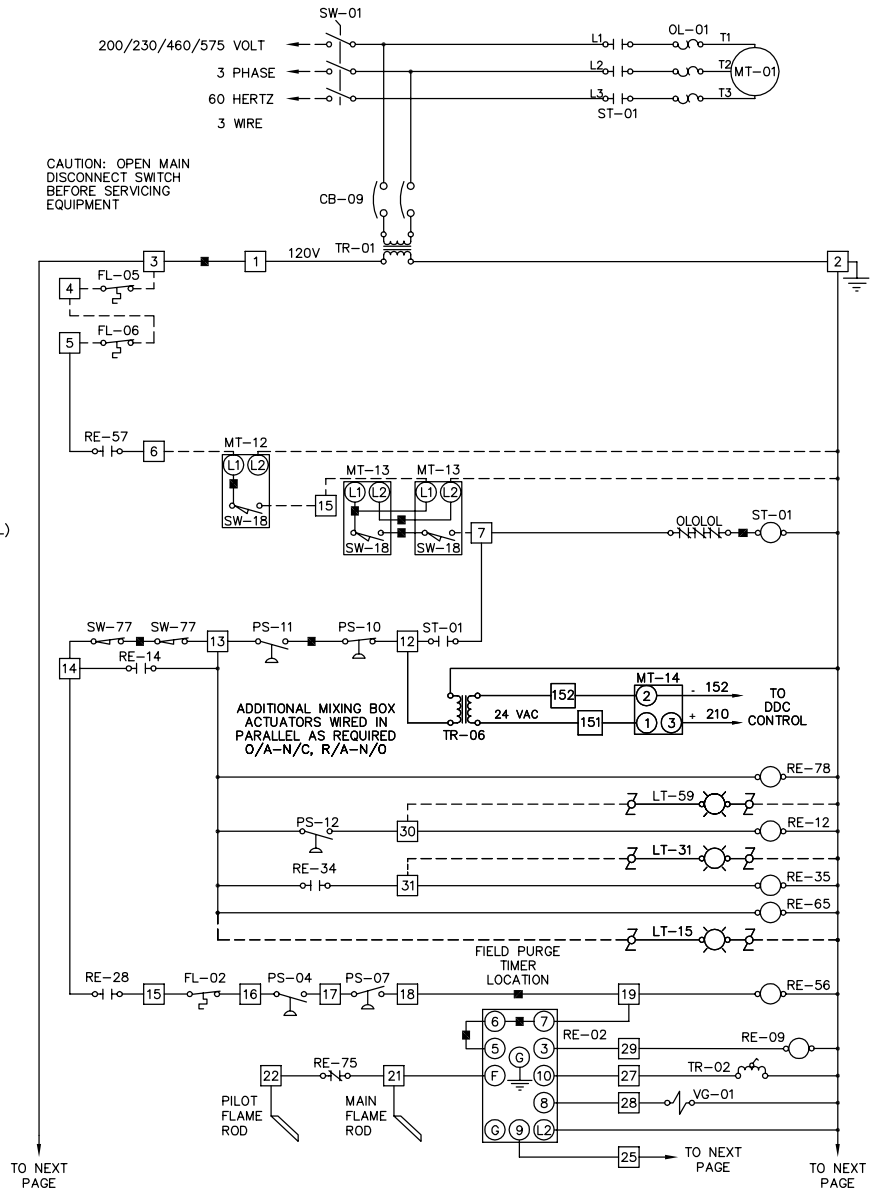
Wiring Diagram

Typical Wiring Diagram - Page 1

C000630

COMPONENT IDENTIFICATION

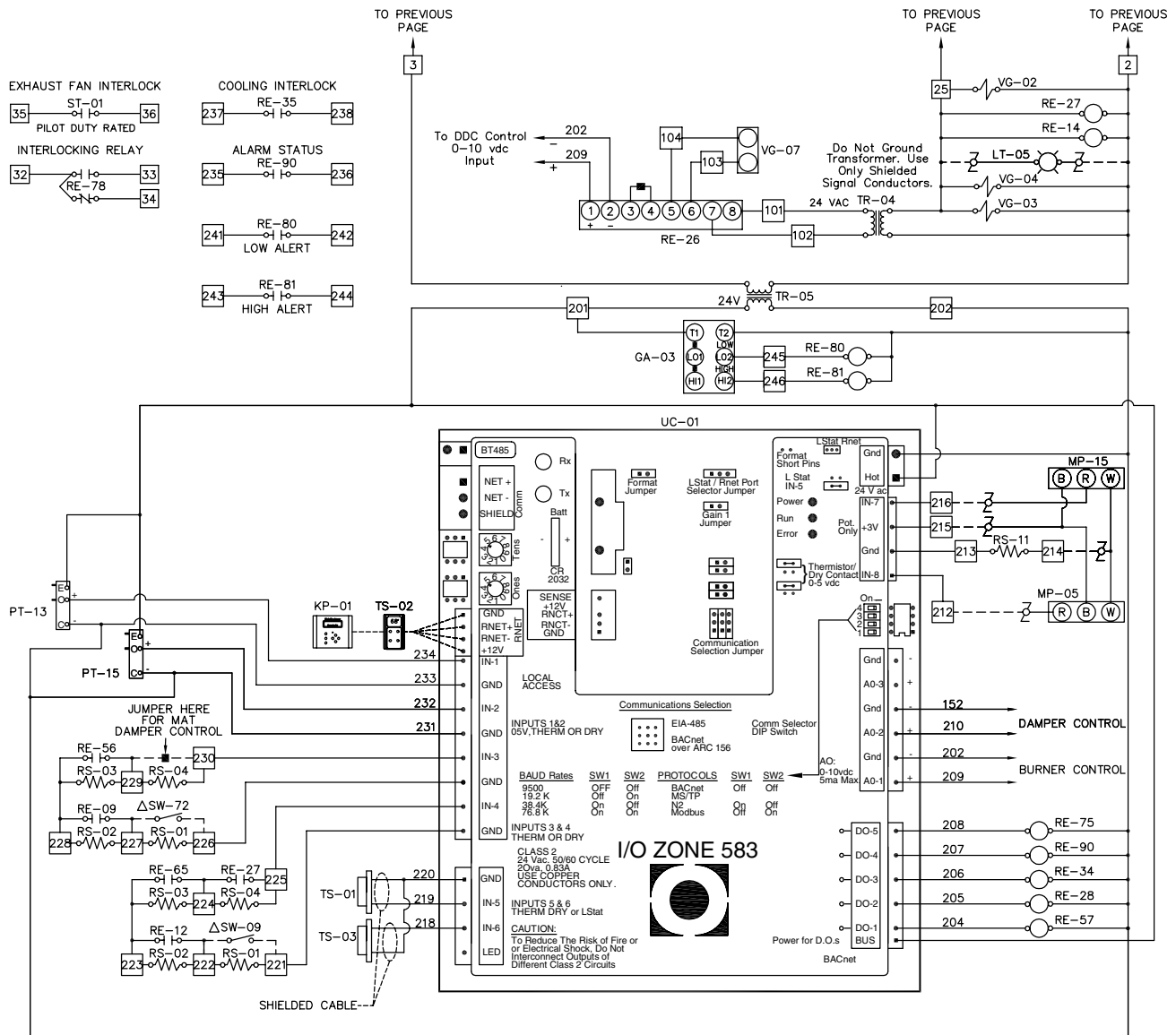
CB-09	CONTROL CIRCUIT TRANSFORMER BREAKER
FL-02	HIGH TEMPERATURE LIMIT SWITCH
FL-05	SUPPLY AIR FIRESTAT (OPTIONAL)
FL-06	RETURN AIR FIRESTAT (OPTIONAL)
GA-03	COMBINATION CO & N02 DETECTOR (OPTIONAL)
KP-01	KEYPAD /DISPLAY MODULE (OPTIONAL)
LT-05	BURNER ON LIGHT (REMOTE)
LT-15	FAN ON LIGHT (REMOTE)
LT-31	COOLING ON LIGHT (REMOTE)
LT-59	CLOGGED FILTER LIGHT (REMOTE)
MP-05	DAMPER CONTROL POTENTIOMETER (OPTIONAL)
MP-15	UNIT ENABLE POTENTIOMETER
MT-01	MAIN SUPPLY FAN MOTOR
MT-12	DISCHARGE DAMPER MOTOR (OPTIONAL)
MT-13	INLET DAMPER MOTOR (OPTIONAL)
MT-14	MIXING BOX DAMPER MOTOR (OPTIONAL)
OL-01	MAIN FAN MOTOR OVERLOAD
PS-04	LOW GAS PRESSURE SWITCH (OPTIONAL)
PS-07	HIGH GAS PRESSURE SWITCH (OPTIONAL)
PS-10	HIGH VELOCITY SWITCH
PS-11	LOW VELOCITY SWITCH
PS-12	CLOGGED FILTER SWITCH (OPTIONAL)
PT-13	BUILDING PRESSURE TRANSDUCER (OPTIONAL)
PT-15	FLOW STATION PRESSURE TRANSDUCER (OPTIONAL)
RE-02	FLAME SAFEGUARD RELAY
RE-09	FLAME FAILURE RELAY
RE-12	CLOGGED FILTER RELAY (OPTIONAL)
RE-14	HOLDING RELAY (OPTIONAL)
RE-26	ELECTRONIC RELAY
RE-27	BURNER STATUS RELAY
RE-28	BURNER ENABLE RELAY
RE-34	COOLING ENABLE RELAY
RE-35	COOLING INTERLOCK RELAY
RE-56	SAFETY CIRCUIT STATUS RELAY
RE-57	UNIT ENABLE RELAY
RE-65	FAN STATUS RELAY
RE-75	FLAME SUPERVISION SWITCHING RELAY
RE-78	INTERLOCKING RELAY (OPTIONAL)
RE-80	LOW ALERT RELAY (OPTIONAL)
RE-81	HIGH ALERT RELAY (OPTIONAL)
RE-90	ALARM STATUS RELAY
RS-01	RESISTOR 1K OHM
RS-02	RESISTOR 2K OHM
RS-03	RESISTOR 4.02K OHM
RS-04	RESISTOR 8.06K OHM
RS-11	RESISTOR 10 OHM
ST-01	MAIN SUPPLY FAN MOTOR STARTER
SW-01	MAIN DISCONNECT SWITCH (OPTIONAL)
SW-09	AUXILLARY UNIT ENABLE (BY OTHERS)
SW-18	DAMPER MOTOR END SWITCH (OPTIONAL)
SW-72	100 PERCENT OUTSIDE AIR SWITCH (BY OTHERS)
SW-77	PROOF OF VALVE CLOSURE SWITCH (OPTIONAL)
TR-01	CONTROL CIRCUIT TRANSFORMER
TR-02	IGNITION TRANSFORMER
TR-04	MODULATING VALVE TRANSFORMER
TR-05	LOW VOLTAGE TRANSFORMER
TR-06	DAMPER MOTOR TRANSFORMER (OPTIONAL)
TS-01	OUTSIDE AIR TEMPERATURE SENSOR
TS-02	SPACE TEMPERATURE SENSOR (OPTIONAL)
TS-03	DISCHARGE AIR TEMPERATURE SENSOR
UC-01	UNIT CONTROL MODULE
VG-01	PILOT GAS VALVE
VG-02	MAIN GAS VALVE
VG-03	AUXILIARY GAS VALVE
VG-04	NORMALLY OPEN VENT VALVE (OPTIONAL)
VG-07	MODULATING GAS VALVE



Wiring Diagram

Typical Wiring Diagram - Page 2

C000630



Electrical Data and Sequence of Operation

Amp Draw Table

ITEM	SOURCE	Amps	MOTOR HORSEPOWER							
			1	1½	2	3	5	7½	10	15
A	Blower Motor	AMPS for 208V 3 Ph.	4.6	6.6	7.5	10.6	16.7	24.2	30.8	46.2
		AMPS for 230V 3 Ph.	4.2	6.0	6.8	9.6	15.2	22.0	28.0	42.0
		AMPS for 460V 3 Ph.	2.1	3.0	3.4	4.8	7.6	11.0	14.0	21.0
		AMPS for 575V 3 Ph.	1.7	2.4	2.7	3.9	6.1	9.0	11.0	17.0
		Amps	MOTOR HORSEPOWER							
			20	25	30	40	50	60	75	100
		AMPS for 208V 3 Ph.	59.4	74.8	88.0	114.0	143.0	169.0	211.0	273.0
		AMPS for 230V 3 Ph.	54.0	68.0	80.0	104.0	130.0	154.0	192.0	248.0
B	Control Transformer	AMPS for 460V 3 Ph.	27.0	34.0	40.0	52.0	65.0	77.0	96.0	124.0
		AMPS for 575V 3 Ph.	22.0	27.0	32.0	41.0	52.0	62.0	77.0	99.0
		Amps	CONTROL CIRCUIT AMPS							
			Heating Unit Only		Heating Unit w/One Evap. Module		Heating Unit w/Two Evap. Module		Heating Unit w/Three Evap. Module	
		AMPS for 208V 3 Ph.	2.4		7.2		9.6		12.0	
		AMPS for 230V 3 Ph.	2.2		6.5		8.7		10.9	
		AMPS for 460V 3 Ph.	1.1		3.3		4.3		5.4	
		AMPS for 575V 3 Ph.	0.9		2.6		3.5		4.3	

NOTES: 1) Above motor amps are based on 2002 edition of NEC.
2) Control circuit amps are based on standard controls.

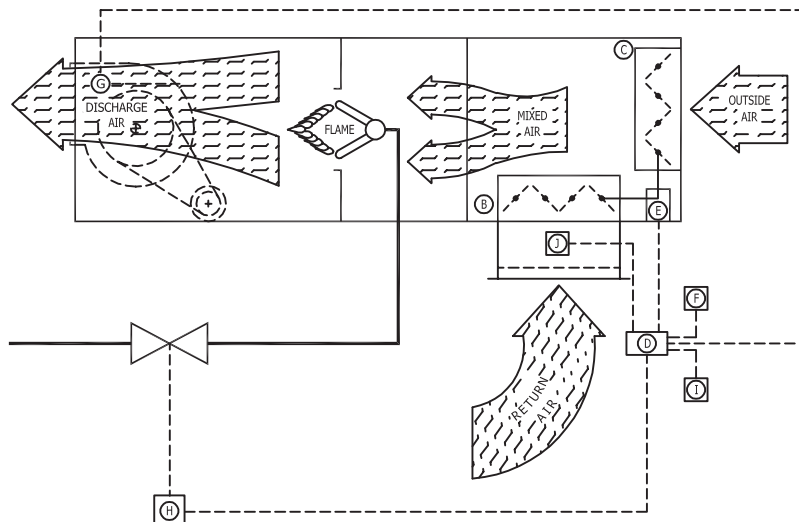
Steps to size optional disconnect switch:

1. Find the blower motor HP required from tables on pages 4 and 5.
2. Find amp draw for required motor HP from chart in item A above.
3. Find amps for control circuit from chart in item B above.
4. Add amps from step 2 and step 3, then multiply by 1.25.

Sequence of Operation – Return Air Units

P000621

OPERATION WITH RETURN AIR UPSTREAM OF BURNER



Signal from remote control I to AdaptAir Controller D, sets operational parameters for dampers B and C, and burner. Damper operation can be manual, building pressure or mixed air temperature.

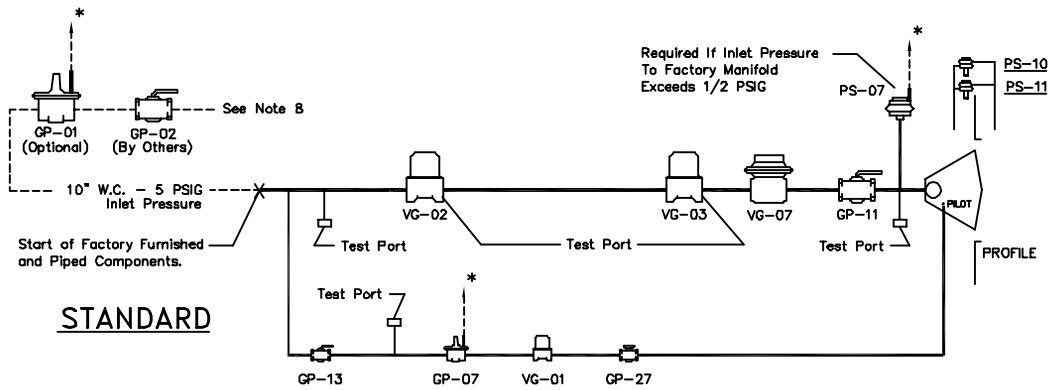
Return air dampers B, and outside air dampers C, are interlocked to move together. As one opens, the other closes. As the return air dampers open, allowing more return air to enter the unit, the outside air dampers move toward the closed position, decreasing the amount of outside air. Pressure sensor and flow station J, senses change in return airflow and signals AdaptAir Controller D.

Modulating gas valve H, regulates gas supply in response to signal from AdaptAir Controller D. AdaptAir Controller D, varies signal based on input from room temperature sensor F, discharge temperature sensor G, and airflow sensor J. Gas valve H can provide approximately 4% to 100% of rated burner capacity.

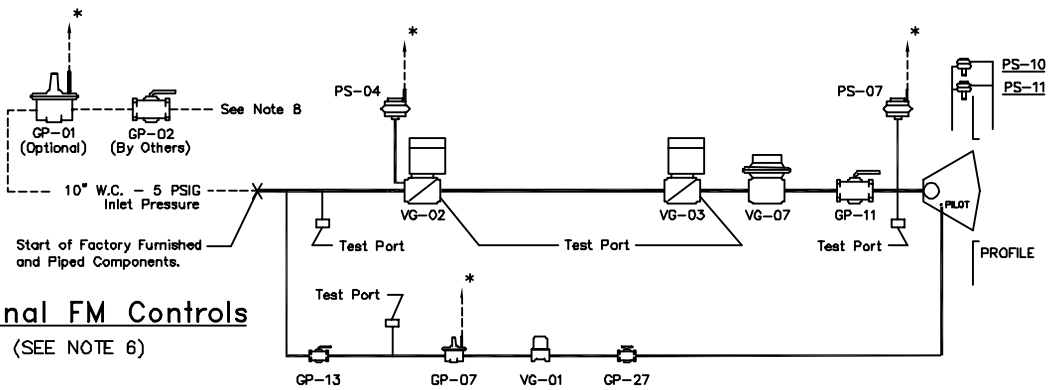
Gas Piping Layout

Schematic Component Diagrams

C000148

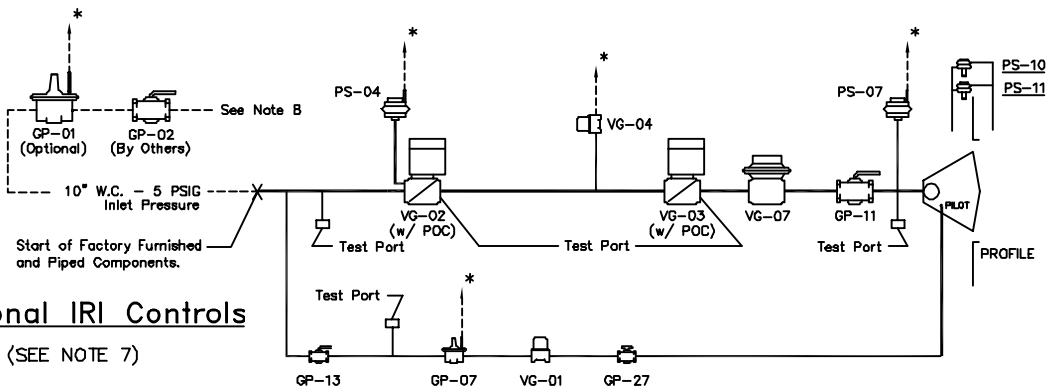


STANDARD



Optional FM Controls

(SEE NOTE 6)



Optional IRI Controls

(SEE NOTE 7)

COMPONENT IDENTIFICATION

GP-01	HIGH GAS PRESSURE REGULATOR
GP-02	MAIN GAS SHUT-OFF VALVE
GP-09	PILOT GAS PRESSURE REGULATOR
GP-11	MAIN TEST FIRING SHUT-OFF VALVE
GP-13	PILOT GAS SHUT-OFF VALVE
GP-27	ORIFICED NEEDLE VALVE
VG-01	PILOT GAS VALVE
VG-02	MAIN GAS VALVE
VG-03	AUXILIARY GAS VALVE
VG-04	NORMALLY OPEN VENT VALVE
VG-07	MODULATING VALVE
PS-04	LOW GAS PRESSURE SWITCH
PS-07	HIGH GAS PRESSURE SWITCH
PS-10	HIGH VELOCITY PRESSURE SWITCH
PS-11	LOW VELOCITY PRESSURE SWITCH

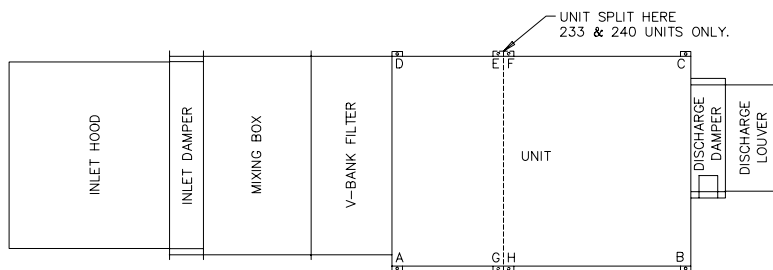
NOTES:

1. Vent limiting devices provided wherever possible, when venting is required* the venting to outside is by others on indoor units and furnished by factory on outdoor units.
2. Units with 900 MBH and less use a pressure regulator (not shown) for high fire setting.
3. For inlet pressures under 10" W.C. - Please contact factory.
4. 3,300 MBH and above will require a minimum inlet pressure of 1 PSIG. For inlet pressures under 1 PSIG - Please contact factory.
5. Units that are listed to Z83.4 standard (100% make-up air) carry both ETL and CETL approvals.
6. The standard manifold meets FM requirements for inputs under 2,500 MBH for ETL listed units.
7. The standard manifold meets IRI requirements for ETL listed units.
8. High gas pressure regulator required if inlet pressure exceeds 1/2 PSIG for inputs up to and including 900 MBH or inlet pressures over 5 PSIG for inputs greater than 900 MBH.

Weights and Cabinet Arrangements

Unit Weights (Approximate)

C000473



PLAN VIEW

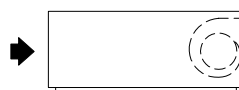
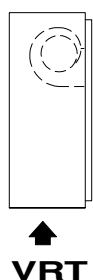
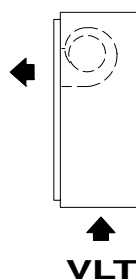
Note: Cooling coil section weights include 6 row dry coil.

Model	Unit								Inlet Hood (No Filters)	Inlet Damper	V-Bank Filter	Mixing Box	Air Flow Station	Discharge Damper	Discharge Louver	Cooling Coil Section	Add For Vertical Units
	A	B	C	D	E	F	G	H									
109	215	215	185	145	—	—	—	—	170	75	105	480	47	30	70	1010	224
112	215	215	185	145	—	—	—	—	170	75	105	480	47	30	70	1010	224
115	215	215	185	145	—	—	—	—	170	75	105	480	47	30	70	1500	224
118	225	225	200	160	—	—	—	—	170	75	105	480	47	30	70	1500	224
120	331	331	272	251	—	—	—	—	270	125	175	700	68	55	85	2580	475
122	344	344	282	257	—	—	—	—	270	125	175	700	68	55	85	2580	475
125	510	510	420	384	—	—	—	—	290	140	240	950	80	85	140	4180	590
130	538	538	442	402	—	—	—	—	290	140	240	950	80	85	140	4180	590
215	342	342	274	222	—	—	—	—	275	135	175	700	80	100	150	2420	427
218	378	378	311	233	—	—	—	—	275	135	175	700	80	100	150	2420	427
220	625	625	555	475	—	—	—	—	320	200	230	980	111	145	215	3405	899
222	675	675	545	475	—	—	—	—	320	200	230	980	111	145	215	3405	899
225	824	824	732	610	—	—	—	—	500	275	340	1270	135	210	230	5420	1145
230	863	863	731	673	—	—	—	—	720	275	340	1270	135	210	230	5420	1145
233	517	1139	936	421	382	973	490	1535	775	350	550	2200	190	230	300	NA	1100
240	557	1625	1361	451	413	1395	529	2344	1050	500	675	2750	221	250	350	NA	1300

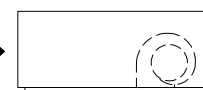
APPROXIMATE WEIGHT (LBS.)

Cabinet Arrangement

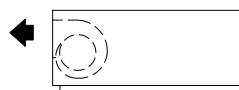
For all arrangements shown, controls are on near side.



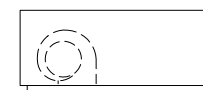
HRS



HRB



HLS



HLB

Guide Specification – Base Unit

Applied Air

Base Bid Applied Air model DFC _____ make-up air unit(s) designed for outdoor application. The unit discharge shall be designed for easy adaptation to external duct work or optional accessories. The unit(s) shall be capable of delivering _____ cfm at _____ ESP using a _____ horsepower (ODP) (TEFC) motor operating on (208/3/60) (230/3/60) (460/3/60).

BURNER SECTION

The line burner shall be capable of delivering _____ BTUH firing on (natural gas) (propane) at an inlet pressure of _____ (inches water column) (PSIG). The standard ETL listed unit will meet ANSI, FM, and IRI requirements. Both burner and blower shall be compensated for an altitude of _____ feet above sea level. Manifold to be located outside of air stream and shielded from atmospheric conditions by means of a protective compartment with hinged access. An observation port shall be located to provide view of pilot and main flame.

Unit(s) shall be supplied with a wide range burner with a modulating turndown ratio of up to 25:1. Adjustable profile plates shall be provided and sized to maintain the require velocity across the line burner. The operation of the burner shall be programmed through the flame safeguard with timed prepurge and flame-sensed by means of a (flame rod)(ultra violet scanner).

The burner assembly and gas manifold shall be completely prepped and factory tested prior to shipment.

The unit shall be controlled by the AdaptAire DDC control module with full BACnet compatibility. Unit shall have the AdaptAire (MDT - Modulating Discharge Temperature Control System)(MRT – Modulating Room Temperature Control System)(MRT-Pro Modulating Room Pro Temperature Control System)(MRT-Expert Modulating Room Expert Temperature Control System). The AdaptAire DDC control system shall include but not be limited to the following controls required for standard operation:

- Electronic time clock with normal, holiday, and override schedules. (Optional accessory on MDT or MRT Control Systems).
- Timed freeze protection to prevent heater from discharging unheated air into the building.
- Inlet On-Off ductstat which will turn burner off when inlet temperature equals desired discharge air temperature as fuel savings mode.
- On-Off night setback thermostat for lower operating temperatures in unoccupied mode as fuel savings mode. (Optional accessory on MDT or MRT Control Systems).

UNIT CASING

Unit casing and accessories shall be fabricated from heavy-gauge bright spangled galvanized steel suitably reinforced to insure rigidity. The base of the unit shall be adaptable for curb mounting. All casings shall be airtight and weatherproof. Roof panels shall be convex to prevent ponding, and designed with a standing seam to prevent water entrainment. Cabinet shall

be designed with roof eaves to prevent water from getting into wall panels. Complete access shall be provided to all components through gasketed, hinged access doors. This includes the motor, blower, burner, and electrical components and manifold sections.

BLOWER SECTION

Each unit shall be supplied with centrifugal forward curve, DWDI fan(s) rated in accordance with AMCA standards. The fan or fans shall be mounted on a heavy-duty polished steel shaft designed for a maximum operating speed not to exceed 75% of its first critical speed. Bearings are to be heavy-duty industrial prelubricated type. Blowers to be driven by a V-belt package sized with a capacity of 25% greater than the motor horsepower. Multiple belt applications will be matched sets. Drives are to be (fixed) (adjustable). Maximum outlet velocity _____ FPM. Motor to be mounted on adjustable slide base. Motor cover shall be provided for protection when control cabinet door is open.

CONTROL ENCLOSURE

The unit(s) shall be supplied with a control compartment and all controls mounted within this compartment are to be wired to a numbered terminal strip. All wiring is to be color coded and in accordance with the NEC. A circuit diagram is to be laminated to the inside of the control Cabinet door. All electrical components shall bear a recognized label.

CONTROLS

1. Main fan starters and overloads
2. Control circuit fuses
3. High temperature limit switch
4. Flame safeguard with alarm contacts
5. Flame rod sensor
6. Ignition transformer
7. Automatic pilot valve
8. Main gas automatic safety shutoff valve
9. MDT Control System
10. Air proving differential switch
11. Control transformer
12. Remote control panel

OPTIONAL ACCESSORIES

1. Motorized inlet damper or discharge damper
2. V-bank filter box with filters
3. Inlet hood and birdscreen with or without filters
4. Insulation
5. Roof curb (horizontal units only)
6. Extended grease lines
7. Vibration feet and hangers
8. Clogged filter switch
9. Disconnect switch
10. U. L. labeled control panel
11. Painted galvanized casing
12. Vertical arrangement with support stand and birdscreen
13. Mixed air section with or without return air flow station
14. High gas pressure regulator (required over 1/2 PSIG)
15. UV flame detection (mini or purple peeper)
16. DX or CW cooling coil section
17. Firestat
18. 115 Volt service receptacle

Guide Specification – Mixing Dampers with Return Flow Station



Applied Air

Unit(s) shall have outside air and return air dampers with modulating actuator controlled by AdaptAire DDC control system. The AdaptAire DDC control system shall have capability to digitally control the outside air quantity from a nominal minimum of 20% to 100% with integrated gas valve control at all room concentrations of CO₂.

The return air inlet shall include a self-calibrating flow measuring station with a grid of velocity pressure probes with spacing no greater than 12" over the entire face of the return air opening and sampled every two seconds. Samples will be added to a twenty-five point rolling average and then on to a second rolling average to provide smooth, accurate data that is delivered to the AdaptAire DDC control system every two seconds. The DDC control system shall be capable of electronically displaying the return air/outside air ratio within 5% accuracy at all damper positions.

The AdaptAire DDC control system shall be capable of controlling mixing dampers in: (Choose One)

MANUAL MODE:

The "Manual" mode allows manual positioning of the outside air (O.A.) damper and return air (R.A.) damper by changing the damper position setpoint.

MIXED AIR TEMPERATURE MODE:

The "Mixed Air Temperature" mode shall provide automatic control of the mixed air temperature by modulating the outside air (O.A.) damper and return air (R.A.) damper to maintain the mixed air temperature setpoint. As the mixed air temperature increases above the setpoint more outside air will be introduced.

BUILDING PRESSURE MODE:

The "Building Pressure" mode shall provide automatic building pressure control by modulating the outside air (O.A.) damper and return air (R.A.) damper to maintain the indoor building pressure setpoint. As the building pressure decreases below the setpoint more outside air will be introduced.

Guide Specification – BACView Controller



The display functions of the remote keyboard display for the AdaptAire DDC control system shall have a minimum of two lines, sixteen character display which shall include but not limited to the following:

- Return air temperature
- Outside air temperature
- Discharge air temperature
- Mixed air temperature
- Maximum allowable temperature rise
- Actual temperature rise
- Current percent of outside air
- Current building pressure (optional)
- Current damper input voltage (optional)
- Current burner input voltage
- Fan operating hours since last reset
- Fan start cycle count since last reset
- Burner operating hours since last reset
- Burner start cycle count since last reset
- Cooling interlock operating hours since last reset
- Cooling interlock cycle count since last reset
- Critical alarm conditions:
 - Airflow switch failure
 - Unit on, fan off
 - Unit off, fan on
 - Low discharge temperature
 - Safety circuit open
 - Burner jumped

The control settings available on the remote keyboard display for the AdaptAire DDC control system shall include but not be limited to the following:

- Heating setpoint
- Cooling setpoint
- Economizer setpoint
- Setback setpoint
- Freeze protection setpoint
- Maximum discharge air temperature setpoint
- Minimum discharge air temperature setpoint
- Minimum ventilation option and setpoint
- Time of day schedule selection and setpoints (Not available on MDT or MRT Control Systems)
 - Normal 5/7 schedule
 - Holiday schedule
 - Manual override



Applied Air



Efficient Direct Fired Gas Heating System

Choose Applied Air Direct Fired Gas Heating

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- Constantly replace contaminated indoor air with fresh, heated outside air
- Optional evaporative cooling
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December 8, 2006

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**SUBJECT: TRANSMITTAL OF ENTECH ENGINEERING REPORT NO. ER2006-11-409 ENTITLED
"ZEE MANUFACTURING, LTD.'S REGENERATIVE THERMAL OXIDIZER (EPN RTO)
INITIAL COMPLIANCE TEST (TCEQ ACCOUNT ID NO. BG-1199-P; PERMIT NO 43104;
REGULATED ENTITY NO. RN100542828; CUSTOMER REFERENCE NO. CN601490808)"**

Entech Engineering conducted an initial compliance test on the Zee Manufacturing, Ltd.'s, Regenerative Thermal Oxidizer (EPN RTO) on November 15, 2006 in San Antonio, Bexar County, Texas. The test program was conducted under Zee Manufacturing, Ltd.'s purchase order number 10252006.

Six copies of the Entech final report, which documents the findings and results of this program, are enclosed. Three of the six copies of the final report include color copies of the strip chart located in Appendix A. Any copies of the final report that are forwarded to the regulatory agency should include the color copies of the strip chart located in Appendix A. Additional color copies will be available at your request. Please note that the results presented in this report only relate to the items tested or the samples as received by Entech's lab; further, this report will not be reproduced except in full, without the written approval of the client. Contact us at our League City, Texas office if you have any questions or comments concerning the findings of this program.

Sincerely,



Mark Brumfield
Senior Environmental Scientist

Approved by:



Scott Adams
Project Manager

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**ZEE MANUFACTURING, LTD.S'
REGENERATIVE THERMAL OXIDIZER (EPN RTO)
INITIAL COMPLIANCE TEST
(TCEQ ACCOUNT ID NO. BG-1199-P; PERMIT NO. 43104)
(REGULATED ENTITY NO. RN100542828, CUSTOMER REFERENCE NO. CN601490808)

(ENTECH REPORT NO. ER2006-11-409)**

PREPARED BY

**ENTECH ENGINEERING INC.
LEAGUE CITY, TEXAS**

DECEMBER 2006

PREPARED FOR

**ZEE MANUFACTURING, LTD.
SAN ANTONIO, TEXAS**

SAMPLING LOCATION

**ZEE MANUFACTURING, LTD.
REGENERATIVE THERMAL OXIDIZER (RTO) INLET AND STACK (EPN RTO)
SAN ANTONIO, BEXAR COUNTY, TEXAS**

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SECTION 1.0 SUMMARY

Entech Engineering Inc. was retained by Zee Manufacturing, Ltd. to conduct an initial compliance test on the Regenerative Thermal Oxidizer (RTO) in San Antonio, Bexar County, Texas. The objective of this program was to demonstrate performance of the RTO in controlling volatile organic compound (VOC) emissions according to the Maximum Allowable Emission Rates Table (MAERT) and the special conditions specified in the Texas Commission on Environmental Quality (TCEQ) Permit No. 43104. The emission compliance test program was performed on November 15, 2006 and was coordinated by Mr. Donnie Zapara, Vice President of Zee Manufacturing, Ltd. and Mr. Stephen Dugger, Senior Environmental Scientist, Source Environmental Sciences, Inc. A pretest meeting was held at Zee Manufacturing, Ltd. On October 12, 2006. Mr. Jeffery Seiler of the TCEQ San Antonio (Region 13) office was present to observe the initial compliance test.

Zee Manufacturing, Ltd. operates a wood cabinet manufacturing facility. VOC emissions from the stain and coating process are routed to a Regenerative Thermal Oxidizer, which is designated in the TCEQ permit as Emission Point No. (EPN RTO), for destruction. VOCs released by the process include (but are not limited to): n-butyl acetate, 2-propanol, toluene, xylene, naphtha, and unspciated VOCs. The RTO is manufactured by Anguil Environmental Systems, Inc. Of Milwaukee, Wisconsin. Pipeline quality sweet natural gas is used as a supplemental fuel to maintain operating temperatures.

According to Special Condition No. 6 of the Texas Commission on Environmental Quality (TCEQ) Permit No. 43104, the emissions from the coating lines shall be controlled by the thermal oxidizer with 100 percent collection and 95 percent destruction efficiencies to achieve the emission rates specified in the maximum allowable emission rates table (MAERT). Special Condition No. 11 requires that an initial one-time sampling of the coating lines collection and add-on control system shall be conducted to: A) Ensure all emissions from the stain and topcoat/scaler booths and drying ovens are captured and 95 percent of captured emissions are destroyed. B) Measure total VOC concentration from the thermal oxidizer (EPN RTO) to verify that the hourly emission rate does not exceed that specified on the MAERT.

For the emission compliance test, total volatile organic compounds (total VOC) concentrations along with velocity and moisture were measured from the RTO inlet and stack to determine mass emission rates. Mr. Jeffery Seiler, Environmental Investigator, of the TCEQ San Antonio (Region 13) office was present during testing to verify and approve that the thermal oxidizer met the 100 percent collection efficiency requirement specified in Special Condition 6 of the TCEQ Permit No. 43104. Entech conducted three 64-minute runs at both locations simultaneously to obtain representative emission samples. The arithmetic averages of the three runs at each location were used to determine compliance with the MAERT and were used to calculate the destruction efficiency (DE). Summaries of the emission compliance test results for the RTO are presented in Tables 1 and 2. Table 1 is a summary of the pollutant emission rates in comparison to the permit specifications. Table 2 is a summary of the inlet and stack sampling parameters and pollutant emission rates. Test methods and equipment descriptions are presented in Section 2.0 and results and discussions are presented in Section 3.0.

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Table 1.

Zee Manufacturing, Ltd.

Regenerative Thermal Oxidizer (EPN RTO)

Initial Compliance Test Summary

(TECQ Account ID No. BG-1199-P, Permit No. 43104)

(Regulated Entity No. RN100542828, Customer Reference No. CN601490808)

Stack Volatile Organic Compound (VOC) Emission Summary

Emission Point No. (EPN)	Pollutant	Measurement Unit	Pollutant Conc.	Pollutant Mass Rate (lb/hr)	Allowable Permit (lb/hr)	Allowable Exceeded (Yes/No)
RTO	VOC _{stack}	ppmv	4.17	0.52	8.46	No

Destruction Efficiency (DE) Summary

Emission Point No. (EPN)	Pollutant	Measurement Unit	Pollutant Mass Emission	DE (%)	Allowable Permit (%)	Allowable Exceeded (Yes/No)
RTO	VOC _{inlet}	lb/hr	61.58	99.1	95	No
	VOC _{stack}	lb/hr	0.52			

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SECTION 2.0 TEST METHOD AND EQUIPMENT DESCRIPTION

The emission test equipment, procedures, and analytical methods used in this program were those described in the Environmental Protection Agency (EPA) Code of Federal Regulations (CFR), Title 40 (Protection of the Environment), Part 60 (New Source Performance Standard), Appendix A. Sampling equipment was prepared and calibrated at the Entech Engineering facility prior to transportation. At the site, sampling equipment was set up, checked out, and employed according to the following Reference Method procedures.

EPA Reference Method 1 - "Sample and Velocity Traverses for Stationary Sources". The Regenerative Thermal Oxidizer (EPN RTO) stack has an internal diameter (ID) measuring 43.5 inches at the sampling plane with two three-inch sampling ports installed at 90° apart that conform to the method requirements. The RTO inlet duct has an internal diameter of 45.0 inches at the sampling plane with two 90° three-inch sampling ports that conform to the method requirements. In this program, at both sample locations, sixteen traverse points were used to measure velocity and volumetric flow rate according to the Reference Method 2 procedures.

EPA Reference Method 2 - "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)". Volumetric flow rate at the stack and inlet was determined by measuring the velocity using a Type S (Staustscheibe or reverse type) pitot tube with an assigned baseline coefficient of 0.84 and differential pressure gauge (inclined manometer).

EPA Reference Method 3C - "Determination of Carbon Dioxide, Methane, Nitrogen, and Oxygen from Stationary Sources". Integrated gas samples of the inlet and stack were collected in Tedlar bags and measured using a gas chromatography equipped with a Thermal Conductivity Detector (TCD). Percent value concentrations for oxygen and carbon dioxide and nitrogen were used to calculate dry molecular weight.

EPA Reference Method 4 - "Determination of Moisture Content in Stack Gases". Moisture content of the inlet and stack gas was measured by condensing flue gas moisture in Modified and Greenburg-Smith impingers immersed in an ice water bath and determining the moisture gain by gravimetric analysis.

EPA Reference Method 18 - "Measurement of Gaseous Organic Compound Emissions by Gas Chromatography". Integrated gas samples from the inlet and stack were collected in Tedlar bags. Methane and ethane concentrations were determined using a Shimadzu gas chromatograph equipped with a flame ionization detector (GC/FID). A six-foot-by-1/8-inch stainless steel column packed with Haysep-Q polymer (80/100 mesh) was used to separate the organic constituents. The methane and ethane concentrations were deducted from the total organics measured by the Reference Method 25A to determine the concentration of VOCs.

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EPA Reference Method 25A - "Determination of Total Organic Concentration Using a Flame Ionization Analyzer". Total hydrocarbons (THCs) were measured per Reference Method 25A and quantified as propane equivalent using a THC Flame Ionization Analyzer (FIA).

In this test program, THC Continuous Emission Monitoring Systems (CEMS) were used to determine the inlet and stack gaseous concentrations of total volatile organic compounds (VOC) per Reference Method 25A. A description of the Entech Engineering CEM systems is presented as follows.

Volatile Organic Compound (VOC) CEMS - Inlet

J.U.M. Engineering, Inc. THC Analyzer -

Model No.	:	VE 7
Serial No.	:	Entech #1
Principal	:	Flame ionization detector
Calibration	:	High Span - 8400 ppmv propane in N ₂ Mid Span - 4970 ppmv propane in N ₂ Low Span - 3000 ppmv propane in N ₂ Zero Span - N ₂ Zero Gas
Full Span	:	0 - 10000 ppmv THC

Volatile Organic Compound (VOC) CEMS - Stack

J.U.M. Engineering, Inc. THC Analyzer -

Model No.	:	VE 7
Serial No.	:	Entech #4
Principal	:	Flame ionization detector
Calibration	:	High Span - 845 ppmv propane in N ₂ Mid Span - 503 ppmv propane in N ₂ Low Span - 301 ppmv propane in N ₂ Zero Span - N ₂ Zero Gas
Full Span	:	0 - 1000 ppmv THC

Sampling System - The THC analyzer heated sample pump was used to draw samples continuously from the centroid of the sampling plane through a sample probe and a heated Teflon sample line to the analyzer. Control valves integrated in the instrument were used to regulate the gas flow to the detector. THC concentrations were measured on a hot wet basis.

Instrument Calibration - Calibration gases were sent via a sample line to a three-way valve located behind the sample probe and back to the instrument to check linearity

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(Calibration Error Check). The same procedure was repeated with the zero and mid-level calibration gases after each test run to measure the instrument drift (Calibration Drift). The calibration gases for the THC calibrations were EPA Protocol 1 gases.

Data Acquisition - A Yokogawa HR1300 hybrid recorder was used to record the CEMS output on a continuous basis. A Strawberry Tree digital integrator was used to integrate the CEMS output recorded on the hybrid recorder. Both raw data from the digital integrator, and the Hybrid recorder are included in Appendix A. The Strawberry Tree data was used for reporting purposes, while the hybrid recorder data was presented as additional (backup) data.

Dry molecular weight of the flue gas was determined based on the measured O_2 , CO_2 , and N_2 concentrations. The Reference Methods 2, 3C, and 4 results were used to calculate the inlet and stack flow rates, which were then used to determine the pollutant mass emission rates in pounds-per-hour (lb/hr). The destruction efficiency (DE) was calculated from the inlet and stack mass emission rates. A schematic of the inlet and stack sampling locations displaying Entech THC CEM systems are presented in Figures 1 and 2, respectively. A schematic of the moisture train with S-type pitot tube used at the RTO inlet and stack is displayed in Figure 3.

Figure 1
Zee Manufacturing, Ltd.
San Antonio, Texas
Regenerative Thermal Oxidizer (EPN RTO) Inlet
(TCEQ Account ID BG-1199-P; Permit No. 43104)
(Drawing Not to Scale)

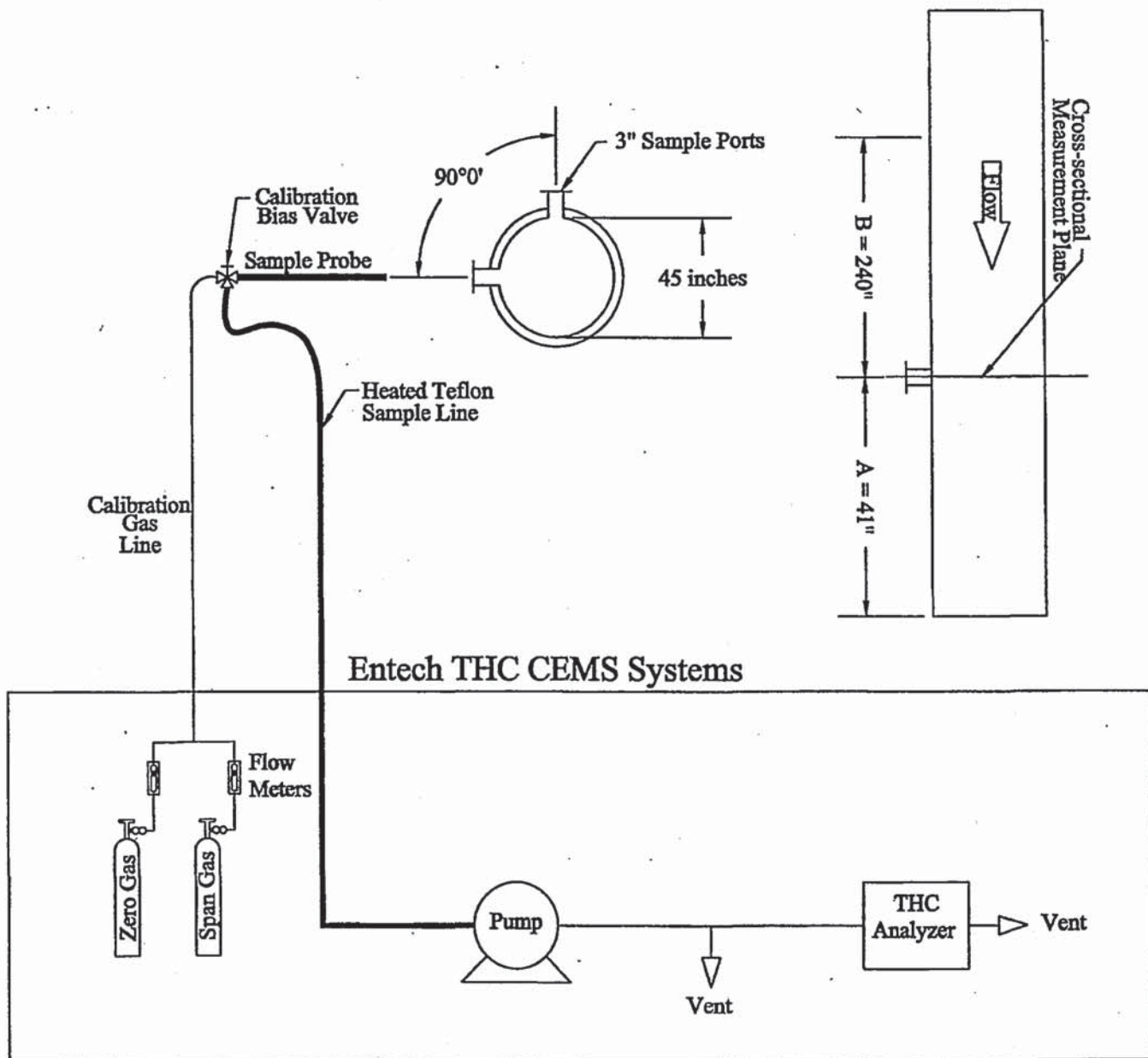


Figure 2
Zee Manufacturing, Ltd.
San Antonio, Texas
Regenerative Thermal Oxidizer (EPN RTO) Stack
(TCEQ Account ID BG-1199-P; Permit No. 43104)
(Drawing Not to Scale)

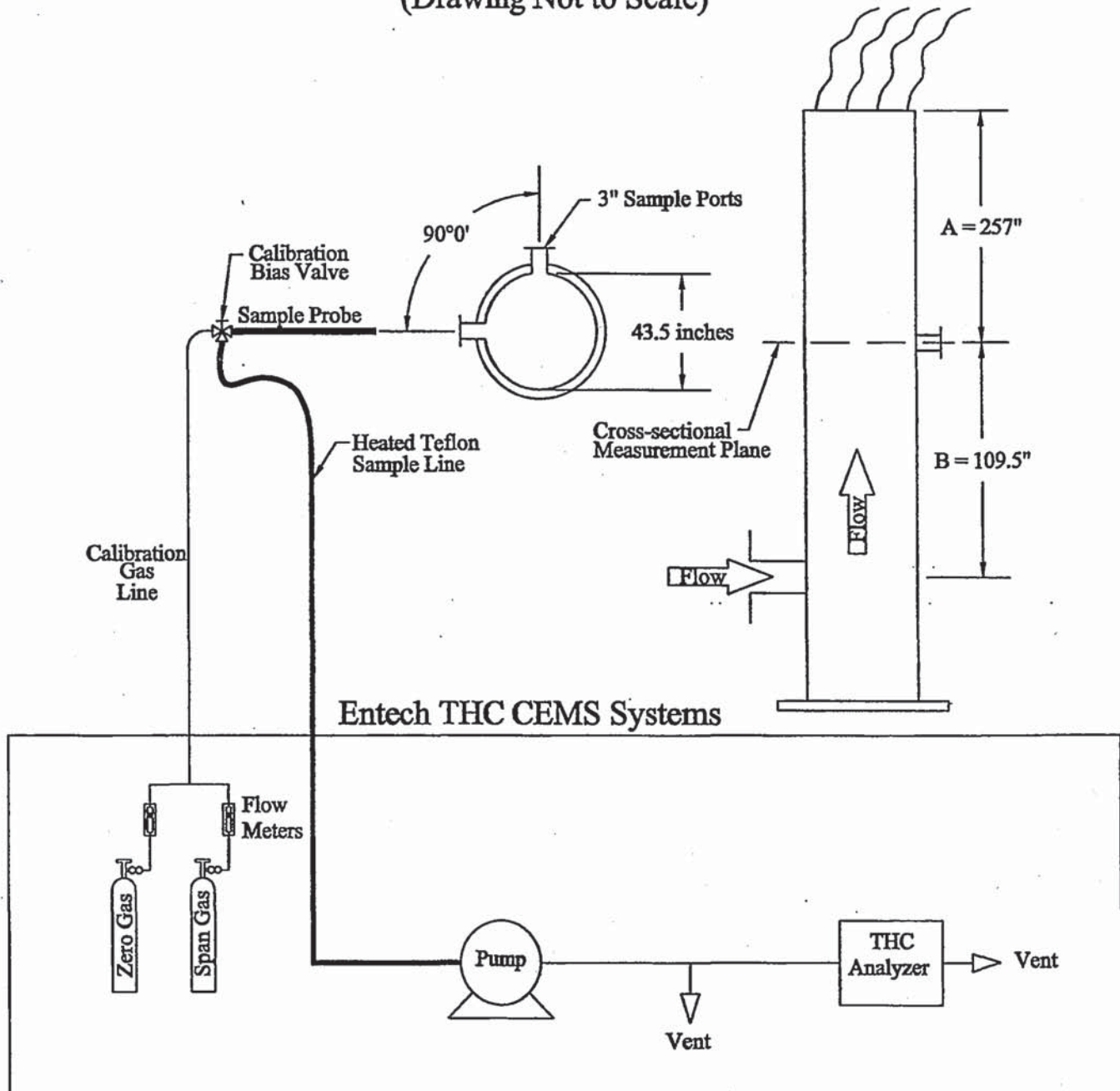
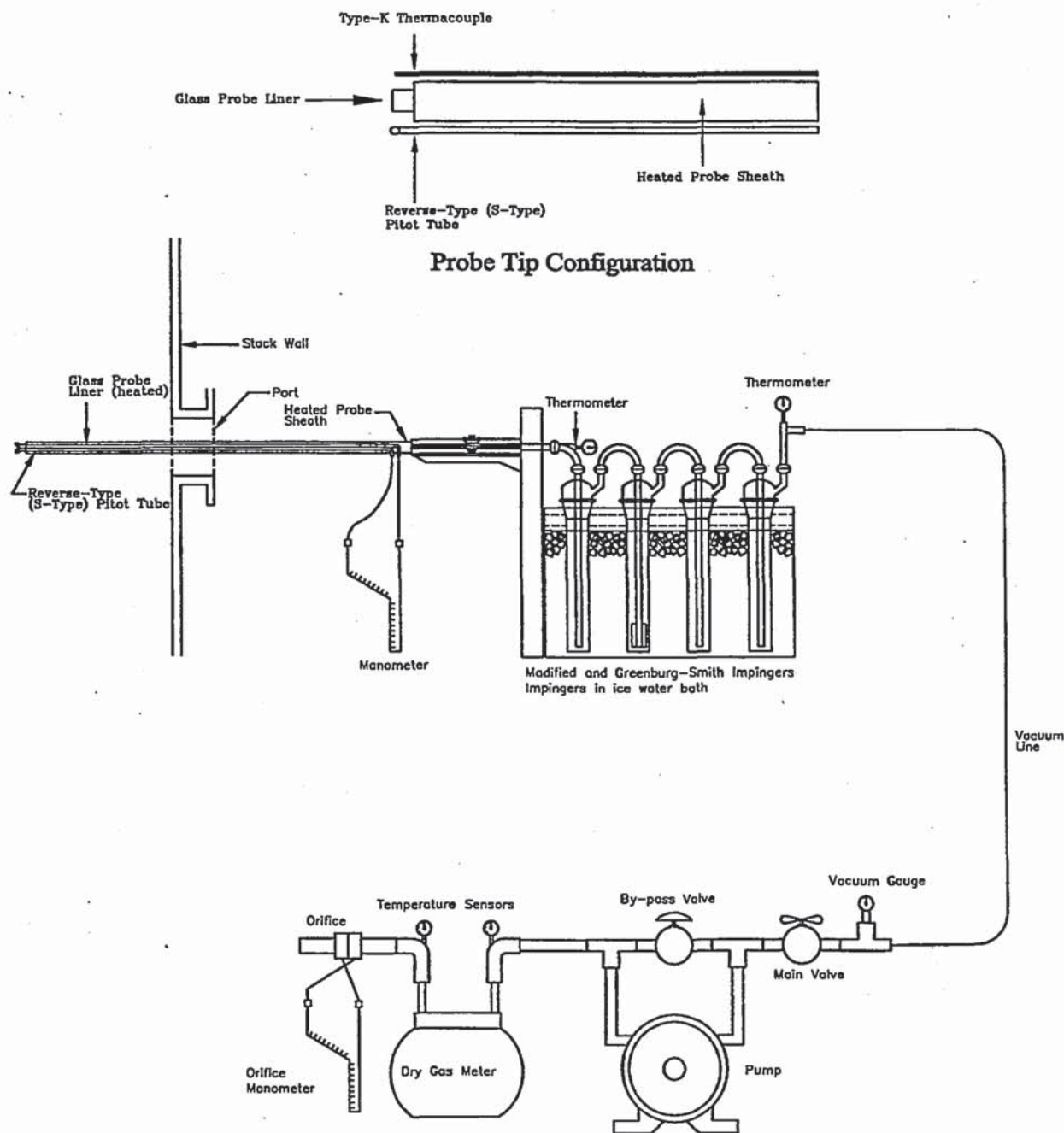


Figure 3.
Zee Manufacturing, Ltd.
San Antonio, Texas
Regenerative Thermal Oxidizer (EPN RTO)
(TCEQ Account No. BG-1199-P; Permit No. 43104)
Reference Method 4 - Moisture Sampling Train
(Drawing Not to Scale)



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SECTION 3.0 RESULTS AND DISCUSSIONS

Entech Engineering conducted an initial compliance test on the Regenerative Thermal Oxidizer at the Zee Manufacturing, Ltd. facility in San Antonio, Bexar County, Texas. Continuous spraying in the stain and topcoat/sealer booths was the condition determined to be maximum VOC emissions to the RTO. Equipment was set up at the regenerative thermal oxidizer inlet duct and stack (EPN RTO) on November 14, 2006 and testing was conducted on November 15, 2006. Three test runs were conducted with simultaneous measurement on the unit inlet and stack to measure total volatile organic compounds (total VOC). The inlet and stack three run average VOC concentrations were used in determining the mass emission rate and destruction efficiency.

For the stack emission compliance test, total VOC as propane equivalent mass emission rates averaged 0.52 lb/hr. For the demonstration of destruction efficiency, total VOC reduction was determined to be 99.1%. Summaries of the stack and inlet test results and selected test parameters are presented in Table 2.

All other pertinent data of the test program is contained in the appendices. The field raw data are contained in Appendix A. Laboratory data and data calculations and QAQC are presented in Appendices B and C. Instrument specifications, equipment calibrations, calibration gas certifications, process data, resumes, chain of custody, and personnel information are presented in Appendices D through J.

Table 2.

Zee Manufacturing, Ltd.

San Antonio, Texas

Regenerative Thermal Oxidizer Inlet and Outlet (EPN RTO)

(TCEQ Account No. BG-1199-P; Regulated Entity No. RN100542828; Customer Reference No. CN601490808)

Initial Compliance Test Summary

Test ID	Inlet				Test ID	Outlet			
	Test 1	Test 2	Test 3	Average		Test 1	Test 2	Test 3	Average
Sampling Date	11/15/06	11/15/06	11/15/06	N/A	Sampling Date	11/15/06	11/15/06	11/15/06	N/A
Sampling Time	11:12 - 12:21	12:42 - 13:51	14:12 - 15:21	N/A	Sampling Time	11:12 - 12:21	12:42 - 13:51	14:12 - 15:21	N/A
Sampling Duration (min)	64	64	64	64	Sampling Duration (min)	64	64	64	64

Stack & Sampling Condition Data									
Oxygen (O ₂)	vol%, dry	21.95	21.74	21.30	21.66	20.87	20.66	20.51	20.68
Carbon Dioxide (CO ₂)	vol%, dry	0.00	0.00	0.00	0.00	0.38	0.31	0.42	0.37
Moisture	vol%	0.02	0.03	0.00	0.02	0.00	1.04	1.07	0.70
Stack Gas Temperature	degrees F	78.6	77.6	75.6	77.3	130.9	132.0	120.8	127.9
Velocity	ft/sec	11.03	12.94	15.93	13.30	33.40	33.70	31.40	32.83
Volumetric Flow Rate	dscfm	7101.38	8342.93	10315.52	8586.61	18427.75	18307.35	17377.67	18037.59

Emission Data

Methane	ppmv, dry	2.33	3.07	2.14	2.18	0.15	0.17	0.30	0.21
Methane (as Propane Equivalent)	ppmv, dry	0.78	0.69	0.71	0.73	0.05	0.06	0.10	0.07
Ethane	ppmv, dry	0.79	0.79	0.79	0.79	0.05	0.06	0.10	0.07
Ethane (as Propane Equivalent)	ppmv, dry	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
THC as Propane	ppmv, dry	993	1045.0	1082.0	1040.00	4.9	4.8	3.6	4.43
VOC as Propane *	ppmv, dry	992.03	1044.12	1081.09	1039.08	4.66	4.55	3.31	4.17
	lb/hr	48.36	59.80	76.56	61.58	0.59	0.57	0.39	0.52
Destruction Efficiency =					98.78	99.04	99.48	99.10	

*VOC as Propane calculated as propane equivalents and exclude methane and ethane

Shaded cells calculated using minimum detection limits.