

**AIR EMISSION SUMMARY**

The air contaminant sources listed below comprise the Permit to Install for **PCC Airfoils** located in **STARK** County. The sources listed below shall not exceed the emission limits/control requirements contained in the table. This condition in no way limits the applicability of any other state or federal regulations. Additionally, this condition does not limit the applicability of additional special terms and conditions of this permit.

<u>Ohio EPA Source Number</u>	<u>Source Identification Description</u>	<u>BAT Determination</u>	<u>Applicable Federal &amp; OAC Rules</u>	<u>Permit Allowable Mass Emissions and/or Control/Usage Requirements</u>
L007	Open top vapor degreaser for mold finishing. The emissions unit involves the use of trichloroethylene cleaning solvent, 4 foot by 2 foot opening, powered cover, and a refrigerated freeboard chiller (Baron Blakeslee brand).	Compliance with the MACT Standard for vapor degreasers	MACT standard for vapor degreasers, 40 CFR Part 63.463  OAC 3745-21-09 (O)  OAC 3745-31-05 (A) (3)	The permittee shall ensure that the chilled air blanket temperature (in °F), measured at the center of the air blanket, is no greater than 30 percent of the solvent's boiling point.  The permittee shall maintain a freeboard with a freeboard ratio equal to 1.0 or greater.  See the additional, special, terms and conditions marked OAC Additional Special Terms and Conditions  1.1 pound of Trichloroethylene per hour  4.9 TPY Trichloroethylene

**SUMMARY  
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS**

<u>Pollutant</u>	<u>Tons / Year</u>
Trichloroethylene	4.9

The information contained under the Summary of Emissions section of the Permit to Install is for informational purposes only and is not enforceable.

## **Additional Special Terms and Conditions**

### **A. Operational Restrictions**

1. The permittee shall meet all of the following required work and operational practices:
  - a. Control air disturbances across the solvent cleaning machine opening(s) by incorporating the following control equipment or techniques:
    - i. Cover(s) for the solvent cleaning machine shall be in place during the idling mode and during the downtime mode unless either the solvent has been removed from the machine or maintenance or monitoring is being performed that requires the cover(s) to not be in place. The cover must be able to be readily opened or closed, must completely cover the cleaning machine openings when in place, and must be free of cracks, holes and other defects.
  - b. The solvent cleaning machine shall have a freeboard ratio of 1.0 or greater.
  - c. The solvent cleaning machine shall have an automated parts handling system capable of moving parts or parts baskets at a speed of 3.4 meters per minute (11 feet per minute) or less from the initial loading of parts through removal of cleaned parts.
  - d. The solvent cleaning machine shall be equipped with a device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils.
  - e. The solvent cleaning machine shall be equipped with a vapor level control device that shuts off sump heat if the vapor level in the vapor cleaning machine rises above the height of the primary condenser.
  - f. The solvent cleaning machine shall have a primary condenser.
  - g. The parts baskets or the parts being cleaned in solvent cleaning machine shall not occupy more than 50 percent of the solvent/air interface area unless the parts baskets or parts are introduced at a speed of 0.9 meter per minute (3 feet per minute) or less.
  - h. Any spraying operations shall be done within the vapor zone or within a section of the solvent cleaning machine that is not directly exposed to the ambient air (i.e., a baffled or enclosed area of the

solvent cleaning machine).

- i. Parts shall be oriented so that the solvent drains from them freely. Parts having cavities or blind holes must be tipped or rotated before being removed from the solvent cleaning machine unless an equally effective approach has been approved by the Director (Canton City Health Department, Air Pollution Control Division).
  - j. Parts baskets or parts shall not be removed from the solvent cleaning machine until dripping has stopped.
  - k. During startup of the solvent cleaning machine, the primary condensers shall be turned on before the sump heater.
  - l. During shutdown of the solvent cleaning machine, the sump heater shall be turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off.
  - m. When solvent is added or drained from the solvent cleaning machine, the solvent shall be transferred using threaded or other leakproof couplings and the end of the pipe in the solvent sump shall be located beneath the liquid solvent surface.
  - n. The solvent cleaning machine and its associated controls shall be maintained as recommended by the manufacturers of the equipment or using alternative maintenance practices that have been demonstrated to the satisfaction of the Director (Canton City Health Department, Air Pollution Control Division) to achieve the same or better results as those recommended by the manufacturer.
  - o. The permittee shall complete and pass the applicable sections of the test of solvent cleaning operating procedures in 40 CFR Part 63, Appendix B if requested during an inspection by the Director (Canton City Health Department, Air Pollution Control Division).
  - p. Waste solvent, still bottoms, and sump bottoms shall be collected and stored in closed containers. The closed containers may contain a device that would allow pressure relief, but must not allow liquid solvent to drain from the container.
  - q. Sponges, fabric, wood, and paper products shall not be cleaned.
2. The open top vapor degreaser shall be operated and maintained in accordance with the following practices to minimize solvent evaporation from the unit (OAC additional special term and condition):
    - a. A cover that can be opened and closed easily without disturbing the vapor zone.

- b. A condenser flow switch and thermostat or any other device which shuts off the sump heat if the condenser coolant is either not circulating or is too warm.
- c. A spray safety switch which shuts off the spray pump if the vapor level drops below any fixed spray nozzle.
- d. A vapor level control thermostat or any other device which shuts off the sump heat when the vapor level rises too high.
- e. A water flow switch, water pressure switch, or any other device which shuts off the sump heat if the water in a water-cooled condenser has no flow or no pressure, whichever is being monitored.
- f. Freeboard ratio and cover requirements:
  - i. A freeboard with a freeboard ratio greater than or equal to 1.0 shall be maintained, and if the open top vapor degreaser opening is greater than 10 square feet, the cover must be powered or equipped with mechanical features whereby it can be readily closed when the degreaser is not in use.
    - ii. The permittee shall operate and maintain a refrigerated chiller for the open top vapor degreaser.
  - g. Keep the cover closed at all times except when processing work loads through the degreaser.
  - h. Minimize solvent carry-out by:
    - i. Racking parts so that solvent drains freely and is not trapped.
    - ii. Moving parts in and out of the degreaser at less than 11 feet per minute.
    - iii. Holding the parts in the vapor zone at least 30 seconds or until condensation ceases, whichever is longer.
    - iv. Tipping out any pools of solvent on the cleaned parts before removal from the vapor zone.
    - v. Allowing parts to dry within the degreaser for at least 15 seconds or until visually dry, whichever is longer.
  - i. Clean only materials that are neither porous nor absorbent.
  - j. Occupy no more than one-half of the degreaser's open-top area with a workload.

- k. Always spray within the vapor level.
  - l. Repair solvent leaks immediately, or shut down the degreaser.
  - m. Store waste solvent only in covered containers.
  - n. Operate the cleaner such that water cannot be visually detected in solvent exiting the water separator.
  - o. Use no ventilation fans near the degreaser opening.
  - p. When the cover is open, do not expose the open top vapor degreaser to drafts greater than 131 feet per minute, as measured between 3 and 6 feet upwind and at the same elevation as the tank lip.
  - q. If a lip exhaust is used on the open top vapor degreaser, do not use a ventilation rate that exceeds 65 cubic feet per minute per square foot of degreaser open area, unless a higher rate is necessary to meet Occupational Safety and Health Administration requirements.
  - r. Provide a permanent, conspicuous label, summarizing the operating procedures.
3. The maximum annual trichloroethylene usage for this emissions unit shall not exceed 800 gallons, based upon a rolling, 12-month summation of the trichloroethylene usage figures.

## **B. Monitoring and/or Record Keeping Requirements**

1. The permittee shall conduct monitoring and record the results on a monthly basis for the following:
  - a. For the cover, the owner or operator shall conduct a visual inspection to determine if the cover is opening and closing properly, completely covers the cleaning machine opening when closed, and is free of cracks, holes, and other defects.
  - c. If a dwell is used, the owner or operator shall determine the actual dwell time by measuring the period of time that parts are held within the freeboard area of the solvent cleaning machine after cleaning.
2. The permittee shall monitor the hoist speed as described below:
  - a. The permittee shall determine the hoist speed by measuring the time it takes for the hoist to travel a measured distance. The speed is equal to the distance in meters divided by the time in minutes (meters per minute).

- b. The permittee shall conduct monthly monitoring of the hoist speed. If after the first year, no exceedances of the hoist speed are measured, the permittee may begin monitoring the hoist speed quarterly.
    - c. If an exceedance of the hoist speed occurs during quarterly monitoring, the permittee shall return to a monthly monitoring frequency until another year of compliance without an exceedance is demonstrated.
    - d. If the permittee can demonstrate to the satisfaction of the Director (appropriate District Office or local air agency) in the initial compliance report that the hoist speed cannot exceed a speed of 3.4 meters per minute (11 feet per minute), the required monitoring frequency is quarterly, including during the first year of compliance.
3. The permittee shall maintain the following records in written or electronic form for the lifetime of the solvent cleaning machine:
  - a. Owner's manuals, or if not available, written maintenance and operating procedures for the solvent cleaning machine and control equipment.
  - b. The date of installation for the solvent cleaning machine and all of its control devices. If the exact date for the installation is not known, a letter certifying that the cleaning machine and its control devices were installed prior to, or on, November 29, 1993, or after November 29, 1993, may be substituted.
  - c. Records of the halogenated HAP solvent content for the solvent used in the solvent cleaning machine.
4. The permittee shall maintain the following records in written or electronic form for a period of five years for the solvent cleaning machine:
  - a. The results of control device monitoring required in this section of the permit.
  - b. Information on the actions taken to comply with 40 CFR 63.463 (e) and (f), including records of written or verbal orders for replacement parts, a description of the repair made, and additional monitoring conducted to demonstrate that monitored parameters have returned to acceptable levels.
  - c. Estimates of the trichloroethylene consumption for the solvent cleaning machine for each calendar year.
  - d. The annual amount of trichloroethylene employed for the solvent cleaning machine for each calendar year.

5. Record keeping requirements for units equipped with a refrigerated chiller (OAC Additional Special Term and Condition):

The permittee shall maintain records of the following information:

- a. The types of solvents employed in the open top vapor degreaser.
  - b. All control equipment maintenance.
6. The permittee shall maintain monthly records of the following information:
    - a. The amount (in gallons) of the trichloroethylene usage for each month; and
    - b. The rolling, 12-month summation of the amount (in gallons) of the trichloroethylene usage.

### **C. Reporting Requirements**

1. The permittee shall conduct monitoring and record the results on a weekly basis for the freeboard refrigeration device by using a thermometer or thermocouple to measure the temperature at the center of the air blanket during the idling mode.
2. The permittee shall submit an initial notification report as soon as practicable before the construction or reconstruction is planned to commence. This report shall include all of the information required in 40 CFR 63.5 (d) (1) of Subpart A, with the following revisions and additions:
  - a. The report shall include a brief description of the solvent cleaning machine type (batch vapor, batch cold, vapor in-line, or cold in-line), solvent/air interface area, and existing controls.
  - b. The report shall include the anticipated compliance approach for the solvent cleaning machine.
  - c. The report shall include an estimate of the annual trichloroethylene consumption for the solvent cleaning machine in lieu of the requirements of 40 CFR 63.5 (d) (1) (ii) (H), Subpart A.
3. The permittee shall submit an initial statement of compliance no later than 150 days after startup. Each initial statement of compliance shall contain the following:
  - a. The name and address of the permittee.
  - b. The address (i.e., physical location) of the solvent cleaning machine.
  - c. A list of the control equipment used to achieve compliance.

- d. A list of the parameters that are monitored and the values of these parameters measured on or during the first month after the compliance date for each piece of control equipment required to be monitored.
4. The permittee shall submit an annual report by February 1 of each year for the preceding year. Each annual report shall contain the following:
  - a. A signed statement from the facility owner or their designee stating that, All operators of solvent cleaning machines have received training on the proper operation of solvent cleaning machines and their control devices sufficient to pass the test required pursuant to 40 CFR 60.463 (d) (10).
  - b. An estimate of solvent consumption during the reporting period.
5. The permittee shall submit an exceedance report on a semiannual basis. If the temperature of the chilled air blanket, measured at the center of the air blanket, was greater than 30% of the solvent's boiling point, and no correction was made within 15 days of detection, the permittee shall begin to submit a quarterly report until such time that the permittee requests and receives approval of a less frequent reporting frequency from the Director (appropriate District Office or local air agency). The permittee may receive approval of less frequent reporting if the following conditions are met: (1) The emissions unit has demonstrated a full year of compliance without an exceedance, (2) the permittee continues to comply with all relevant record keeping and monitoring requirements specified in 40 CFR 63.1, General Provisions, and (3) the Director (appropriate District Office or local air agency) does not object to a reduced frequency of reporting for the affected emissions unit as provided in paragraph (e) (3) (iii) of Subpart A, 40 CFR 63.1, General Provisions. Each exceedance report shall be delivered or postmarked by the 30th day following the reporting period. Each exceedance report shall contain the following:
  - a. The reason and a description of the exceedance and action(s) taken to comply with 40 CFR 63.463 (e) and (f) including written or verbal orders for replacement parts, a description of the repairs made, and additional monitoring conducted to demonstrate that monitored parameters have returned to acceptable levels.
  - b. If no exceedance has occurred, a statement to that effect shall be submitted.
6. The permittee shall submit deviation (excursion) reports which identify all exceedances of the rolling, 12-month trichloroethylene usage limitation denoted in Condition A.3 of this permit.

#### **D. Testing Requirements**

1. The permittee shall determine the facility's potential to emit (PTE) from all solvent cleaning operations. A facility's total PTE is the sum of the HAP emissions from all solvent cleaning operations plus all HAP emissions from other emissions units from within the facility. The potential to emit shall be determined in accordance with the following procedures:

- a. Determine the potential to emit for each individual solvent cleaning machine using the following equation:

$$PTE_i = H_i \times W_i \times SAI_i$$

Where:

$PTE_i$  = the potential to emit for the solvent cleaning machine i (kilograms solvent per year).

$H_i$  = hours of operation for solvent cleaning machine i (hours per year).

= 8760 hours per year, unless otherwise restricted by a federally enforceable requirement.

$W_i$  = the working mode uncontrolled emission rate (kilograms per square meter per hour).

= 1.95 kilograms per square meter per hour for batch vapor and cold cleaning machines.

= 1.12 kilograms per square meter per hour for in-line cleaning machines.

$SAI_i$  = solvent/air interface area of solvent cleaning machine i (square meters). Section 63.461 defines the solvent/air interface area for those machines that have a solvent /air interface. Cleaning machines that do not have a solvent area interface shall calculate a solvent/air interface area using the procedure in paragraph (b) below.

- b. Cleaning machines that do not have a solvent/air interface shall calculate a solvent/air interface area using the following equation:

$$SAI = 2.2 * (Vol)^{0.6}$$

Where:

$SAI$  = the solvent/air interface area (square meters).

$Vol$  = the cleaning capacity of the solvent cleaning machine (cubic meters).

- c. Sum the  $PTE_i$  for all solvent cleaning operations to obtain the total potential to emit for solvent cleaning operations at the facility.
2. Compliance with the emission limitation(s) in the Air Emission Summary of this Permit to Install shall be determined in accordance with the following method(s):

a. Emission Limitation

1.1 lbs trichloroethylene/hr

Applicable Compliance Method:

Multiply the gallons of trichloroethylene used in the year (assuming no waste) by the density of trichloroethylene 12.2 pounds per gallon and divide by 2,000 pounds per ton to obtain the annual emissions in tons. Then divide the annual emissions in tons by 8,760 hours per year and multiply by 2,000 pounds per ton to obtain the perchloroethylene emissions in pounds per hour. The calculated hourly emission rate must be less than 1.1 pounds of perchloroethylene per hour.

b. Emission Limitation

4.9 TPY trichloroethylene

Applicable Compliance Method

Follow the compliance method directly above. The annual emissions must be less than 4.9 TPY.

**E. Miscellaneous Requirements**

None.

**Emissions Calculations for  
PCC Airfoils for the proposed  
Open Top Vapor Degreaser  
PTI #15-1321**

**Uncontrolled Potential to Emit**

The MACT standard provides the following equation for calculating the Potential to Emit (PTE) for this emissions unit:

$$\text{PTE} = \text{H} \times \text{W} \times \text{SAI}$$

where,

PTE = potential to emit (kilograms solvent per year)

H = hours of operation for the emissions unit (use 8760 hrs/yr, unless otherwise restricted in a federally enforceable permit)

W = the working mode uncontrolled emission rate (kilograms per square meter per hour)

= 1.95 kilograms per square meter per hour for batch vapor and cold cleaning machines

SAI = solvent/air interface area of solvent cleaning machine (square meters)

$$= 4 \text{ ft} \times 2 \text{ ft} = 8 \text{ sq. ft.} \times 0.092903 \text{ sq. m/sq. ft.} = 0.7432 \text{ sq. m}$$

$$\text{PTE} = 8760 \text{ hrs/yr} \times 1.95 \text{ kg/sq.meter/hr} \times 0.7432 \text{ sq.meter}$$

$$= 12,696 \text{ kg solvent/yr} \times 0.0011 \text{ ton/kg} = 14 \text{ tons solvent/yr}$$

**Restricted Potential to Emit**

The solvent density is 12.2 lbs/gal. Therefore, based on the PTE above, the maximum solvent usage would be as follows:

$$14 \text{ tons/yr} \times 2000 \text{ lbs/ton} = 28,000 \text{ lbs/yr} \times \text{gal}/12.2 \text{ lbs} = 2,295 \text{ gal/yr}$$

PCC has proposed to use no more than 800 gallons of solvent per year. The reason for the drastic reduction in solvent usage is due to the fact that the unit will utilize control measures such as a cover and a refrigerated chiller which will contain the solvent in the degreaser and minimize evaporation.

If we assume that all 800 gallons of solvent are evaporated into the air, the restricted emission limit is as follows:

$$800 \text{ gal/yr} \times 12.2 \text{ lbs solvent/gal} \times \text{ton}/2000 \text{ lbs} = 4.9 \text{ tpy OC}$$

The above calculation is a conservative assumption because not all 800 gallons will actually evaporate. The unit has a capacity of approximately 300

gallons. Consequently, PCC will either top off the solvent periodically, or put in fresh solvent a couple of times each year to ensure that the unit performs properly. In addition, PCC will be recycling the waste solvent. The maximum solvent used each year, however, will not exceed 800 gallons.

The average hourly emission rate is calculated as follows:

$$4.9 \text{ tpy} \times 2000 \text{ lbs/ton} \times \text{yr}/8760 \text{ hrs} = 1.1 \text{ lb/hr trichloroethylene}$$