

1.1.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
001	Water-Based/Solvent Based Paper Saturator	Thermal Oxidizer

1.1.3 Applicable Emission Limitations

- a. i. An affected paper saturator line for the purpose of these unit-specific conditions is a process as described in Special Condition 1.1.1 and is using solvent-based resins and identified in Condition 1.1.2. Application of a water-based resin is covered by Application No. 96070071.
- ii. For the purpose of this permit, application of solvent-based resin solutions means application of resin solutions which do not use water as a diluent.
- b. The affected paper saturator line is subject to 35 IAC 212.321(a), which provides that:
 - i. No person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter (PM) from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.321 (see also Attachment 1) [35 IAC 212.321(a)].
 - ii. At the maximum anticipated process weight rate for the affected paper saturator, i.e. 11,500 pounds per hour, the allowable PM emission rate for the affected paper saturator line set by 35 IAC 212.321 is 6.46 pounds per hour.
- c. No person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2000 ppm, [35 IAC 214.301].

- d. The affected paper saturator line is classified as a "paper coating line" as that term is defined at 35 IAC 211.4490, and is subject to 35 IAC 215 Subpart F, which provides that the owner or operator shall either:
 - i. Not apply coating on the line in which the VOM content exceeds 2.9 pounds per gallon. This limitation is expressed in units of VOM per volume of coating (minus water and any compounds which are specifically exempted from the definition of VOM) as applied at each coating applicator. Compounds which are specifically exempted from the definition of VOM should be treated as water for the purpose of calculating the "less water" part of the coating composition [35 IAC 215.204(c)]; or,
 - ii. Operate a capture and control system and control device for VOM emissions and the owner or operator demonstrates equivalent compliance with Condition 1.1.3(d)(i) (35 IAC 215.205(c)) through the applicable coating analysis and capture system and control device efficiency test methods and procedures specified in 35 IAC 215.105 and recordkeeping and reporting requirements; and the control device is equipped with monitoring equipment, as specified in Condition 1.1.1, and the monitoring equipment is installed, calibrated, operated and maintained according to vendor specifications at all times the control device is in use.

1.1.4 Non-Applicability of Regulations of Concern

- a. The affected paper saturator is not subject to 40 CFR 60, Subpart VV, Standards of Performance for Polymeric Coating of Supporting Substrates Facilities because the operation does not fit the definition for "polymeric coating of supporting substrates" since it excludes paper, plastic film, metallic foil or metal coil.
- b. The curing oven on the affected paper saturator is not subject to 35 IAC 216.121, Emissions of Carbon Monoxide from Fuel Combustion Emission Units, because the affected paper saturator is not by definition a fuel combustion emission unit.

- c. The curing oven on the affected paper saturator is not subject to 35 IAC 217.121, emissions of nitrogen oxides from new fuel combustion emission sources, because the actual heat input is less than 73.2 MW (250 mmBtu/hr) and the affected paper saturator is not by definition a fuel combustion emission unit.
- d. The paper saturator line is not required to meet the limitations of 35 IAC 215.301 or 215.302, Use of Organic Material, because the coating line is subject to 35 IAC 215.204 [35 IAC 215.209].

1.1.5 Operational And Production Limits And Work Practices

- a. Requirements for the Thermal Oxidizer
 - i. Whenever solvent based resin solutions are being applied, the thermal oxidizer shall be operated to achieve at least 98 percent overall control efficiency for VOM, and be operated as follows. Although 98% overall control efficiency is the established efficiency sought by the Permittee, in no case shall the efficiency be lower than that required to demonstrate equivalence to 35 IAC 215.204(c). This requirement applies year round so that the Permittee may not shutdown the thermal oxidizer between November and March as otherwise might be allowed by 35 IAC 215.106.
 - ii. A. During solvent-based resin application, the thermal oxidizer combustion chamber shall be preheated to the manufacturer's recommended temperature but not less than the temperature at which the oxidizer was operated during the most recent emission test, before the paper coating process is begun, and this temperature shall be maintained during operation of the affected coating line.

[Note: Until emission testing is performed, the combustion chamber temperature shall not be less than 1400EF. This requirement does not apply when the Permittee is conducting emission testing.]

B. The thermal oxidizer shall always be operated when solvent-based resin paper saturation is in operation.

iii. The Permittee shall follow good operating practices for the thermal oxidizer, including periodic inspection, routine maintenance and prompt repair of defects.

These requirements are imposed in conjunction with the limitation in Condition 1.1.6 to assure that the use of solvent-based resin solution is not a major modification.

b. The curing oven on the affected paper saturator shall only be operated with natural gas as the fuel.

1.1.6 Emission Limitations

The affected paper saturator is subject to the following:

a. Emissions of volatile organic material from the affected paper saturator shall not exceed 27.3 tons/month and 135.8 tons/year. Compliance with the annual limitation shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 months total). This limitation is based on representations of maximum actual emission rates.

These limitations ensure that the use of solvent-based resin solutions does not constitute a new major source or major modification pursuant to the federal rules for Prevention of Significant Deterioration (PSD) 40 CFR 52.21.

b. Compliance with the emission limitation established in Condition 1.1.3(d) shall be based on Condition 1.1.12(b).

c. The thermal oxidizer shall be designed and maintained so as to maintain an overall capture and control efficiency of 98%.

1.1.7 Testing Requirements

a. Within 60 days after achieving the maximum production rate at which the affected paper saturator will be operated with solvent-based resins, but not later

than 180 days after initial startup of the affected paper saturator with solvent-based resins and at such other times as may be required by the Illinois EPA or the USEPA under section 114 of the CAA, the owner or operator of the affected paper saturator shall conduct performance test(s) to determine the percent retention rate of solvent within the paper overall control efficiency of the thermal oxidizer and VOM emissions of the saturator line and furnish the Illinois EPA or the USEPA a written report of the results of such performance test(s). The test procedures shall be designed to verify 98% overall control of VOM. Prior to conducting such a test, the Illinois EPA shall be consulted to verify that the intended test method is approved and is appropriate for use in testing this equipment to demonstrate compliance.

- b. i. Reference Method 25, or other test method(s) approved by the Illinois EPA shall be used to determine the VOC concentration, in ppmv, of each effluent gas stream entering and exiting the thermal oxidizer and each effluent gas stream emitted directly to the atmosphere. Reference Methods 1, 2, 3, and 4 shall be used to determine the sampling location, volumetric flowrate, molecular weight, and moisture of all sampled gas streams. For Reference Method 25, the sampling time for each of three runs must be at least 1 hour. The minimum sampling volume must be 0.003 dscm except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Illinois EPA.
- ii. The method set forth in 35 IAC Appendix B, Procedure T shall be used if the Permittee intends to demonstrate Permanent Total Enclosure on the saturator line (100 percent capture of VOM emissions).
- c. This test shall be conducted during circumstances which are representative of maximum emissions, and equipment data and material usage during the test shall be recorded.

- d. At least 30 days prior to the actual date of testing a written test plan shall be submitted to the Illinois EPA for review and approval. This plan shall describe the specific procedures for testing, including as a minimum:
 - i. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - ii. The conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the source and any control equipment will be determined.
 - iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations.
 - iv. The test method(s) which will be used, with the specific analysis method, if the method can be used with different analysis methods. The specific sampling, analytical and quality control procedures with an identification of the standard methods upon which they are based.
 - v. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
 - vi. Any proposed use of an alternative test method, with detailed justification.
 - vii. The format and content of the Source Test Report.
- e. The Illinois EPA shall be notified prior to these tests to enable the Illinois EPA to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the tests. The Illinois EPA may, at its discretion, accept notification with shorter

advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe the testing.

- f. Upon reasonable request by the Illinois EPA, the VOM content of specific coatings and cleaning solvents used on the affected paper saturator line shall be determined as follows:
 - i. The VOM content of representative coatings "as applied" on the affected coating line shall be determined according to USEPA Reference Methods 24 and 24A of 40 CFR 60 Appendix A and the procedures of 35 IAC 215.208.
 - ii. This testing may be performed by the supplier of a material provided that the supplier provides appropriate documentation for such testing to the Permittee and the Permittee's records pursuant to Condition 1.1.9(d) directly reflect the application of such material and separately account for any additions of solvent.

1.1.8 Monitoring Requirements

- a. The Permittee shall install, calibrate, maintain, and operate a monitoring device which continuously indicates and records the temperature of the thermal oxidizer's combustion chamber. The monitoring device shall have an accuracy of the greater of ± 0.75 percent of the temperature being measured expressed in degrees Celsius or $\pm 2.5^{\circ}\text{C}$.
- b. The owner or operator of an affected paper saturator controlled by a thermal oxidizer which uses a hood or enclosure to capture fugitive VOC emissions shall install, calibrate, maintain, and operate a monitoring device which continuously indicates that the hood or enclosure is operating. No continuous monitor shall be required if the owner or operator can demonstrate that the saturator is interlocked with the affected paper saturator line's main draft fan to the thermal oxidizer and the main draft fan cannot be operated without the oxidizer being fired, except as is allowed to purge the oxidizer during the startup procedure.

1.1.9 Recordkeeping Requirements

The Permittee shall maintain records of the following items for the affected paper saturator to demonstrate compliance with Conditions 1.1.3, 1.1.5, and 1.1.6:

- a. A calendar month record of all coatings used and the results of the reference test method specified in Condition 1.1.7(f) or the manufacturer's formulation data used for determining the VOC content of those coatings.
- b. A continuous record of the combustion chamber temperature of the thermal oxidizer during coating operations, which shall include reading at least every 10 minutes. Records of all 3-hour periods (during actual coating operations) during which the average temperature of the device is more than 28EC (50EF) below the required temperature complying with Condition 1.1.5(b)(ii).
- c. Records of the testing, if required, of VOC content of coatings and cleaning solvents used on the line pursuant to Condition 1.1.7(f), which include the following:
 - i. Identification of material tested;
 - ii. Results of analysis;
 - iii. Documentation of analysis methodology; and
 - iv. Person performing analysis.
- d. Records of the testing of the affected saturator line pursuant to Condition 1.1.7(a), which include the following:
 - i. The date, place and time of sampling or measurements;
 - ii. The date(s) analyses were performed;
 - iii. The company or entity that performed the analyses;
 - iv. The analytical techniques or methods used;

- v. The results of such analyses; and
 - vi. The operating conditions as existing at the time of sampling or measurement.
- e. The Permittee shall collect and record all of the following information each day for the paper saturating line.
- i. A log of operating time for the capture system, control device, monitoring equipment and the associated coating line. These logs shall reasonably identify periods of time when: an emission unit(s) served by the control device operate but the capture system is not operational; emission unit(s) served by the control device operate but the control device is not operating; and the control device is operating but its monitoring equipment is not operating; and
 - ii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages.
- f. The Permittee shall report annual VOM emissions from the affected paper saturator line based on the monthly coating usage and VOM content and performance of the thermal oxidizer as calculated in Condition 1.1.12(c).

1.1.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of noncompliance of the affected paper saturator line with the permit requirements as follows. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. For all affected paper saturators subject to compliance with Conditions 1.1.5, the performance test data and results from the performance test shall be submitted to the Illinois EPA or the USEPA as specified in Condition 1.1.7(a).

- b. Quarterly reports to the Illinois EPA of exceedances of the VOC emission limits specified in Conditions 1.1.3(d)(ii) and 1.1.6(a).
- c. Any other exceedance shall be reported by sending a copy of such record to the Illinois EPA within 30 days following the occurrence of the violation.

1.1.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

1.1.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 1.1.9 and the emission factors and formulas listed below:

- a. Compliance with Condition 1.1.3(b) is assumed to be achieved by the work practices inherent in operation of the paper saturator line. Compliance with Conditions 1.1.3(c) is assumed to be achieved by the work-practices inherent in operation of a natural gas-fired cure oven.
- b. Compliance with Condition 1.1.3(d)(ii) is assumed by proper operation of the thermal oxidizer, as addressed by Condition 1.1.5(a) through (b).
- c. To determine compliance with Condition 1.1.6, emissions from the affected paper saturator line shall be calculated based on the following:

Monthly Volatile Organic Material Emissions:

Where:

A_m = Actual VOM emissions in tons/month

i = Subscript denoting a specific coating used

n = Total number of saturator coatings applied

- V_c = Volume of coating applied in gallons/month (minus water and other compound which are specifically exempted from the definition of VOM)
- D_c = The density of VOM in each coating applied for the purpose of calculating A_m (minus water and other compounds which are specifically exempted from the definition of VOM) in pounds/gallon
- V_d = Volume of diluent applied in gallons/month minus water and other compounds which are specifically exempted from the definition of VOM
- D_d = The density of VOM in each diluent used for the purpose of calculating A_m (minus water and other compounds which are specifically exempted from the definition of VOM) in pounds/gallon
- $R_{\%}$ = Percent VOM retained in product as determined through source testing
- $E_{\%}$ = Thermal oxidizer efficiency expressed as a percent as determined through source testing

2. This permit is issued based on negligible emissions of VOM and HAP from the resin kitchen and each storage tank. For this purpose, emissions shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/year.

If you have any questions on this, please call Bob Smet at 217/782-2113.

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DES:RPS:psj

cc: Region 3