



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

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Secretary

KENNETH L. KIMMELL  
Commissioner

Mr. Zib Drelich  
Shawsheen Rubber Co., Inc.  
220 Andover Street  
Andover, MA 01810

RE: **ANDOVER** - Metropolitan  
Boston/Northeast Region  
310 CMR 7.02 NON-MAJOR  
COMPREHENSIVE PLAN APPLICATION  
Transmittal No. W034223  
Application No. MBR-03-IND-008  
**FINAL APPROVAL**  
**TEST APPROVAL**

Dear Mr. Drelich:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Protection, Bureau of Waste Prevention (MassDEP), has reviewed the air emission testing results for the recuperative thermal oxidizer (TOx) associated with the two coating lines located at your existing 220 Andover Street, Andover, Massachusetts facility. Air emissions compliance testing was conducted to demonstrate compliance with the destruction and removal efficiency (DRE) requirements contained in the Conditional Approval letter, Application No. MBR-03-IND-008, dated June 12, 2003, governing the subject equipment.

MassDEP has completed its technical review of the plan application and compliance test results report listed above. This application concerns the modification of an existing coating line and the replacement of the existing thermal oxidizer that was previously serving two coating lines at your facility located at 220 Andover Street in Andover, Massachusetts. The submitted application bears the seal and signature of Mr. Dale T. Raczynski, Massachusetts P.E. No. 36207.

This review of the submitted information by MassDEP engineers indicates that Shawsheen Rubber Co., Inc. (Shawsheen Rubber) manufactures pressure sensitive adhesive tapes for the athletic industry as well as other adhesive or cohesive coated fabrics and films. The facility presently operates two coating lines that apply adhesives and other coatings on paper, textiles, and film substrates.

This information is available in alternate format. Call Aprel McCabe, ADA Coordinator at 1-617-556-1171.

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MassDEP has determined that your application and compliance test results report are administratively and technically complete and that the described changes are in conformance with current air pollution engineering practices and hereby grants **FINAL APPROVAL** for the proposal, application No. MBR-03-IND-008, subject to the below listed conditions.

Please review the entire APPROVAL carefully, as it stipulates the particular conditions with which the facility owner/operator must comply in order for the facility to be operated in compliance with the Regulations. Failure to comply with this APPROVAL will constitute a violation of the Regulations and can result in the revocation of the APPROVAL.

### **Units Tested**

Shawsheen Rubber operates two coating lines which apply adhesives and other coatings on to paper, textiles, and film substrates. Each of the coating lines consists of a knife over roll coating head and an associated drying oven. The volatile organic compounds (VOC) and hazardous air pollutants (HAPs) generated from these two coating lines are controlled by the existing Catalytic Products Quadrant SR-17,500 recuperative thermal oxidizer (TOx). The coating station and drying oven associated with each coating line are fully enclosed to meet all the U.S. Environmental Protection Agency (USEPA) Permanent Total Enclosure (PTE) criteria delineated in Special Condition No. D.(5) and Reference Method 204 in the Code of Federal Regulations 40, Part 51, Appendix M.

### **Compliance Testing**

The required testing was performed on May 11, 2010 by Eastmount Environmental Services, LLC; and was witnessed by MassDEP personnel. The testing demonstrated that the coating application stations and drying ovens met the USEPA criteria for PTEs, thus, achieving a capture efficiency of 100.00 percent for each PTE. MassDEP review of the report's test results indicates that the two coating lines and the associated TOx demonstrated compliance with their air emissions capture and control requirements. A compliance demonstration is successful provided that either the outlet pounds per hour or the weigh percent control efficiency standards are met. A summary of the test results is given in Table A below.

**Table A. Compliance Test Results for TOx at 1400 °F**

|                                      | Run 1 | Run 2 | Run 3 | Average | Standard |
|--------------------------------------|-------|-------|-------|---------|----------|
| Oxidizer VOC Inlet (lbs/hr)          | 273.7 | 298.8 | 273.6 | 282.0   | N/A      |
| Oxidizer VOC Outlet (lbs/hr)         | 0.04  | 0.05  | 0.03  | 0.04    | 3.6      |
| Overall VOC Control Efficiency (wt%) | 99.98 | 99.98 | 99.99 | 99.98   | 99.0     |

VOC = volatile organic compounds, lbs/hr = pounds per hour (lbs/hr), wt % = weight percent, N/A = not applicable

A. EQUIPMENT DESCRIPTION

Shawsheen Rubber operates a fabric, paper, and film coating facility at 220 Andover Street, Andover, Massachusetts. The facility consists of two coating lines (designated Lines 404 and 406) that apply adhesives and other coatings to paper, textiles, and films. The two lines and their associated drying ovens are exhausted to a new 17,500 standard cubic feet per minute (scfm) recuperative thermal oxidizer. Shawsheen Rubber has not installed the new line to replace Line 404.

Coating Line 404 consists of a knife over roll application station, followed by a single zone steam heated drying oven. Each coating station and each drying oven are fully enclosed to meet all of the USEPA requirements for a Permanent Total Enclosure (PTE).

Coating Line 406 also consists of a knife over roll application station and is followed by a 40-foot long two-zone drying oven. Each zone is equipped with a Maxon Ovenpak Model No. 415 natural gas-fired burner rated at a maximum heat input rating of 1.65 MMBtu/hr. Each coating station and each drying oven are fully enclosed to meet all of the USEPA requirements for a PTE.

The VOC and hazardous air pollutants (HAPs) emissions from Lines 404 and 406 are controlled by a Catalytic Products QUADRANT SR-17,500 recuperative thermal oxidizer (TOx). The TOx is designed to provide a minimum residence time for VOC and HAPs in the combustion chamber of 1.0 second at a minimum operating temperature of 1400°F. The maximum process air flow rate will be 21,132 actual cubic feet per minute (acfm) at 180°F. The TOx is equipped with a Maxon Circular IncinoPak burner, which is sized to supply a maximum heat input rate of 10 MMBtu/hr. The burner utilizes natural gas as the only fuel of use at a maximum rate of 10,000 cubic feet per hour. A thermocouple is installed at the downstream end of the combustion chamber to monitor the chamber temperature. A temperature chart recorder records this temperature continuously. In the event of a high solvent (VOC) loading condition, which results in an elevated combustion chamber temperature of 1550°F or greater, the TOx will automatically shut down.

The VOC and HAPs are captured by the use of PTEs around each coating station and each drying oven. Each enclosure meets U.S. EPA Method 204 for a PTE (See Special Condition No. D.(5)). The PTEs for the each coating line shall continue to provide 100 percent VOC and HAPs capture efficiency for the TOx serving them. The TOx is designed to provide a minimum destruction efficiency of 99 percent by weight for VOC and HAPs. Thus, the overall removal efficiency of VOC and HAPs shall continue to be a minimum of 99 percent by weight (capture efficiency times destruction efficiency).

The treated process air stream exits the TOx at between 500°F and 850°F. This stream is exhausted to the atmosphere through a stainless steel stack, the top of which is 44 feet above ground level. The inside exit diameter of this stack is 44 inches and provides a stack gas exit velocity ranging from 50 to 68 feet per second at an average exit temperature of approximately 675°F.

On March 31, 2012, MassDEP received a written request from Shawsheen Rubber to be allowed to emit directly to atmosphere the emissions from a new water-based product that is produced on Coating Line 406. This product uses a water-based coating that contains 0.5% by weight of vinyl acetate as the only VOC and HAP material in the coating. Shawsheen Rubber also requested to be allowed to use other similar, water-based coatings on Line 406 without control by the TOx.

MassDEP has determined that these requests are reasonable, and Shawsheen Rubber is hereby allowed to use only the water-based coatings referenced above without use of the TOx. This is provided that these operations shall comply with the conditions in Section C(7) below such that the total uncontrolled emissions of VOC and HAPs shall not exceed 2,000 pounds during any twelve month rolling period. Shawsheen Rubber has not requested an increase in their allowable emission rates contained in Table 1 below.

**B. EMISSIONS**

- (1) Table 1 below contains the Allowable Facility-wide VOC and HAPs Emission Limits (after control by the new TOx):

Table 1

| Allowable Single HAP <sup>1</sup> Emission Limit in Tons per Month | Allowable Single HAP <sup>1</sup> Emission Limit in Tons per Twelve Month Rolling Calendar Period | Allowable Total HAPs <sup>1</sup> Emission Limit in Tons per Month | Allowable Total HAPs <sup>1</sup> Emission Limit in Tons per Twelve Month Rolling Calendar Period | Allowable VOC <sup>2</sup> Emission Limit in Tons per Month | Allowable VOC <sup>2</sup> Emission Limit in Tons per Twelve Month Rolling Calendar Period |
|--|---|--|---|---|--|
| 2.0  | 9.4   | 4.6  | 15.0  | 4.6   | 15.0   |

1 – HAPs = hazardous air pollutants

2 – VOC = volatile organic compounds

- (2) The capture efficiency of VOC and HAPS by the PTE of each coating station and drying oven shall be 100 percent. The TOx shall provide a minimum destruction efficiency of 99 percent by weight for VOC and HAPS or a maximum total hourly emission rate of VOC and HAPS from Coating Lines 404 and 406, after control, of 3.6 pounds per hour, whichever is less stringent. Shawsheen Rubber shall ensure that all technically feasible means have been taken such that the TOx obtains the overall control efficiency of 99% for VOC and HAPS, whenever possible. The system's capture efficiency, destruction efficiency, and total hourly emission rate of VOC and HAPS shall be demonstrated through compliance testing as specified in Special Conditions No. D.(4) and D.(6).

### C. OPERATIONAL AND USAGE REQUIREMENTS

Shawsheen Rubber shall comply with the following operational and usage requirements:

- (1) Any coating used on Lines 404 and 406 shall contain no more than 4.8 pounds of VOC per gallon of solids, as applied after controls.
- (2) All VOC and/or HAPS-containing materials, such as coatings and cleanup solutions, shall be transported and stored in tightly covered containers.
- (3) All cleaning rags used in conjunction with the cleaning solutions shall be placed in tightly covered containers when not in use, and shall be collected for proper recycling or disposal.
- (4) All process air from both Lines 404 and 406 shall be vented to the TOx for abatement, except as specified in C(7) below.
- (5) That an electronic interlock system shall prevent the associated production line from operating until the TOx achieves a minimum oxidizer chamber temperature of 1400°F. The electronic interlock system shall also prevent the production line from operating if the TOx combustion chamber temperature falls below 1400°F or exceeds 1550°F.
- (6) The minimum set point temperature for the TOx shall be 1400°F or such other temperature, as to maintain a minimum combustion chamber temperature of 1400°F, at all times.

- (7) Line 406 shall be permitted to utilize water-based coating without control by the TOx as long as all of the following conditions are being complied with:
- (i) The actual uncontrolled emissions of VOC and HAPs combined shall be less than 2,000 pounds per rolling twelve month period and shall be included in the facility-wide allowable emission limits found in Table 1 above;
  - (ii) Shawsheen Rubber shall only be permitted to utilize water-based coatings that contain 5% or less by weight of VOC and HAPs combined of the total water-based coating weight as applied;
  - (iii) Shawsheen Rubber shall obtain a written letter for each water-based coating specifying the maximum total VOC and HAPs content in the subject coating [in addition to the Material Safety Data Sheet (MSDS)];
  - (iv) Shawsheen Rubber shall maintain on-site the weekly, monthly, and twelve month rolling emission rates of these uncontrolled emissions;
  - (v) Only the Manufacturing Manager or the Facilities Engineering Manager shall possess the keys and password protection to switch the damper position to the "ATMOSPHERE" position on the control panel of the drying oven for Coating Line 406 in order to allow venting of the uncontrolled water-based coatings directly to atmosphere;
  - (vi) Prior to venting to atmosphere and operating Coating Line 406 on a water-based coating without control, there shall be a minimum of a half hour purge of the drying oven associated with Coating Line 406 which shall be directed and controlled by the existing TOx so that the previous solvent based coating material can be fully purged from the drying ovens; and
  - (vii) Prior to switching to the "ATMOSPHERE" position, either the Manufacturing Manager or the Facilities Engineering Manager shall record the lower explosive limit (LEL) reading from oven #1 of Coating Line 406 on a log which includes date, time, LEL reading, and name of the water-based coating that will be utilized shortly on Coating Line 406.

D. SPECIAL CONDITIONS

- (1) Shawsheen Rubber shall comply with all of the requirements contained in Section B. above and shall adhere to the Operational and Usage Requirements contained in Section C. above.
- (2) That for compliance testing purposes, the inlet sampling ports must be located on the inlet stream to the TOx. The outlet sampling ports must be located downstream of the TOx and upstream of any dilution or recirculation streams. The inlet and outlet sampling ports must be located in accordance with 40 CFR 60, Appendix A, Method 1.

- (3) Shawsheen Rubber shall operate and maintain the dated and timed temperature circular chart recorder, to record the temperature in the combustion chamber of the subject TOx. The temperature records must document actual temperatures of the TOx's combustion chamber, which shall be used to determine compliance with the minimum operating temperature necessary to ensure the proper VOC and HAPs destruction efficiency of the new TOx. The temperature records shall be maintained on-site for a minimum of five years, and shall be made available to MassDEP personnel upon request.
- (4) All required compliance testing shall use methods approved by MassDEP, in writing, and shall be witnessed by MassDEP personnel. Said compliance testing of the subject VOC and HAPs air pollution control system must demonstrate, at minimum: a) whether or not the enclosure around each coating station or drying oven complies with the United States Environmental Protection Agency's (USEPA) Method 204 which outlines criteria for Permanent Total Enclosures and with Section B (2) above; and b) the VOC and HAPs destruction efficiency of the TOx; and c) the maximum hourly VOC and HAPs emission rate, after control, in pounds per hour. In addition, the electronic interlock for the TOx system shall be tested on the day of any required compliance testing. At least sixty (60) days prior to the commencement of any compliance testing at its facility, Shawsheen Rubber shall submit a pretest protocol to this Office for review and written MassDEP approval. This protocol shall describe the test methodologies to be employed during the required compliance testing. A final compliance test results report must be submitted by Shawsheen Rubber to this Office, attention Permit Chief for the Bureau of Waste Prevention, within sixty (60) days of completion of the above required compliance testing.
- (5) Shawsheen Rubber shall maintain documentation and adhere to the criteria for VOC and HAPs capture efficiency - U.S. EPA Method 204 for permanent total enclosures (PTE) for the new production line. The criteria for a PTE are the following:
  - a) All access doors and windows are closed during normal operation.
  - b) The interior of the PTE is under negative pressure to the outside environment.
  - c) The average velocity through the natural draft openings (NDOs) must be greater than 200 feet per minute.
  - d) Sources of VOC and HAPs in the PTE must be at least four (4) equivalent diameters from each NDO.
  - e) The total area of all NDOs must be less than five (5) percent of the total area of the enclosure.

The above procedures shall be incorporated into Shawsheen Rubber's Standard Operating and Maintenance Procedure (SOMP) for the subject process equipment.

- (6) Shawsheen Rubber shall complete additional emissions testing of the subject coating lines and the associated TOx by April 30, 2013 and every three years thereafter.
- (7) That the CONDITIONAL APPROVAL (Application No. MBR-03-IND-008), dated June 12, 2003, is hereby superseded in its entirety by this FINAL APPROVAL.
- (8) That a copy of this FINAL APPROVAL letter shall be posted at or near the subject equipment.
- (9) That Shawsheen Rubber shall comply with all applicable requirements of Federal Regulation Title 40, Part 60, Subpart RR, titled "Standards of Performance for Pressure Sensitive Tape and Label Surface Coating Operation."
- (10) A copy of the subject TOx's SOMP shall be maintained at the facility at all times.
- (11) The TOx's start-up specifications and maintenance procedures shall be incorporated into its SOMP. A revised SOMP must be submitted by Shawsheen Rubber to this Office, attention Permit Chief for the Bureau of Waste Prevention, within 45 days from the date of this letter. The revised SOMP shall address the spare parts inventory and back-up equipment systems for the dryer and the TOx to prevent or reduce any downtime of the TOx. In addition, a copy of any subsequent revisions made to the SOMP must be submitted to this office within seven (7) days of the modification(s).
- (12) If any TOx upset occurs, which lasts for more than 15 minutes, then Shawsheen Rubber shall discontinue operation of the production line until the TOx and any associated equipment in question are repaired and operating properly.
- (13) Should the TOx become inoperable, for any reason, Shawsheen Rubber shall notify MassDEP within 24 hours by fax at (978) 694-3499 and subsequently in writing within seven (7) days of occurrence describing the reason(s) for and the extent of down time of the equipment and all steps that have been or will be taken to prevent said occurrence from recurring.
- (14) Shawsheen Rubber shall continue to evaluate and utilize low and no VOC/HAPs coatings and clean-up solutions which are technically and economically feasible in accordance with 310 CMR 50 (Toxic Use Reduction).

- (15) That Shawsheen Rubber shall maintain adequate on-site records to document compliance with the emission caps as stated in Section B. above. Said records shall be made available to MassDEP personnel upon request, and shall be kept on site for a minimum of five (5) years. (See attached On-site Record-keeping Forms for the MassDEP approved forms. An electronic version of this form in Microsoft Excel format can be obtained at <http://www.state.ma.us/dep/nero/bwp/nerobwp.htm>). Shawsheen Rubber shall submit an annual compendium of the previous twelve monthly VOC/HAPs emissions records to this Office, attention Permit Chief, by no later than January 30<sup>th</sup> of the following year.
- (16) Shawsheen Rubber shall submit, in writing, an Exceedance Report to MassDEP should the facility exceed any limitation/restriction established within this FINAL APPROVAL. Said Exceedance Report shall be submitted, in writing, to this Office within seven (7) days of determination of the exceedance of the limitation. The Exceedance Report shall include identification, duration, reason for the exceedance, and remedial action plan to prevent future exceedances.
- (17) That the facility's air emissions shall be reported in the Emission Statement Forms submitted by Shawsheen Rubber to MassDEP as required by the Regulation 310 CMR 7.12.

E. GENERAL CONDITIONS

- (1) If any nuisance condition(s) should be generated by the operation of this facility, then Shawsheen Rubber shall take immediate and appropriate steps to abate the nuisance condition(s).
- (2) Shawsheen Rubber shall be permitted to utilize on each subject coating line any materials with resultant comparable or lower VOC and HAPs emissions than those presently proposed and as long as these emissions are included in, and do not result in an exceedance of, any of the allowable VOC and HAPs emissions limitations specified in this letter.
- (3) Shawsheen Rubber shall continue to investigate the feasibility of implementing alternative technologies or reformulated raw material inputs which will lead to the decrease of overall emissions from the subject facility to the environment (air emissions, solvent waste, etc.). The subject facility shall seek assistance from outside sources such as suppliers, vendors, or the Office of Technical Assistance (which is located at the Executive Office of Environmental Affairs, 100 Cambridge Street, Boston, Massachusetts, Telephone No. 617-727-3260). Shawsheen Rubber personnel shall record any information supplied to them relative to reducing overall emissions and pollution prevention techniques. This information as well as any progress towards decreasing overall emissions to the environment shall be recorded in an Environmental Logbook (See General Condition E.4 below).

- (4) Shawsheen Rubber shall maintain an Environmental Logbook, or equivalent record keeping system, which shall document all actions associated with environmental issues and overall emissions changes at the facility. The facility shall record information such as the results of federal, state, or local environmental inspections; maintenance or corrective actions related to pollution control equipment; and measures taken to lower overall emissions to the environment (air, solvent waste, etc.). This Logbook, or equivalent record keeping system, shall be made available to MassDEP personnel upon request.
- (5) Shawsheen Rubber shall allow MassDEP personnel access to the plant site, buildings, and all pertinent records at all times for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- (6) Please be advised that this FINAL APPROVAL does not negate the responsibility of Shawsheen Rubber to comply with this or any other applicable federal, state, or local regulations now or in the future. Nor does this Approval imply compliance with this or any other applicable federal, state, or local regulations now or in the future.
- (7) This Approval may be suspended, modified, or revoked by MassDEP if, at any time, MassDEP determines that Shawsheen Rubber is violating any condition or part of this FINAL APPROVAL.
- (8) MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Environmental Affairs, for air quality purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and Regulation 301 CMR 11.00, Section 11.04, provide certain "Fail-Safe Provisions" which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report at a later time.
- (9) This Approval consists of the application materials and this Approval letter. If conflicting information is found between these two documents, then the requirements of the Approval letter shall take precedence over the documentation in the application materials.
- (10) Failure to comply with any of the above described conditions will constitute a violation of the "Regulations", and can result in the revocation of the Approval granted herein.

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date you received this Plan Approval. Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
P.O. Box 4062  
Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this matter, please do not hesitate to contact Mr. Mun Wong at the Metropolitan Boston/Northeast Region, 205B Lowell Street, Wilmington, Massachusetts 01887.

Sincerely,

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Mun S. Wong  
Environmental Engineer  
Bureau of Waste Prevention

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James E. Belsky  
Permit Chief  
Bureau of Waste Prevention

JEB/Emw/mw  
P:\MWONG\W034223 Final

cc: Board of Health, Town Hall, Andover, MA 01810  
Fire Headquarters, 32 N. Main Street, Andover, MA 01810  
DEP, Boston, Attn: Y. Tian, M. Altobelli (E-copy)  
DEP, NERO, Attn: M. Wong, M. Persky