



State of Ohio Environmental Protection Agency

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P.O. Box 1049  
Columbus, OH 43216-1049

6/18/2009

Certified Mail

Edward Boothe  
GE Lighting Inc - Bucyrus Lamp Plant  
GE Company - Bucyrus Lamp Plant  
1250 South Walnut Street  
Bucyrus, OH 44820

No	TOXIC REVIEW
No	PSD
No	SYNTHETIC MINOR
No	CEMS
No	MACT
No	NSPS
No	NESHAPS
No	NETTING
No	MAJOR NON-ATTAINMENT
No	MODELING SUBMITTED

RE: FINAL AIR POLLUTION PERMIT-TO-INSTALL  
Facility ID: 0317010010  
Permit Number: 03-17435  
Permit Type: Initial Installation  
County: Crawford

Dear Permit Holder:

Enclosed please find a final Air Pollution Permit-to-Install (PTI) which will allow you to install or modify the described emissions unit(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, we urge you to read it carefully.

The issuance of this PTI is a final action of the Director and may be appealed to the Environmental Review Appeals Commission ("ERAC") under Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and describe the action complained of and the grounds for the appeal. The appeal must be filed with the ERAC within thirty (30) days after notice of the Director's action. A filing fee of \$70.00 must be submitted to the ERAC with the appeal, although the ERAC, has discretion to reduce the amount of the filing fee if you can demonstrate (by affidavit) that payment of the full amount of the fee would cause extreme hardship. If you file an appeal of this action, you must notify Ohio EPA of the filing of the appeal (by providing a copy to the Director) within three (3) days of filing your appeal with the ERAC. Ohio EPA requests that a copy of the appeal also be provided to the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the ERAC at the following address:

Environmental Review Appeals Commission  
309 South Fourth Street, Room 222  
Columbus, OH 43215

The Ohio EPA is encouraging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Compliance Assistance and Pollution Prevention at (614) 644-3469. If you have any questions regarding this permit, please contact the Ohio EPA DAPC, Northwest District Office. This permit has been posted to the Division of Air Pollution Control (DAPC) Web page <http://www.epa.state.oh.us/dapc>.

Sincerely,

*Michael W. Ahern*  
Michael W. Ahern, Manager  
Permit Issuance and Data Management Section, DAPC

Cc: U.S. EPA Region 5 Via E-Mail Notification  
Ohio EPA DAPC, Northwest District Office

Ted Strickland, Governor  
Lee Fisher, Lieutenant Governor  
Chris Korleski, Director





**State of Ohio Environmental Protection Agency  
Division of Air Pollution Control**

**FINAL**

**Air Pollution Permit-to-Install  
for  
GE Lighting Inc - Bucyrus Lamp Plant**

Facility ID: 0317010010  
Permit Number: 03-17435  
Permit Type: Initial Installation  
Issued: 6/18/2009  
Effective: 6/18/2009





State of Ohio Environmental Protection Agency  
 Division of Air Pollution Control

**Air Pollution Permit-to-Install**  
 for  
 GE Lighting Inc - Bucyrus Lamp Plant

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State of Ohio Environmental Protection Agency  
Division of Air Pollution Control

**Final Permit-to-Install**  
**Permit Number:** 03-17435  
**Facility ID:** 0317010010  
**Effective Date:** 6/18/2009

## Authorization

Facility ID: 0317010010  
Facility Description: Fluorescent Lamp Manufacturing  
Application Number(s): A0003716  
Permit Number: 03-17435  
Permit Description: This permit action is an administrative modification to PTI 03-13538 issued on 5/8/03 involving high speed lamp lines P006, P007 and P008. The modification is for purposes of resolving appeal case number ERAC 175299. It should be noted that P006 was modified to include bulb crushing operations by PTI 03-16008 issued on 8/23/03. This modification shall supersede both previous permit actions.  
Permit Type: Initial Installation  
Permit Fee: \$0.00  
Issue Date: 6/18/2009  
Effective Date: 6/18/2009

This document constitutes issuance to:

GE Lighting Inc - Bucyrus Lamp Plant  
GE Company - Bucyrus Lamp Plant  
1250 South Walnut Street  
Bucyrus, OH 44820

Of a Permit-to-Install for the emissions unit(s) identified on the following page.

Ohio EPA District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Northwest District Office  
347 North Dunbridge Road  
Bowling Green, OH 43402  
(419)352-8461

The above named entity is hereby granted a Permit-to-Install for the emissions unit(s) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Chris Korleski  
Director



## Authorization (continued)

Permit Number: 03-17435

Permit Description: This permit action is an administrative modification to PTI 03-13538 issued on 5/8/03 involving high speed lamp lines P006, P007 and P008. The modification is for purposes of resolving appeal case number ERAC 175299. It should be noted that P006 was modified to include bulb crushing operations by PTI 03-16008 issued on 8/23/03. This modification shall supersede both previous permit actions.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

<b>Emissions Unit ID:</b>	<b>P006</b>
Company Equipment ID:	L-4
Superseded Permit Number:	03-16008
General Permit Category and Type:	Not Applicable
<b>Emissions Unit ID:</b>	<b>P007</b>
Company Equipment ID:	L-5
Superseded Permit Number:	03-13538
General Permit Category and Type:	Not Applicable
<b>Emissions Unit ID:</b>	<b>P008</b>
Company Equipment ID:	L-6
Superseded Permit Number:	03-13538
General Permit Category and Type:	Not Applicable



State of Ohio Environmental Protection Agency  
Division of Air Pollution Control

**Final Permit-to-Install**  
**Permit Number:** 03-17435  
**Facility ID:** 0317010010  
**Effective Date:** 6/18/2009

## **A. Standard Terms and Conditions**



## **1. Federally Enforceable Standard Terms and Conditions**

- a) All Standard Terms and Conditions are federally enforceable, with the exception of those listed below which are enforceable under State law only:
  - (1) Standard Term and Condition A. 2.a), Severability Clause
  - (2) Standard Term and Condition A. 3.c) through A. 3.e) General Requirements
  - (3) Standard Term and Condition A. 6.c) and A. 6.d), Compliance Requirements
  - (4) Standard Term and Condition A. 9., Reporting Requirements
  - (5) Standard Term and Condition A. 10., Applicability
  - (6) Standard Term and Condition A. 11.b) through A. 11.e), Construction of New Source(s) and Authorization to Install
  - (7) Standard Term and Condition A. 14., Public Disclosure
  - (8) Standard Term and Condition A. 15., Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations
  - (9) Standard Term and Condition A. 16., Fees
  - (10) Standard Term and Condition A. 17., Permit Transfers

## **2. Severability Clause**

- a) A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.
- b) All terms and conditions designated in parts B and C of this permit are federally enforceable as a practical matter, if they are required under the Act, or any its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA and the State and by citizens (to the extent allowed by section 304 of the Act) under the Act. Terms and conditions in parts B and C of this permit shall not be federally enforceable and shall be enforceable under State law only, only if specifically identified in this permit as such.

## **3. General Requirements**

- a) The permittee must comply with all terms and conditions of this permit. Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and re-issuance, or modification.



- b) It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.
- c) This permit may be modified, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.
- d) This permit does not convey any property rights of any sort, or any exclusive privilege.
- e) The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

**4. Monitoring and Related Record Keeping and Reporting Requirements**

- a) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:
  - (1) The date, place (as defined in the permit), and time of sampling or measurements.
  - (2) The date(s) analyses were performed.
  - (3) The company or entity that performed the analyses.
  - (4) The analytical techniques or methods used.
  - (5) The results of such analyses.
  - (6) The operating conditions existing at the time of sampling or measurement.
- b) Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.
- c) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:
  - (1) Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the Ohio EPA DAPC, Northwest District Office.



(2) Quarterly written reports of (i) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the Ohio EPA DAPC, Northwest District Office. The written reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See A.15. below if no deviations occurred during the quarter.

(3) Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, and reporting requirements contained in this permit shall be submitted (i.e., postmarked) to the Ohio EPA DAPC, Northwest District Office every six months, by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.

(4) This permit is for an emissions unit located at a Title V facility. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

d) The permittee shall report actual emissions pursuant to OAC Chapter 3745-78 for the purpose of collecting Air Pollution Control Fees.

## 5. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to the Ohio EPA DAPC, Northwest District Office in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

## 6. Compliance Requirements

a) The emissions unit(s) identified in this Permit shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

b) Any document (including reports) required to be submitted and required by a federally applicable requirement in this permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.

c) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:



- (1) At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.
  - (2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.
  - (3) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
  - (4) As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.
- d) The permittee shall submit progress reports to the Ohio EPA DAPC, Northwest District Office concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:
- (1) Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.
  - (2) An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

**7. Best Available Technology**

As specified in OAC Rule 3745-31-05, new sources that must employ Best Available Technology (BAT) shall comply with the Applicable Emission Limitations/Control Measures identified as BAT for each subject emissions unit.

**8. Air Pollution Nuisance**

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

**9. Reporting Requirements**

The permittee shall submit required reports in the following manner:

- a) Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the Ohio EPA DAPC, Northwest District Office.
- b) Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the Ohio EPA DAPC, Northwest District Office. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted



(i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

## **10. Applicability**

This Permit-to-Install is applicable only to the emissions unit(s) identified in the Permit-to-Install. Separate application must be made to the Director for the installation or modification of any other emissions unit(s).

## **11. Construction of New Sources(s) and Authorization to Install**

- a) This permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. This permit does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the application and terms and conditions of this permit. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of this permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Issuance of this permit is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.
- b) If applicable, authorization to install any new emissions unit included in this permit shall terminate within eighteen months of the effective date of the permit if the owner or operator has not undertaken a continuing program of installation or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.
- c) The permittee may notify Ohio EPA of any emissions unit that is permanently shut down (i.e., the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31) by submitting a certification from the authorized official that identifies the date on which the emissions unit was permanently shut down. Authorization to operate the affected emissions unit shall cease upon the date certified by the authorized official that the emissions unit was permanently shut down. At a minimum, notification of permanent shut down shall be made or confirmed through completion of the annual PER covering the last period of operation of the affected emissions unit(s).
- d) The provisions of this permit shall cease to be enforceable for each affected emissions unit after the date on which an emissions unit is permanently shut down (i.e., emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31). All records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law. All reports required by this permit must be submitted for any period an affected emissions unit operated prior to permanent shut down. At a minimum, the permit requirements must be evaluated as part of the PER covering the last period the emissions unit operated.



No emissions unit certified by the authorized official as being permanently shut down may resume operation without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31.

- e) The permittee shall comply with any residual requirements related to this permit, such as the requirement to submit a PER, air fee emission report, or other any reporting required by this permit for the period the operating provisions of this permit were enforceable, or as required by regulation or law. All reports shall be submitted in a form and manner prescribed by the Director. All records relating to this permit must be maintained in accordance with law.

## **12. Permit-To-Operate Application**

The permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77. The permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if the proposed new or modified source(s) would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification must be obtained before the operation of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d).

## **13. Construction Compliance Certification**

The applicant shall identify the following dates in the online facility profile for each new emissions unit identified in this permit.

- a) Completion of initial installation date shall be entered upon completion of construction and prior to start-up.
- b) Commence operation after installation or latest modification date shall be entered within 90 days after commencing operation of the applicable emissions unit.

## **14. Public Disclosure**

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

## **15. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations**

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly (i.e., postmarked), by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

## **16. Fees**

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable permit-to-install fees within 30 days after the issuance of any permit-to-install. The permittee shall pay all applicable permit-to-operate fees within thirty days of the issuance of the invoice.



State of Ohio Environmental Protection Agency  
Division of Air Pollution Control

**Final Permit-to-Install**  
**Permit Number:** 03-17435  
**Facility ID:** 0317010010  
**Effective Date:** 6/18/2009

**17. Permit Transfers**

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The Ohio EPA DAPC, Northwest District Office must be notified in writing of any transfer of this permit.

**18. Risk Management Plans**

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

**19. Title IV Provisions**

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.



State of Ohio Environmental Protection Agency  
Division of Air Pollution Control

**Final Permit-to-Install**  
**Permit Number:** 03-17435  
**Facility ID:** 0317010010  
**Effective Date:** 6/18/2009

## **B. Facility-Wide Terms and Conditions**



State of Ohio Environmental Protection Agency  
Division of Air Pollution Control

**Final Permit-to-Install**  
**Permit Number:** 03-17435  
**Facility ID:** 0317010010  
**Effective Date:** 6/18/2009

1. This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).
  - a) For the purpose of a permit-to-install document, the facility-wide terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
    - (1) None.
  - b) For the purpose of a permit-to-operate document, the facility-wide terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
    - (1) None.



State of Ohio Environmental Protection Agency  
Division of Air Pollution Control

**Final Permit-to-Install**  
**Permit Number:** 03-17435  
**Facility ID:** 0317010010  
**Effective Date:** 6/18/2009

## **C. Emissions Unit Terms and Conditions**



**1. P006, L-4**

**Operations, Property and/or Equipment Description:**

L-4 High Speed Horizontal Lamp Assembly Line (Line J)

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. None.

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operations(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3) (Administrative modification to PTI 03-16008, issued 8/23/03 to resolve ERAC appeal 175299. P006 was included in PTI 03-13538 that was appealed but was modified shortly after the PTI was issued.)	<u>Coating Emissions:</u> 8.15 lbs organic compounds (OC)/hour*; 35.70 tons OC/year * see also b)(2)a  <u>Cleanup Emissions:</u> 2.82 lbs OC/month; 0.02 ton OC/year  <u>Natural Gas Combustion Emissions:</u> 3.37 lbs nitrogen oxides (NOx)/hour; 14.76 tons NOx/year  2.83 lbs carbon monoxide (CO)/hour; 12.40 tons CO/year  <u>Binder Combustion Emissions:</u> 0.05 lb NOx/hour; 0.22 ton NOx/year  <u>End Brushing Emissions:</u> 0.008 lb particulate emissions (PE)/hour;



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		0.04 ton PE/year  Visible PE shall not exceed 5% opacity, as a six-minute average.  <u>Bulb Crushing Emissions:</u> 0.02 lb PE/hour, 0.09 ton PE/year  Visible PE shall not exceed 0% opacity, as a six-minute average.  <u>SO2 Lubricant Emissions:</u> 0.84 lb sulfur dioxide (SO2)/hr; 3.68 tons SO2/yr  <u>Mercury Evacuation System Emissions:</u> 0.0004 lb of Mercury (Hg)/hour; 0.002 ton of Hg/year  See b)(2)a through b)(2)d.
b.	OAC rule 3745-21-09(U)(1)(c)	3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents [for the coatings used for the metal parts (base cement coatings)]
c.	OAC rule 3745-21-07(G)(2)	OC emissions shall not exceed 8 pounds per hour and 40 pounds per day (for the coatings /cleanup materials used for only the non-metal parts) [see b)(2)b].
d.	OAC rule 3745-17-11(B)(2)	See b)(2)e
e.	OAC rule 3745-17-07(A)(1)	See b)(2)f
f.	OAC rule 3745-18-06(E)	Exempt [see b)(2)g]
g.	OAC rule 3745-21-08(B)	See b)(2)h

(2) Additional Terms and Conditions

- a. This emissions unit is subject to the emission limitation of 8.15 lbs of OC/hour, from the coating operations, at all times, except when subject to OAC rule 3745-21-07(G)(2) as specified in b)(2)b.

The hourly OC emission limitation of 8.15 pounds was established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and reporting requirements to ensure compliance with this limitation.

- b. This emissions unit becomes subject to the OC emission limitations of 8 lbs/hr and 40 lbs/day [OAC rule 3745-21-07 (G)(2)] on the days any photochemically reactive material (coating and/or cleanup material) is employed in an operation



involving non-metal substrates, for coating /cleanup material used associated with non-metal substrates.

On February 18, 2008 Ohio EPA rescinded existing rule 3745-21-07 of the Ohio Administrative Code (OAC) and adopted new rule 3745-21-07. The new OAC rule 3745-21-07 does not establish any requirements for this emissions unit. The rule rescindment and new rule shall be federally enforceable on the date the U.S. EPA approves a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the rule rescindment and new OAC rule 3745-21-07, the requirement to comply with OAC rule 3745-21-07 (G) (2) still exists as part of the federally-approved SIP of Ohio. It should be noted that the requirements to comply with OAC rule 3745-21-07(G)(2) shall terminate on the date the U.S. EPA approves the rule rescindment and new rule as a revision of the Ohio SIP.

- c. The requirements of this rule also include compliance with the requirements of OAC rules 3745-21-09(U)(1), 3745-21-07(G)(2), 3745-18-06(E), and 3745-21-08(B).
- d. Best available technology (BAT) control requirements have been determined to be the following:
  - i. Use of a baghouse (fabric filter) for particulate emissions from the end brushing operation; the fabric filter shall achieve an overall control efficiency of 99%, by weight.
  - ii. Use of a carbon adsorber for mercury emissions from the mercury evacuation system; the carbon adsorber shall achieve a maximum outlet emission rate of 0.0004 pound of mercury per hour.
  - iii. Use of a baghouse (fabric filter) for particulate emissions from the bulb crushing system; the fabric filter shall achieve an overall control efficiency of 99%.
- e. The uncontrolled mass rate of particulate emissions from this emissions unit is less than 10 lbs/hr. Therefore, pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule 3745-17-11 does not apply because the facility is located in Crawford County, which is identified as a P-2 county.
- f. This emissions unit is exempt from the visible particulate emission limitations specified in OAC rule 3745-17-07(A), pursuant to OAC rule 3745-17-07(A)(3)(h), because OAC rule 3745-17-11 is not applicable.
- g. The maximum process weight rate for this emissions unit is less than 1000 lbs/hr. Therefore, pursuant to OAC rule 3745-18-06 (C), this emissions unit is exempt from OAC rule 3745-18-06 (E).
- h. The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05 (A)(3) in this permit to install.



On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" still exists as part of the federally-approved SIP for Ohio.

- i. The hourly and annual emission limitations for NOx, CO, PE, SO2 and Hg were established for PTI purposes to reflect the potentials to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and reporting requirements to ensure compliance with these limitations.
- j. Sections b)(2)a through b)(2)i above are intended for clarification of current regulatory applicability and requirements at the time of permit issuance, and are not intended to address or prohibit any change that could otherwise be processed under OAC rule 3745-77-07(I).

c) Operational Restrictions

- (1) None.

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall maintain daily records of the following information for this emissions unit:
  - a. the company name and identification number of each coating/ink applied to non-metal substrates;
  - b. the company name and identification number of each cleanup material employed; and
  - c. whether or not each coating/ink and cleanup material employed is a photochemically reactive material.
- (2) On any day when any photochemically reactive material is employed in an operation involving non-metal substrates, the permittee shall collect and record the following information for this emissions unit for each such day:
  - a. the company name and identification of the following:
    - i. each coating and ink employed on non-metal substrates; and
    - ii. each photochemically reactive cleanup material employed;
  - b. the total number of lamps processed;
  - c. the OC emissions from all the coatings and inks employed on non-metal substrates, calculated in accordance with the following equation:  

$$\text{OC emissions (lbs/day)} = (\# \text{ of lamps processed/day}) \times (A + B + C + D + E + F + G + H + I)$$



where:

A = emission factor for surfactant phosphor coating:  
maximum lb of coating/1000 lamps (0.358) x maximum OC content weight fraction (0.83) = 0.297 lb of OC/1000 lamps

B = emission factor for mono-ethanol amine phosphor coating:  
maximum lb of coating/1000 lamps (0.181) x maximum OC content weight fraction (1.0) = 0.181 lb of OC/1000 lamps

C = emission factor for monogram ink:  
maximum lb of ink/1000 lamps (0.006) x maximum OC content weight fraction (0.30) = 0.0018 lb of OC/1000 lamps

D = emission factor for monogram ink diluent solvent:  
maximum lb of ink/1000 lamps (0.0002) x maximum OC content weight fraction (1.0) = 0.0002 lb of OC/1000 lamps

E = emission factor for headmarking ink:  
maximum lb of ink/1000 lamps (0.0063) x maximum OC content weight fraction (0.71) = 0.0045 lb of OC/1000 lamps

F = emission factor for headmarking ink diluent solvent:  
maximum lb of solvent/1000 lamps (0.0037) x maximum OC content weight fraction (1.0) = 0.0037 lb of OC/1000 lamps

G = emission factor for E-Mix:  
maximum lb of E-Mix/1000 lamps (0.1607) x maximum OC content weight fraction (0.29) = 0.047 lb of OC/1000 lamps

H = emission factor for E-Mix diluent solvent:  
maximum lb of solvent/1000 lamps (0.0068) x maximum OC content weight fraction (1.00) = 0.0068 lb of OC/1000 lamps

I = emission factor for Dry-Film:  
maximum lb of Dry-Film/1000 lamps (0.0339) x maximum weight fraction (.50) = 0.017 lb of OC/1000 lamps

- d. the OC content of each photochemically reactive cleanup material employed, in pounds per gallon;
- e. the number of gallons of each photochemically reactive cleanup material employed;
- f. the OC emissions from each photochemically reactive cleanup material employed  $[d)(2)d \times d)(2)e]$ , in pounds;
- g. the total OC emissions from all the photochemically reactive cleanup materials employed  $[\text{summation of } d)(2)f \text{ for all photochemically reactive cleanup materials}]$ , in pounds;
- h. the total number of hours the emissions unit was in operation while coating non-metal substrates and employing photochemically reactive cleanup materials;



- i. the total OC emissions from all the coatings/inks and photochemically reactive cleanup materials employed  $\{[d)(2)c + d)(2)g] / d)(2)h\}$ , in pounds; and
  - j. the average hourly OC emission rate  $[d)(2)i / d)(2)h]$ , in pounds per hour (average).
  - k. [Note: The coating information must be for the coatings as employed, including any thinning solvents added at the emissions unit. Also, the definitions of "photochemically reactive" is based upon OAC rule 3745-21-01(C)(5).]
  - l.
- (3) On the days when coating metal parts, the permittee shall collect and record the following information for this emissions unit for the coatings used for the metal parts:
- a. the company name and identification of each coating (base cement) employed;
 

the VOC content of each coating (pounds/gallon, excluding water and exempt solvents) employed. [The VOC content excluding water and exempt solvents shall be calculated in accordance with the equation specified in paragraph (B)(8) of OAC rule 3745-21-10 for CVOC,2.]
- (4) In conjunction with the coating information required in d)(2) above, the permittee shall collect and record the following information each month for all OC emissions emitted (including OC emissions from the use of photochemically reactive materials, non-photochemically reactive materials, and base cement) from lamp processing for this emissions unit:
- a. the name and identification number of each coating, ink and base cement employed;
  - b. the total number of lamps processed;
  - c. the total number of bases cemented;
  - d. the total OC emissions from the coatings and inks employed, calculated in accordance with the following equation:
 

OC emissions (lbs/month) = (# of lamps processed/month) x (A + B + C + D + E + F + G + H + I)\*

\* For emission factors A, B, C, D, E, F, G, H, and I, see d(2).
  - e. the total OC emissions from all the base cement employed, calculated in accordance with the following equation:
 

OC emissions (lbs/month) = (# of bases cemented/month) x (EF)

where

EF = emission factor for base cement:

EF (lb OC/1000 bases) = maximum lbs cement/1000 bases (5.055) x maximum OC content weight fraction (0.0774) x 0.98\* = 0.383



\* 2% of the OC is emitted elsewhere

- (5) The permittee shall collect and record the following information each month for all the cleanup materials employed in this emissions unit:
- the name and identification of each cleanup material employed;
  - the OC content of each cleanup material employed, in pounds per gallon;
  - the number of gallons of each cleanup material employed;
  - the OC emissions from each cleanup material employed [d)(5)b x d)(5)c];
  - the total OC emissions from all the cleanup materials employed [summation of d)(5)d for all cleanup materials], in pounds.
- (6) The permittee shall calculate and record each month the total OC emissions for this emissions unit, in tons, calculated as follows:
- total OC emissions (tons/month) = {the total OC emissions from lamp processing [from d(4)d] + the total OC emissions from base cementing [from d)(4)e] + the total OC emissions from cleanup materials usage [from d)(5)e]} /2000
- (7) The permittee shall collect and record each year the total OC emissions for this emissions unit, in tons, calculated by summing the monthly OC emissions [from d(6)] for the calendar year.
- (8) The permittee shall monitor at least once every fifteen minutes the pressure drop across the carbon adsorber serving the vacuum pump, and across the baghouses (fabric filter) serving the end brushing operation and bulb crushing system, during operation of this emissions unit, and record the average of those values over the period during which this emissions unit operates each day. For purposes of this requirement, the permittee shall record one average total pressure drop value for each control device each day, for a period beginning at midnight or such time after midnight when the emissions unit begins to operate and ending at the time the emissions unit ceases that day or at midnight should the emissions unit operate beyond midnight. If the emissions unit starts and stops more than once during this 24-hour period, the permittee shall record the average value for the time during this 24-hour period when the emissions unit is in operation. Hereinafter this value shall be called a "Daily Pressure Drop Value".

Whenever the Daily Pressure Drop Value is outside of the applicable range specified below (hereinafter the "Pressure Drop Range"), the permittee shall promptly conduct an investigation to determine if there is a malfunction of the carbon adsorber or either baghouse (whichever is producing a Daily Pressure Drop Value outside of its Pressure Drop Range), and if so, comply with the requirements of OAC rule 3745-15-06. For each such occasion (i.e. when a Daily Pressure Drop Value is outside of its Pressure Drop Range), the permittee shall record the number of days during which the Daily Pressure Drop Value remained outside of its Pressure Drop Range and a description of the maintenance or repairs, if any, made to the carbon adsorber or either baghouse. If upon the investigation the permittee determines there is no malfunction that is subject to OAC rule 3745-15-06, the permittee shall also maintain records documenting the basis for such determination.



The Pressure Drop Ranges are:

- a. for the carbon adsorber, 0.01 to 5.0 inches of water.
- b. for the end brushing baghouse, 0.5 to 5.0 inches of water.
- c. for the bulb crushing baghouse, 6.0 to 10.0 inches of water.

These pressure drop ranges are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA, Northwest District Office. The permittee may request revisions to the range(s) based upon information that demonstrates compliance with the allowable mercury emission rate (for the carbon adsorber) or particulate emission rate (for either baghouse) for this emissions unit. If the permittee submits a written request to establish a new pressure drop range, Ohio EPA shall promptly evaluate and act on that request and, if approved, incorporate the new range into this permit as a minor permit modification.

e) Reporting Requirements

- (1) The permittee shall notify the Northwest District Office in writing of any daily record showing the use of base cement exceeding 3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents. The notification shall include a copy of such record and shall be sent to the Northwest District Office within 30 days following the end of the calendar month.
- (2) The permittee shall submit semiannual reports that identify the following information concerning the operation of the carbon adsorber during operation of this emissions unit:
  - a. the total duration (in days) that its daily pressure drop value was outside of its applicable Pressure Drop Range; and
  - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d).

These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (3) The permittee shall submit semiannual reports that identify the following information concerning the operation of each baghouse (fabric filter) during operation of this emissions unit:
  - a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
  - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d).

These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (4) The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following limitations:



- a. the hourly and daily OC emission limitations of 8 and 40 pounds, respectively (on any day any PRM was employed while coating non-metal substrates); and
- b. the monthly OC emission limitation of 2.82 pounds (from cleanup materials).

The permittee shall submit these reports in accordance with the General Terms and Conditions of this permit.

- (5) The permittee shall submit annual reports that summarize the actual annual OC emissions for this emissions unit for the previous calendar year. These reports shall be submitted by January 31 of each year.
- (6) The permittee shall submit quarterly summaries that include a log of the downtime for the capture (collection) system, control device and monitoring equipment when the associated emissions unit was in operation.

f) Testing Requirements

- (1) Compliance with the emission limitations in b)(1) shall be determined in accordance with the following method(s):

- a. Emission Limitation:  
8.15 lbs OC/hour

Applicable Compliance Method:

The hourly allowable OC emission rate was established based on the summation of the OC emissions generated during lamp manufacturing and OC emissions generated during lamp base cementing. The following outlines potential emissions generated during each process:

- i. Lamp manufacturing - the potential to emit for lamp manufacturing is 1.75 lbs of OC per hour based on the summation of emissions from the following components of the line and a maximum lamp manufacturing rate of 6000 lamps per hour:

Phosphor Coating - 1.27 pounds of OC per hour (based on a maximum surfactant usage rate of 0.358 lb/1000 lamps and a maximum OC content of 8.3% by weight, plus a maximum mono ethanol amine usage rate of 0.181 lb/1000 lamps and a maximum OC content of 100% by weight).

Monogram Ink - 0.01 pound of OC per hour (based on a maximum ink usage rate of 0.006 lb/1000 lamps and a maximum OC content of 30% by weight, plus a maximum diluent usage rate of 0.0002 lb/1000 lamps and a maximum OC content of 100% by weight).

Headmarking Ink - 0.05 pound of OC per hour (based on a maximum ink usage rate of 0.0063 lb/1000 lamps and a maximum OC content of 71% by weight, plus a maximum diluent solvent usage rate of 0.0037 lb/1000 lamps and maximum OC content of 100% by weight).

E-Mix - 0.32 pound of OC per hour (based on a maximum usage rate of 0.1607 lb/1000 lamps and a maximum OC content of 29% by weight, plus



a maximum diluent solvent usage rate of 0.0068 lb/1000 lamps and a maximum OC content of 100% by weight).

Dry Film - 0.10 pound of OC per hour (based on a maximum usage rate of 0.0339 lb/1000 lamps and a maximum OC content of 50% by weight).

- ii. Lamp base cementing - the potential to emit for lamp base cementing is 6.40 lbs of OC per hour based on a maximum lamp base cementing rate of 16,700 bases per hour and a maximum cement usage rate of 5.055 lbs/1000 bases, a maximum OC content of 7.74 % by weight and a maximum emission rate of 98% (98% for this emissions unit, i.e. 2% of the OC is emitted during base cement mixing).

If required, the permittee shall demonstrate compliance in accordance with Methods 1 - 4, 18, 25, or 25A, as appropriate, of 40 CFR, Part 60, Appendix A.

- b. Emission Limitation:  
35.70 tons OC/year

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d).

- c. Emission Limitation:  
2.82 lbs OC/month, from cleanup materials

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(5).

- d. Emission Limitation:  
0.02 ton OC/year, from cleanup materials

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(5) and shall be the summation of the 12 OC emission rates for the calendar year.

- e. Emission Limitation:  
3.37 lbs NO<sub>x</sub>/hour (natural gas combustion)

Applicable Compliance Method:

The hourly allowable NO<sub>x</sub> emission limitation was established by multiplying the maximum natural gas usage rate of 33,675 cu. ft /hr by the AP-42 emission factor of 100 lbs of NO<sub>x</sub>/mm cu. ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 4 and 7 of 40 CFR, Part 60, Appendix A.

- f. Emission Limitation:  
2.83 lb CO/hour (natural gas combustion)



Applicable Compliance Method:

The hourly allowable CO emission limitation was established by multiplying the maximum natural gas usage rate of 33,675 cu. ft /hr by the AP-42 emission factor of 84 lbs of CO/mm cu. ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 4 and 10 of 40 CFR, Part 60, Appendix A.

- g. Emission Limitation:  
0.008 lb PE/hour (end brushing)

Applicable Compliance Method:

The hourly allowable PE limitation was established by multiplying the maximum phosphor coating application rate of 12.56 lbs/1000 lamps by the production rate of 6000 lamps per hour, a removal rate of 1% of the phosphor applied, and then multiplying by a control factor (1-0.99\*).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 5 of 40 CFR, Part 60, Appendix A.

\* the baghouse control efficiency is assumed to be 99%

- h. Emission Limitation:  
Visible PE shall not exceed 5% opacity, as a six-minute average (end brushing)

Applicable Compliance Method:

Compliance shall be determined in accordance with the test method and procedures in Method 9 of 40 CFR, Part 60, Appendix A.

- i. Emission Limitation:  
0.02 lb PE/hour (bulb crushing)

Applicable Compliance Method

The hourly limitation represents the potential to emit\* of the emissions unit. Therefore, no monitoring and Record keeping, reporting, or compliance method calculations are required to demonstrate compliance with this limitation.

\* The potential to emit is based on a maximum bulb crushing rate of 1.50 tons bulbs crushed/hour, an emission factor of 1.50 lbs PE/ton bulbs crushed, and a control efficiency of 99%.

If required, the permittee shall demonstrate compliance in accordance with the test methods and procedures in Methods 1-5 of 40 CFR Part 60, Appendix A.

- j. Emission Limitation:  
Visible PE shall not exceed 0% opacity, as a six-minute average (bulb crushing)

Applicable Compliance Method:

Compliance shall be determined in accordance with the test method and procedures in Method 9 of 40 CFR, Part 60, Appendix A.

- k. Emission Limitation:  
0.84 lb SO<sub>2</sub>/hour (SO<sub>2</sub> lubricant)



Applicable Compliance Method:

The hourly allowable SO<sub>2</sub> emission limitation was established by summing the maximum of 0.11 lb of SO<sub>2</sub>/hour injected in the Lehr and 0.73 lb of SO<sub>2</sub>/hour injected in the flare machines.

If required, the permittee shall demonstrate compliance in accordance with Methods 1 - 4 and 6 of 40 CFR, Part 60, Appendix A.

- I. Emission Limitation:  
0.05 lb NO<sub>x</sub>/hour (binder combustion)

Applicable Compliance Method:

The hourly allowable NO<sub>x</sub> emission limitation was established by multiplying the maximum phosphor coating application rate of 12.56 lbs/1000 lamps by the maximum lamp processing rate of 6000 lamps per hour and by 0.11 lb of binder/lb of coating, and then by 0.0055 lb of NO<sub>x</sub>/lb of binder.

If required, the permittee shall demonstrate compliance in accordance with the test methods and procedures in Methods 1- 4 and 7 of 40 CFR, Part 60, Appendix A.

- m. Emission Limitation:  
0.0004 lb Hg/hour

Applicable Compliance Method:

Compliance with this emission limitation was demonstrated with the results of emissions testing conducted on November 18, 2003.

If required, the permittee shall conduct any future compliance demonstration with the emission limitation in accordance with Methods 1 through 4, and 29 of 40 CFR, Part 60, Appendix A.

- n. Emission Limitations:  
14.76 tons NO<sub>x</sub>/year (natural gas combustion)  
12.40 tons CO/year (natural gas combustion)  
0.04 ton PE/year (end brushing)  
0.09 ton PE/year (bulb crushing)  
3.68 tons SO<sub>2</sub>/year (SO<sub>2</sub> lubricant)

0.22 ton NO<sub>x</sub>/year (binder combustion)  
0.002 ton Hg/year

Applicable Compliance Method:

Compliance with the annual emission limitation for each pollutant above shall be assumed as long as compliance with the hourly emission limitation for the specific pollutant is maintained (the annual emission limitation for each pollutant was determined by multiplying the hourly emission limitation for the specific pollutant by 8760, and then dividing by 2000).

- (2) Formulation data or U.S. EPA Method 24 shall be used to determine the OC/VOC contents of all the coatings and cleanup materials.



State of Ohio Environmental Protection Agency  
Division of Air Pollution Control

**Final Permit-to-Install**  
**Permit Number:** 03-17435  
**Facility ID:** 0317010010  
**Effective Date:** 6/18/2009

g) Miscellaneous Requirements

(1) None.



**2. P007, L-5**

**Operations, Property and/or Equipment Description:**

L-5 High Speed Horizontal Lamp Assembly Line (Line K)- Coating, End Brushing, Natural Gas Combustion, and Mercury Evacuation with Cyclone and Carbon Adsorber (Modification to increase current permit emission limitations)

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. None.

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operations(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3) (Administrative modification to PTI 03-13538, issued 5/8/03 to resolve ERAC appeal 175299.)	<u>Coating Emissions:</u> 8.36 lbs organic compounds (OC)/hour*; 36.62 tons OC/year * see also b)(2)a  <u>Cleanup Emissions:</u> 2.82 lbs OC/month; 0.02 ton OC/year  <u>Natural Gas Combustion Emissions:</u> 3.33 lbs nitrogen oxides (NOx)/hour; 14.59 tons NOx/year  2.80 lbs carbon monoxide (CO)/hour; 12.26 tons CO/year  <u>Binder Combustion Emissions:</u> 0.25 lb NOx/hour; 1.10 ton NOx/year



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p><u>End Brushing Emissions:</u> 0.009 lb particulate emissions (PE)/hour; 0.04 ton PE/year</p> <p>Visible PE shall not exceed 5% opacity, as a six-minute average.</p> <p><u>SO2 Lubricant Emissions:</u> 0.84 lb sulfur dioxide (SO2)/hr; 3.68 tons SO2/yr</p> <p><u>Mercury Evacuation System Emissions:</u> 0.0004 lb of Mercury (Hg)/hour; 0.002 ton of Hg/year</p> <p>See b)(2)a through b)(2)d.</p>
b.	OAC rule 3745-21-09(U)(1)(c)	3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents [for the coatings used for the metal parts (base cement coatings)]
c.	OAC rule 3745-21-07(G)(2)	OC emissions shall not exceed 8 pounds per hour and 40 pounds per day (for the coatings /cleanup materials used for only the non-metal parts) [see b)(2)b].
d.	OAC rule 3745-17-11(B)(2)	See b)(2)e
e.	OAC rule 3745-17-07(A)(1)	See b)(2)f
f.	OAC rule 3745-18-06(E)	Exempt [see b)(2)g]
g.	OAC rule 3745-21-08(B)	See b)(2)h

(2) Additional Terms and Conditions

- a. This emissions unit is subject to the emission limitation of 8.36 lbs of OC/hour, from the coating operations, at all times, except when subject to OAC rule 3745-21-07(G)(2) as specified in b)(2)b.

The hourly OC emission limitation of 8.36 pounds was established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and reporting requirements to ensure compliance with this limitation.

- b. This emissions unit becomes subject to the OC emission limitations of 8 lbs/hr and 40 lbs/day [OAC rule 3745-21-07 (G)(2)] on the days any photochemically reactive material (coating and/or cleanup material) is employed in an operation involving non-metal substrates, for coating /cleanup material used associated with non-metal substrates.



On February 18, 2008 Ohio EPA rescinded existing rule 3745-21-07 of the Ohio Administrative Code (OAC) and adopted new rule 3745-21-07. The new OAC rule 3745-21-07 does not establish any requirements for this emissions unit. The rule rescindment and new rule shall be federally enforceable on the date the U.S. EPA approves a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the rule rescindment and new OAC rule 3745-21-07, the requirement to comply with OAC rule 3745-21-07 (G) (2) still exists as part of the federally-approved SIP of Ohio. It should be noted that the requirements to comply with OAC rule 3745-21-07(G)(2) shall terminate on the date the U.S. EPA approves the rule rescindment and new rule as a revision of the Ohio SIP.

- c. The requirements of this rule also include compliance with the requirements of OAC rules 3745-21-09(U)(1), 3745-21-07(G)(2), 3745-18-06(E), and 3745-21-08(B).
- d. Best available technology (BAT) control requirements have been determined to be the following:
  - i. Use of a baghouse (fabric filter) for particulate emissions from the end brushing operation; the fabric filter shall achieve an overall control efficiency of 99%, by weight.
  - ii. Use of a carbon adsorber for mercury emissions from the mercury evacuation system; the carbon adsorber shall achieve a maximum outlet emission rate of 0.0004 pound of mercury per hour.
- e. The uncontrolled mass rate of particulate emissions from this emissions unit is less than 10 lbs/hr. Therefore, pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule 3745-17-11 does not apply because the facility is located in Crawford County, which is identified as a P-2 county.
- f. This emissions unit is exempt from the visible particulate emission limitations specified in OAC rule 3745-17-07(A), pursuant to OAC rule 3745-17-07(A)(3)(h), because OAC rule 3745-17-11 is not applicable.
- g. The maximum process weight rate for this emissions unit is less than 1000 lbs/hr. Therefore, pursuant to OAC rule 3745-18-06 (C), this emissions unit is exempt from OAC rule 3745-18-06 (E).
- h. The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05 (A)(3) in this permit to install.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the



requirement to satisfy the "best available control techniques and operating practices" still exists as part of the federally-approved SIP for Ohio.

- i. The hourly and annual emission limitations for NO<sub>x</sub>, CO, PE, SO<sub>2</sub> and Hg were established for PTI purposes to reflect the potentials to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and reporting requirements to ensure compliance with these limitations.
- j. Sections b)(2)a through b)(2)i above are intended for clarification of current regulatory applicability and requirements at the time of permit issuance, and are not intended to address or prohibit any change that could otherwise be processed under OAC rule 3745-77-07(I).

c) Operational Restrictions

- (1) None.

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall maintain daily records of the following information for this emissions unit:

- a. the company name and identification number of each coating/ink applied to non-metal substrates;
- b. the company name and identification number of each cleanup material employed; and
- c. whether or not each coating/ink and cleanup material employed is a photochemically reactive material.

- (2) On any day when any photochemically reactive material is employed in an operation involving non-metal substrates, the permittee shall collect and record the following information for this emissions unit for each such day:

- a. the company name and identification of the following:
  - i. each coating and ink employed on non-metal substrates; and
  - ii. each photochemically reactive cleanup material employed;
- b. the total number of lamps processed;
- c. the OC emissions from all the coatings and inks employed on non-metal substrates, calculated in accordance with the following equation:

$$\text{OC emissions (lbs/day)} = (\# \text{ of lamps processed/day}) \times (A + B + C + D + E + F + G + H + I)$$

where:

A = emission factor for surfactant phosphor coating:



maximum lb of coating/1000 lamps (0.358) x maximum OC content weight fraction (0.83) = 0.297 lb of OC/1000 lamps

B = emission factor for mono-ethanol amine phosphor coating:  
maximum lb of coating/1000 lamps (0.181) x maximum OC content weight fraction (1.0) = 0.181 lb of OC/1000 lamps

C = emission factor for monogram ink:  
maximum lb of ink/1000 lamps (0.006) x maximum OC content weight fraction (0.30) = 0.0018 lb of OC/1000 lamps

D = emission factor for monogram ink diluent solvent:  
maximum lb of ink/1000 lamps (0.0002) x maximum OC content weight fraction (1.0) = 0.0002 lb of OC/1000 lamps

E = emission factor for headmarking ink:  
maximum lb of ink/1000 lamps (0.0063) x maximum OC content weight fraction (0.71) = 0.0045 lb of OC/1000 lamps

F = emission factor for headmarking ink diluent solvent:  
maximum lb of solvent/1000 lamps (0.0037) x maximum OC content weight fraction (1.0) = 0.0037 lb of OC/1000 lamps

G = emission factor for E-Mix:  
maximum lb of E-Mix/1000 lamps (0.1607) x maximum OC content weight fraction (0.29) = 0.047 lb of OC/1000 lamps

H = emission factor for E-Mix diluent solvent:  
maximum lb of solvent/1000 lamps (0.0068) x maximum OC content weight fraction (1.00) = 0.0068 lb of OC/1000 lamps

I = emission factor for Dry-Film:  
maximum lb of Dry-Film/1000 lamps (0.0339) x maximum weight fraction (.50) = 0.017 lb of OC/1000 lamps

- d. the OC content of each photochemically reactive cleanup material employed, in pounds per gallon;
- e. the number of gallons of each photochemically reactive cleanup material employed;
- f. the OC emissions from each photochemically reactive cleanup material employed  $[d)(2)d \times d)(2)e]$ , in pounds;
- g. the total OC emissions from all the photochemically reactive cleanup materials employed  $[\text{summation of } d)(2)f \text{ for all photochemically reactive cleanup materials}]$ , in pounds;
- h. the total number of hours the emissions unit was in operation while coating non-metal substrates and employing photochemically reactive cleanup materials;
- i. the total OC emissions from all the coatings/inks and photochemically reactive cleanup materials employed  $\{[d)(2)c + d)(2)g] / d)(2)h\}$ , in pounds; and



- j. the average hourly OC emission rate [d)(2)i / d)(2)h], in pounds per hour (average).
  - k. [Note: The coating information must be for the coatings as employed, including any thinning solvents added at the emissions unit. Also, the definitions of "photochemically reactive" is based upon OAC rule 3745-21-01(C)(5).]
- (3) On the days when coating metal parts, the permittee shall collect and record the following information for this emissions unit for the coatings used for the metal parts:
- a. the company name and identification of each coating (base cement) employed;
  - b. the VOC content of each coating (pounds/gallon, excluding water and exempt solvents) employed. [The VOC content excluding water and exempt solvents shall be calculated in accordance with the equation specified in paragraph (B)(8) of OAC rule 3745-21-10 for CVOC,2.]
- (4) In conjunction with the coating information required in d)(2) above, the permittee shall collect and record the following information each month for all OC emissions emitted (including OC emissions from the use of photochemically reactive materials, non-photochemically reactive materials, and base cement) from lamp processing for this emissions unit:
- a. the name and identification number of each coating, ink and base cement employed;
  - b. the total number of lamps processed;
  - c. the total number of bases cemented;
  - d. the total OC emissions from the coatings and inks employed, calculated in accordance with the following equation:  
  

$$\text{OC emissions (lbs/month)} = (\# \text{ of lamps processed/month}) \times (A + B + C + D + E + F + G + H + I)^*$$

\* For emission factors A, B, C, D, E, F, G, H, and I, see d(2).
  - e. the total OC emissions from all the base cement employed, calculated in accordance with the following equation:  
  

$$\text{OC emissions (lbs/month)} = (\# \text{ of bases cemented/month}) \times (\text{EF})$$

where

EF = emission factor for base cement:

$$\text{EF (lb OC/1000 bases)} = \text{maximum lbs cement/1000 bases (5.055)} \times \text{maximum OC content weight fraction (0.0774)} \times 0.98^* = 0.383$$

\* 2% of the OC is emitted elsewhere



- (5) The permittee shall collect and record the following information each month for all the cleanup materials employed in this emissions unit:
- a. the name and identification of each cleanup material employed;
  - b. the OC content of each cleanup material employed, in pounds per gallon;
  - c. the number of gallons of each cleanup material employed;
  - d. the OC emissions from each cleanup material employed  $[d)(5)b \times d)(5)c]$ ;
  - e. the total OC emissions from all the cleanup materials employed [summation of  $d)(5)d$  for all cleanup materials], in pounds.
- (6) The permittee shall calculate and record each month the total OC emissions for this emissions unit, in tons, calculated as follows:
- total OC emissions (tons/month) = {the total OC emissions from lamp processing [from  $d)(4)d]$  + the total OC emissions from base cementing [from  $d)(4)e]$  + the total OC emissions from cleanup materials usage [from  $d)(5)e]$  } /2000
- (7) The permittee shall collect and record each year the total OC emissions for this emissions unit, in tons, calculated by summing the monthly OC emissions [from  $d)(6)$ ] for the calendar year.
- (8) The permittee shall monitor at least once every fifteen minutes the pressure drop across the carbon adsorber serving the vacuum pump, and across the baghouse (fabric filter) serving the end brushing operation, during operation of this emissions unit, and record the average of those values over the period during which this emissions unit operates each day. For purposes of this requirement, the permittee shall record one average total pressure drop value for each control device each day, for a period beginning at midnight or such time after midnight when the emissions unit begins to operate and ending at the time the emissions unit ceases that day or at midnight should the emissions unit operate beyond midnight. If the emissions unit starts and stops more than once during this 24-hour period, the permittee shall record the average value for the time during this 24-hour period when the emissions unit is in operation. Hereinafter this value shall be called a "Daily Pressure Drop Value".

Whenever the Daily Pressure Drop Value is outside of the applicable range specified below (hereinafter the "Pressure Drop Range"), the permittee shall promptly conduct an investigation to determine if there is a malfunction of the carbon adsorber or either baghouse (whichever is producing a Daily Pressure Drop Value outside of its Pressure Drop Range), and if so, comply with the requirements of OAC rule 3745-15-06. For each such occasion (i.e. when a Daily Pressure Drop Value is outside of its Pressure Drop Range), the permittee shall record the number of days during which the Daily Pressure Drop Value remained outside of its Pressure Drop Range and a description of the maintenance or repairs, if any, made to the carbon adsorber or baghouse. If upon the investigation the permittee determines there is no malfunction that is subject to OAC rule 3745-15-06, the permittee shall also maintain records documenting the basis for such determination.



The Pressure Drop Ranges are:

- a. for the carbon adsorber, 0.01 to 5.0 inches of water.
- b. for the baghouse, 0.5 to 5.0 inches of water.

These Pressure Drop Ranges are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA, Northwest District Office. The permittee may request revisions to the range(s) based upon information that demonstrates compliance with the allowable mercury emission rate (for the carbon adsorber) or particulate emission rate (for the baghouse) for this emissions unit. If the permittee submits a written request to establish a new Pressure Drop Range, Ohio EPA shall promptly evaluate and act on that request and, if approved, incorporate the new range into this permit as a minor permit modification.

e) Reporting Requirements

- (1) The permittee shall notify the Northwest District Office in writing of any daily record showing the use of base cement exceeding 3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents. The notification shall include a copy of such record and shall be sent to the Northwest District Office within 30 days following the end of the calendar month.
- (2) The permittee shall submit semiannual reports that identify the following information concerning the operation of the carbon adsorber during operation of this emissions unit:
  - a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
  - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d).

These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (3) The permittee shall submit semiannual reports that identify the following information concerning the operation of the baghouse (fabric filter) during operation of this emissions unit:
  - a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
  - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d).

These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (4) The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following limitations:
  - a. the hourly and daily OC emission limitations of 8 and 40 pounds, respectively (on any day any PRM was employed while coating non-metal substrates); and



- b. the monthly OC emission limitation of 2.82 pounds (from cleanup materials).

The permittee shall submit these reports in accordance with the General Terms and Conditions of this permit.

- (5) The permittee shall submit annual reports that summarize the actual annual OC emissions for this emissions unit for the previous calendar year. These reports shall be submitted by January 31 of each year.
- (6) The permittee shall submit quarterly summaries that include a log of the downtime for the capture (collection) system, control device and monitoring equipment when the associated emissions unit was in operation.

f) Testing Requirements

- (1) Compliance with the emission limitations in b)(1) shall be determined in accordance with the following method(s):

- a. Emission Limitation:  
8.36 lbs OC/hour

Applicable Compliance Method:

The hourly allowable OC emission rate was established based on the summation of the OC emissions generated during lamp manufacturing and OC emissions generated during lamp base cementing. The following outlines potential emissions generated during each process:

- i. Lamp manufacturing - the potential to emit for lamp manufacturing is 2.19 lbs of OC per hour based on the summation of emissions from the following components of the line and a maximum lamp manufacturing rate of 7500 lamps per hour:

Phosphor Coating - 1.58 pounds of OC per hour (based on a maximum surfactant usage rate of 0.358 lb/1000 lamps and a maximum OC content of 8.3% by weight, plus a maximum mono ethanol amine usage rate of 0.181 lb/1000 lamps and a maximum OC content of 100% by weight).

Monogram Ink - 0.01 pound of OC per hour (based on a maximum ink usage rate of 0.006 lb/1000 lamps and a maximum OC content of 30% by weight, plus a maximum diluent usage rate of 0.0002 lb/1000 lamps and a maximum OC content of 100% by weight).

Headmarking Ink - 0.06 pound of OC per hour (based on a maximum ink usage rate of 0.0063 lb/1000 lamps and a maximum OC content of 71% by weight, plus a maximum diluent solvent usage rate of 0.0037 lb/1000 lamps and maximum OC content of 100% by weight).

E-Mix - 0.40 pound of OC per hour (based on a maximum usage rate of 0.1607 lb/1000 lamps and a maximum OC content of 29% by weight, plus a maximum diluent solvent usage rate of 0.0068 lb/1000 lamps and a maximum OC content of 100% by weight).



Dry Film - 0.13 pound of OC per hour (based on a maximum usage rate of 0.0339 lb/1000 lamps and a maximum OC content of 50% by weight).

- ii. Lamp base cementing - the potential to emit for lamp base cementing is 6.18 lbs of OC per hour based on a maximum lamp base cementing rate of 16,130 bases per hour and a maximum cement usage rate of 5.055 lbs/1000 bases, a maximum OC content of 7.74 % by weight and a maximum emission rate of 98% (98% for this emissions unit, i.e. 2% of the OC is emitted during base cement mixing).

If required, the permittee shall demonstrate compliance in accordance with Methods 1 - 4, 18, 25, or 25A, as appropriate, of 40 CFR, Part 60, Appendix A.

- b. Emission Limitation:  
36.62 tons OC/year

Applicable Compliance Method:  
 Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d).

- c. Emission Limitation:  
2.82 lbs OC/month, from cleanup materials

Applicable Compliance Method:  
 Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(5).

- d. Emission Limitation:  
0.02 ton OC/year, from cleanup materials

Applicable Compliance Method:  
 Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(5) and shall be the summation of the 12 OC emission rates for the calendar year.

- e. Emission Limitation:  
3.33 lbs NOx/hour (natural gas combustion)

Applicable Compliance Method:  
 The hourly allowable NOx emission limitation was established by multiplying the maximum natural gas usage rate of 33,315 cu. ft /hr by the AP-42 emission factor of 100 lbs of NOx/mm cu. ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 4 and 7 of 40 CFR, Part 60, Appendix A.

- f. Emission Limitation:  
2.80 lb CO/hour (natural gas combustion)



Applicable Compliance Method:

The hourly allowable CO emission limitation was established by multiplying the maximum natural gas usage rate of 33,315 cu. ft /hr by the AP-42 emission factor of 84 lbs of CO/mm cu. ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 4 and 10 of 40 CFR, Part 60, Appendix A.

- g. Emission Limitation:  
0.008 lb PE/hour (end brushing)

Applicable Compliance Method:

The hourly allowable PE limitation was established by multiplying the maximum phosphor coating application rate of 12.56 lbs/1000 lamps by the production rate of 7500 lamps per hour, a removal rate of 1% of the phosphor applied, and then multiplying by a control factor (1-0.99\*).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 5 of 40 CFR, Part 60, Appendix A.

\* the baghouse control efficiency is assumed to be 99%

- h. Emission Limitation:  
Visible PE shall not exceed 5% opacity, as a six-minute average (end brushing)

Applicable Compliance Method:

Compliance shall be determined in accordance with the test method and procedures in Method 9 of 40 CFR, Part 60, Appendix A.

- i. Emission Limitation:  
0.84 lb SO<sub>2</sub>/hour (SO<sub>2</sub> lubricant)

Applicable Compliance Method:

The hourly allowable SO<sub>2</sub> emission limitation was established by summing the maximum of 0.11 lb of SO<sub>2</sub>/hour injected in the Lehr and 0.73 lb of SO<sub>2</sub>/hour injected in the flare machines.

If required, the permittee shall demonstrate compliance in accordance with Methods 1 - 4 and 6 of 40 CFR, Part 60, Appendix A.

- j. Emission Limitation:  
0.25 lb NO<sub>x</sub>/hour (binder combustion)

Applicable Compliance Method:

The hourly allowable NO<sub>x</sub> emission limitation was established by multiplying the maximum phosphor coating application rate of 12.56 lbs/1000 lamps by the maximum lamp processing rate of 7500 lamps per hour and by 0.11 lb of binder/lb of coating, and then by 0.0238 lb of NO<sub>x</sub>/lb of binder.

If required, the permittee shall demonstrate compliance in accordance with the test methods and procedures in Methods 1- 4 and 7 of 40 CFR, Part 60, Appendix A.



- k. Emission Limitation:  
0.0004 lb Hg/hour

Applicable Compliance Method:

Compliance with this emission limitation was demonstrated with the results of emissions testing conducted on November 18, 2003.

If required, the permittee shall conduct any future compliance demonstration with the emission limitation in accordance with Methods 1 through 4, and 29 of 40 CFR, Part 60, Appendix A.

- l. Emission Limitations:
  - 14.59 tons NOx/year (natural gas combustion)
  - 12.26 tons CO/year (natural gas combustion)
  - 0.04 ton PE/year (end brushing)
  - 3.68 tons SO<sub>2</sub>/year (SO<sub>2</sub> lubricant)
  - 1.10 ton NOx/year (binder combustion)
  - 0.002 ton Hg/year

Applicable Compliance Method:

Compliance with the annual emission limitation for each pollutant above shall be assumed as long as compliance with the hourly emission limitation for the specific pollutant is maintained (the annual emission limitation for each pollutant was determined by multiplying the hourly emission limitation for the specific pollutant by 8760, and then dividing by 2000).

- (2) Formulation data or U.S. EPA Method 24 shall be used to determine the OC/VOC contents of all the coatings and cleanup materials.

g) Miscellaneous Requirements

- (1) None.



**3. P008, L-6**

**Operations, Property and/or Equipment Description:**

L-6 High Speed Horizontal Lamp Assembly Line (Line L) - Coating, End Brushing, Natural Gas Combustion, and Mercury Evacuation with Cyclone and Carbon Adsorber (Modification to increase current permit emission limitations)

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. None.

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operations(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3) (Administrative modification to PTI 03-13538, issued 5/8/03 to resolve ERAC appeal 175299.)	<u>Coating Emissions:</u> 8.72 lbs organic compounds (OC)/hour*; 38.19 tons OC/year * see also b)(2)a  <u>Cleanup Emissions:</u> 2.82 lbs OC/month; 0.02 ton OC/year  <u>Natural Gas Combustion Emissions:</u> 3.36 lbs nitrogen oxides (NOx)/hour; 14.72 tons NOx/year  2.83 lbs carbon monoxide (CO)/hour; 12.40 tons CO/year  <u>Binder Combustion Emissions:</u> 0.23 lb NOx/hour; 1.01 ton NOx/year



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p><u>End Brushing Emissions:</u> 0.18 lb particulate emissions (PE)/hour; 0.79 ton PE/year</p> <p>Visible PE shall not exceed 5% opacity, as a six-minute average.</p> <p><u>SO2 Lubricant Emissions:</u> 0.84 lb sulfur dioxide (SO2)/hr; 3.68 tons SO2/yr</p> <p><u>Mercury Evacuation System Emissions:</u> 0.0004 lb of Mercury (Hg)/hour; 0.002 ton of Hg/year</p> <p>See b)(2)a through b)(2)d.</p>
b.	OAC rule 3745-21-09(U)(1)(c)	3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents [for the coatings used for the metal parts (base cement coatings)]
c.	OAC rule 3745-21-07(G)(2)	OC emissions shall not exceed 8 pounds per hour and 40 pounds per day (for the coatings /cleanup materials used for only the non-metal parts) [see b)(2)b].
d.	OAC rule 3745-17-11(B)(2)	See b)(2)e
e.	OAC rule 3745-17-07(A)(1)	See b)(2)f
f.	OAC rule 3745-18-06(E)	Exempt [see b)(2)g]
g.	OAC rule 3745-21-08(B)	See b)(2)h

(2) Additional Terms and Conditions

- a. This emissions unit is subject to the emission limitation of 7.81 lbs of OC/hour, from the coating operations, at all times, except when subject to OAC rule 3745-21-07(G)(2) as specified in b)(2)b.

The hourly OC emission limitation of 7.81 pounds was established for PTI purposes to reflect the potential to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and reporting requirements to ensure compliance with this limitation.

- b. This emissions unit becomes subject to the OC emission limitations of 8 lbs/hr and 40 lbs/day [OAC rule 3745-21-07 (G)(2)] on the days any photochemically reactive material (coating and/or cleanup material) is employed in an operation involving non-metal substrates, for coating /cleanup material used associated with non-metal substrates.



On February 18, 2008 Ohio EPA rescinded existing rule 3745-21-07 of the Ohio Administrative Code (OAC) and adopted new rule 3745-21-07. The new OAC rule 3745-21-07 does not establish any requirements for this emissions unit. The rule rescindment and new rule shall be federally enforceable on the date the U.S. EPA approves a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the rule rescindment and new OAC rule 3745-21-07, the requirement to comply with OAC rule 3745-21-07 (G) (2) still exists as part of the federally-approved SIP of Ohio. It should be noted that the requirements to comply with OAC rule 3745-21-07(G)(2) shall terminate on the date the U.S. EPA approves the rule rescindment and new rule as a revision of the Ohio SIP.

- c. The requirements of this rule also include compliance with the requirements of OAC rules 3745-21-09(U)(1), 3745-21-07(G)(2), 3745-18-06(E), and 3745-21-08(B).
- d. Best available technology (BAT) control requirements have been determined to be the following:
  - i. Use of a cyclone (or fabric filter) for particulate emissions from the end brushing operation; the cyclone (or fabric filter) shall achieve an overall control efficiency of 80%, by weight.
  - ii. Use of a carbon adsorber for mercury emissions from the mercury evacuation system; the carbon adsorber shall achieve a maximum outlet emission rate of 0.0004 pound of mercury per hour.
- e. The uncontrolled mass rate of particulate emissions from this emissions unit is less than 10 lbs/hr. Therefore, pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule 3745-17-11 does not apply because the facility is located in Crawford County, which is identified as a P-2 county.
- f. This emissions unit is exempt from the visible particulate emission limitations specified in OAC rule 3745-17-07(A), pursuant to OAC rule 3745-17-07(A)(3)(h), because OAC rule 3745-17-11 is not applicable.
- g. The maximum process weight rate for this emissions unit is less than 1000 lbs/hr. Therefore, pursuant to OAC rule 3745-18-06 (C), this emissions unit is exempt from OAC rule 3745-18-06 (E).
- h. The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05 (A)(3) in this permit to install.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the



requirement to satisfy the "best available control techniques and operating practices" still exists as part of the federally-approved SIP for Ohio.

- i. The hourly and annual emission limitations for NOx, CO, PE, SO2 and Hg were established for PTI purposes to reflect the potentials to emit for this emissions unit. Therefore, it is not necessary to develop record keeping and reporting requirements to ensure compliance with these limitations.
- j. Sections b)(2)a through b)(2)i above are intended for clarification of current regulatory applicability and requirements at the time of permit issuance, and are not intended to address or prohibit any change that could otherwise be processed under OAC rule 3745-77-07(I).

c) Operational Restrictions

- (1) None.

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall maintain daily records of the following information for this emissions unit:
  - a. the company name and identification number of each coating/ink applied to non-metal substrates;
  - b. the company name and identification number of each cleanup material employed; and

whether or not each coating/ink and cleanup material employed is a photochemically reactive material.

- (2) On any day when any photochemically reactive material is employed in an operation involving non-metal substrates, the permittee shall collect and record the following information for this emissions unit for each such day:

- a. the company name and identification of the following:
  - i. each coating and ink employed on non-metal substrates; and
  - ii. each photochemically reactive cleanup material employed;
- b. the total number of lamps processed;
- c. the OC emissions from all the coatings and inks employed on non-metal substrates, calculated in accordance with the following equation:

$$\text{OC emissions (lbs/day)} = (\# \text{ of lamps processed/day}) \times (A + B + C + D + E + F + G + H + I)$$

where:

A = emission factor for surfactant phosphor coating:



maximum lb of coating/1000 lamps (0.358) x maximum OC content weight fraction (0.83) = 0.297 lb of OC/1000 lamps

B = emission factor for mono-ethanol amine phosphor coating:  
maximum lb of coating/1000 lamps (0.181) x maximum OC content weight fraction (1.0) = 0.181 lb of OC/1000 lamps

C = emission factor for monogram ink:  
maximum lb of ink/1000 lamps (0.006) x maximum OC content weight fraction (0.30) = 0.0018 lb of OC/1000 lamps

D = emission factor for monogram ink diluent solvent:  
maximum lb of ink/1000 lamps (0.0002) x maximum OC content weight fraction (1.0) = 0.0002 lb of OC/1000 lamps

E = emission factor for headmarking ink:  
maximum lb of ink/1000 lamps (0.0063) x maximum OC content weight fraction (0.71) = 0.0045 lb of OC/1000 lamps

F = emission factor for headmarking ink diluent solvent:  
maximum lb of solvent/1000 lamps (0.0037) x maximum OC content weight fraction (1.0) = 0.0037 lb of OC/1000 lamps

G = emission factor for E-Mix:  
maximum lb of E-Mix/1000 lamps (0.551) x maximum OC content weight fraction (0.29) = 0.160 lb of OC/1000 lamps

H = emission factor for E-Mix diluent solvent:  
maximum lb of solvent/1000 lamps (0.0235) x maximum OC content weight fraction (1.00) = 0.0235 lb of OC/1000 lamps

I = emission factor for Dry-Film:  
maximum lb of Dry-Film/1000 lamps (0.0339) x maximum weight fraction (.50) = 0.017 lb of OC/1000 lamps

- d. the OC content of each photochemically reactive cleanup material employed, in pounds per gallon;
- e. the number of gallons of each photochemically reactive cleanup material employed;
- f. the OC emissions from each photochemically reactive cleanup material employed  $[d)(2)d \times d)(2)e]$ , in pounds;
- g. the total OC emissions from all the photochemically reactive cleanup materials employed  $[\text{summation of } d)(2)f \text{ for all photochemically reactive cleanup materials}]$ , in pounds;
- h. the total number of hours the emissions unit was in operation while coating non-metal substrates and employing photochemically reactive cleanup materials;
- i. the total OC emissions from all the coatings/inks and photochemically reactive cleanup materials employed  $\{[d)(2)c + d)(2)g] / d)(2)h\}$ , in pounds; and



- j. the average hourly OC emission rate [d)(2)i / d)(2)h], in pounds per hour (average).
  - k. [Note: The coating information must be for the coatings as employed, including any thinning solvents added at the emissions unit. Also, the definitions of "photochemically reactive" is based upon OAC rule 3745-21-01(C)(5).]
- (3) On the days when coating metal parts, the permittee shall collect and record the following information for this emissions unit for the coatings used for the metal parts:
- a. the company name and identification of each coating (base cement) employed;
  - b. the VOC content of each coating (pounds/gallon, excluding water and exempt solvents) employed. [The VOC content excluding water and exempt solvents shall be calculated in accordance with the equation specified in paragraph (B)(8) of OAC rule 3745-21-10 for CVOC,2.]

- (4) In conjunction with the coating information required in d)(2) above, the permittee shall collect and record the following information each month for all OC emissions emitted (including OC emissions from the use of photochemically reactive materials, non-photochemically reactive materials, and base cement) from lamp processing for this emissions unit:

- a. the name and identification number of each coating, ink and base cement employed;
- b. the total number of lamps processed;
- c. the total number of bases cemented;
- d. the total OC emissions from the coatings and inks employed, calculated in accordance with the following equation:

$$\text{OC emissions (lbs/month)} = (\# \text{ of lamps processed/month}) \times (A + B + C + D + E + F + G + H + I)^*$$

\* For emission factors A, B, C, D, E, F, G, H, and I, see d(2).

- e. the total OC emissions from all the base cement employed, calculated in accordance with the following equation:

$$\text{OC emissions (lbs/month)} = (\# \text{ of bases cemented/month}) \times (\text{EF})$$

where

EF = emission factor for base cement:

$$\text{EF (lb OC/1000 bases)} = \text{maximum lbs cement/1000 bases (5.055)} \times \text{maximum OC content weight fraction (0.0774)} \times 0.98^* = 0.383$$

\* 2% of the OC is emitted elsewhere



- (5) The permittee shall collect and record the following information each month for all the cleanup materials employed in this emissions unit:
- the name and identification of each cleanup material employed;
  - the OC content of each cleanup material employed, in pounds per gallon;
  - the number of gallons of each cleanup material employed;
  - the OC emissions from each cleanup material employed  $[d)(5)b \times d)(5)c]$ ;
  - the total OC emissions from all the cleanup materials employed [summation of  $d)(5)d$  for all cleanup materials], in pounds.
- (6) The permittee shall calculate and record each month the total OC emissions for this emissions unit, in tons, calculated as follows:
- total OC emissions (tons/month) = {the total OC emissions from lamp processing [from  $d)(4)d]$  + the total OC emissions from base cementing [from  $d)(4)e]$  + the total OC emissions from cleanup materials usage [from  $d)(5)e]$  } /2000
- (7) The permittee shall collect and record each year the total OC emissions for this emissions unit, in tons, calculated by summing the monthly OC emissions [from  $d)(6)$ ] for the calendar year.
- (8) The permittee shall monitor at least once every fifteen minutes the pressure drop across the carbon adsorber serving the vacuum pump, and across the baghouse(s) (fabric filter) serving the end brushing operation, during operation of this emissions unit, and record the average of those values over the period during which this emissions unit operates each day. For purposes of this requirement, the permittee shall record one average total pressure drop value for each control device each day, for a period beginning at midnight or such time after midnight when the emissions unit begins to operate and ending at the time the emissions unit ceases that day or at midnight should the emissions unit operate beyond midnight. If the emissions unit starts and stops more than once during this 24-hour period, the permittee shall record the average value for the time during this 24-hour period when the emissions unit is in operation. Hereinafter this value shall be called a "Daily Pressure Drop Value".

Whenever the Daily Pressure Drop Value is outside of the applicable range specified below (hereinafter the "Pressure Drop Range"), the permittee shall promptly conduct an investigation to determine if there is a malfunction of the carbon adsorber or either baghouse (whichever is producing a Daily Pressure Drop Value outside of its Pressure Drop Range), and if so, comply with the requirements of OAC rule 3745-15-06. For each such occasion (i.e. when a Daily Pressure Drop Value is outside of its Pressure Drop Range), the permittee shall record the number of days during which the Daily Pressure Drop Value remained outside of its Pressure Drop Range and a description of the maintenance or repairs, if any, made to the carbon adsorber or either baghouse(s). If upon the investigation the permittee determines there is no malfunction that is subject to OAC rule 3745-15-06, the permittee shall also maintain records documenting the basis for such determination.



The Pressure Drop Ranges are:

- a. for the carbon adsorber, 0.01 to 5.0 inches of water.
- b. for the baghouse, 0.5 to 5.0 inches of water.

These Pressure Drop Ranges are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA, Northwest District Office. The permittee may request revisions to the range(s) based upon information that demonstrates compliance with the allowable mercury emission rate (for the carbon adsorber) or particulate emission rate (for the baghouse) for this emissions unit. If the permittee submits a written request to establish a new Pressure Drop Range, Ohio EPA shall promptly evaluate and act on that request and, if approved, incorporate the new range into this permit as a minor permit modification.

e) Reporting Requirements

- (1) The permittee shall notify the Northwest District Office in writing of any daily record showing the use of base cement exceeding 3.5 pounds of volatile organic compounds (VOC) per gallon of coating, excluding water and exempt solvents. The notification shall include a copy of such record and shall be sent to the Northwest District Office within 30 days following the end of the calendar month.
- (2) The permittee shall submit semiannual reports that identify the following information concerning the operation of the carbon adsorber during operation of this emissions unit:
  - a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
  - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d).

These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (3) The permittee shall submit semiannual reports that identify the following information concerning the operation of the baghouse (fabric filter) during operation of this emissions unit:
  - a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
  - b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d).

These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (4) The permittee shall submit semiannual reports that identify the following information concerning the operation of the baghouse (fabric filter) during operation of this emissions unit:



- a. the total duration (in days) that its Daily Pressure Drop Value was outside of its applicable Pressure Drop Range; and
- b. any and all omissions of the monitoring, record keeping, investigation, and malfunction reporting requirements specified in d).

These semiannual reports shall be submitted by January 31 for the six-month period ending December 31 and by July 31 for the six-month period ending June 30.

- (5) The permittee shall submit annual reports that summarize the actual annual OC emissions for this emissions unit for the previous calendar year. These reports shall be submitted by January 31 of each year.
- (6) The permittee shall submit quarterly summaries that include a log of the downtime for the capture (collection) system, control device and monitoring equipment when the associated emissions unit was in operation.

f) Testing Requirements

- (1) Compliance with the emission limitations in b)(1) shall be determined in accordance with the following method(s):

- a. Emission Limitation:  
8.72 lbs OC/hour

Applicable Compliance Method:

The hourly allowable OC emission rate was established based on the summation of the OC emissions generated during lamp manufacturing and OC emissions generated during lamp base cementing. The following outlines potential emissions generated during each process:

- i. Lamp manufacturing - the potential to emit for lamp manufacturing is 2.04 lbs of OC per hour based on the summation of emissions from the following components of the line and a maximum lamp manufacturing rate of 7000 lamps per hour:

Phosphor Coating - 1.48 pounds of OC per hour (based on a maximum surfactant usage rate of 0.358 lb/1000 lamps and a maximum OC content of 8.3% by weight, plus a maximum mono ethanol amine usage rate of 0.181 lb/1000 lamps and a maximum OC content of 100% by weight).

Monogram Ink - 0.01 pound of OC per hour (based on a maximum ink usage rate of 0.006 lb/1000 lamps and a maximum OC content of 30% by weight, plus a maximum diluent usage rate of 0.0002 lb/1000 lamps and a maximum OC content of 100% by weight).

Headmarking Ink - 0.06 pound of OC per hour (based on a maximum ink usage rate of 0.0063 lb/1000 lamps and a maximum OC content of 71% by weight, plus a maximum diluent solvent usage rate of 0.0037 lb/1000 lamps and maximum OC content of 100% by weight).



E-Mix - 1.28 pound of OC per hour (based on a maximum usage rate of 0.551 lb/1000 lamps and a maximum OC content of 29% by weight, plus a maximum diluent solvent usage rate of 0.0235 lb/1000 lamps and a maximum OC content of 100% by weight).

Dry Film - 0.12 pound of OC per hour (based on a maximum usage rate of 0.0339 lb/1000 lamps and a maximum OC content of 50% by weight).

- ii. Lamp base cementing - the potential to emit for lamp base cementing is 5.77 lbs of OC per hour based on a maximum lamp base cementing rate of 16,130 bases per hour and a maximum cement usage rate of 5.055 lbs/1000 bases, a maximum OC content of 7.74 % by weight and a maximum emission rate of 98% (98% for this emissions unit, i.e. 2% of the OC is emitted during base cement mixing).

If required, the permittee shall demonstrate compliance in accordance with Methods 1 - 4, 18, 25, or 25A, as appropriate, of 40 CFR, Part 60, Appendix A.

- b. Emission Limitation:  
38.19 tons OC/year

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d).

- c. Emission Limitation:  
2.82 lbs OC/month, from cleanup materials

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(5).

- d. Emission Limitation:  
0.02 ton OC/year, from cleanup materials

Applicable Compliance Method:

Compliance with the OC emission limitation above shall be demonstrated based on the monitoring and record keeping requirements established in d)(5) and shall be the summation of the 12 OC emission rates for the calendar year.

- e. Emission Limitation:  
3.36 lbs NOx/hour (natural gas combustion)

Applicable Compliance Method:

The hourly allowable NOx emission limitation was established by multiplying the maximum natural gas usage rate of 33,637 cu. ft /hr by the AP-42 emission factor of 100 lbs of NOx/mm cu. ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]).

If required, the permittee shall demonstrate compliance in accordance with Methods 1- 4 and 7 of 40 CFR, Part 60, Appendix A.



- f. Emission Limitation:  
2.83 lb CO/hour (natural gas combustion)
- Applicable Compliance Method:  
The hourly allowable CO emission limitation was established by multiplying the maximum natural gas usage rate of 33,637 cu. ft /hr by the AP-42 emission factor of 84 lbs of CO/mm cu. ft (AP-42, Section 1.4, Table 1.4-1 [revised 7/98]).
- If required, the permittee shall demonstrate compliance in accordance with Methods 1- 4 and 10 of 40 CFR, Part 60, Appendix A.
- g. Emission Limitation:  
0.18 lb PE/hour (end brushing)
- Applicable Compliance Method:  
The hourly allowable PE limitation was established by multiplying the maximum phosphor coating application rate of 12.56 lbs/1000 lamps by the production rate of 7000 lamps per hour, a removal rate of 1% of the phosphor applied, and then multiplying by a control factor (1-0.80\*).
- If required, the permittee shall demonstrate compliance in accordance with Methods 1- 5 of 40 CFR, Part 60, Appendix A.
- \* the cyclone (or baghouse) control efficiency is assumed to be at least 80%
- h. Emission Limitation: (end brushing)  
Visible PE shall not exceed 5% opacity, as a six-minute average.
- Applicable Compliance Method:  
If required, compliance shall be determined in accordance with the test method and procedures in Method 9 of 40 CFR, Part 60, Appendix A.
- i. Emission Limitation:  
0.84 lb SO<sub>2</sub>/hour (SO<sub>2</sub> lubricant)
- Applicable Compliance Method:  
The hourly allowable SO<sub>2</sub> emission limitation was established by summing the maximum of 0.11 lb of SO<sub>2</sub>/hour injected in the Lehr and 0.73 lb of SO<sub>2</sub>/hour injected in the flare machines.
- If required, the permittee shall demonstrate compliance in accordance with Methods 1 - 4 and 6 of 40 CFR, Part 60, Appendix A.
- j. Emission Limitation:  
0.23 lb NO<sub>x</sub>/hour (binder combustion)
- Applicable Compliance Method:  
The hourly allowable NO<sub>x</sub> emission limitation was established by multiplying the maximum phosphor coating application rate of 12.56 lbs/1000 lamps by the maximum lamp processing rate of 7500 lamps per hour and by 0.11 lb of binder/lb of coating, and then by 0.0238 lb of NO<sub>x</sub>/lb of binder.



If required, the permittee shall demonstrate compliance in accordance with the test methods and procedures in Methods 1- 4 and 7 of 40 CFR, Part 60, Appendix A.

- k. Emission Limitation:  
0.0004 lb Hg/hour

Applicable Compliance Method:

Compliance with this emission limitation was demonstrated with the results of emissions testing conducted on November 18, 2003.

If required, the permittee shall conduct any future compliance demonstration with the emission limitation in accordance with Methods 1 through 4, and 29 of 40 CFR, Part 60, Appendix A.

- l. Emission Limitations:  
14.72 tons NOx/year (natural gas combustion)  
12.40 tons CO/year (natural gas combustion)  
0.79 ton PE/year (end brushing)  
3.68 tons SO<sub>2</sub>/year (SO<sub>2</sub> lubricant)  
1.01 ton NOx/year (binder combustion)  
0.002 ton Hg/year

Applicable Compliance Method:

- m. Compliance with the annual emission limitation for each pollutant above shall be assumed as long as compliance with the hourly emission limitation for the specific pollutant is maintained (the annual emission limitation for each pollutant was determined by multiplying the hourly emission limitation for the specific pollutant by 8760, and then dividing by 2000).

- (2) Formulation data or U.S. EPA Method 24 shall be used to determine the OC/VOC contents of all the coatings and cleanup materials.

g) Miscellaneous Requirements

- (1) None.