

28 February 2005

Ms. Joanne Bagley, President
Brookwood Laminating, Incorporated
1425 Kingstown Road
Peacedale, RI 02883

Dear Ms. Bagley:

The Department of Environmental Management, Office of Air Resources has reviewed and approved your request for a minor source permit for process equipment at your 1425 Kingstown Road, Peacedale facility.

Enclosed is a minor source permit issued pursuant to our review of your application (Approval Nos. 573, 1806 and 1827).

The permit conditions and emission limitations in this permit also incorporate and include those in Approval No. 573 issued for the installation of the HS-Lam line and Approval No. 1806 issued for the Durr regenerative thermal oxidizer. Hereinafter the design, construction, and operation of all the equipment addressed in these approvals shall be subject to the permit conditions and emission limitations contained in this minor source permit.

I can be reached at 222-2808, extension 7011 if there are any questions.

Sincerely,

Douglas L. McVay
Associate Supervising Engineer
Office of Air Resources

cc: South Kingstown Building Official

**STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DIVISION OF AIR RESOURCES**

MINOR SOURCE PERMIT

BROOKWOOD LAMINATING, INCORPORATED

APPROVAL Nos. 573, 1806 and 1827

Pursuant to the provisions of Air Pollution Control Regulation No. 9, this minor source permit is issued to:

Brookwood Laminating, Incorporated

For the following:

Installation of a new fabric coating line, Lam-4 (Approval No. 1827). The Dürr Environmental regenerative oxidizer will oxidize VOC emissions from the A-Lam, HS-Lam, L-Lam and Lam-4 fabric coating lines and the Mixing Room exhaust.

Located at: *1425 Kingstown Road, Peacedale*

This permit shall be effective from the date of its issuance and shall remain in effect until revoked by or surrendered to the Department. This permit does not relieve *Brookwood Laminating, Incorporated* from compliance with applicable state and federal air pollution control rules and regulations. The design, construction and operation of this equipment shall be subject to the attached permit conditions and emission limitations.

**Stephen Majkut, Chief
Office of Air Resources**

Date of issuance

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DIVISION OF AIR RESOURCES

Permit Conditions and Emission Limitations

BROOKWOOD LAMINATING, INCORPORATED

Approval Nos. 573, 1806 & 1827

A. Emission Limitations

1. All volatile organic compound (VOC) emissions generated from the A-Lam, HS-Lam, L-Lam and Lam-4 fabric coating lines and the Mixing Room shall be captured and contained for discharge to an air pollution control device for VOC.
2. VOC emissions generated from the A-Lam, HS-Lam, L-Lam and Lam-4 fabric coating lines and the Mixing Room shall be reduced by 98% or greater. This is to be achieved through a combination of 100 percent capture of the VOC generated by the coating equipment and the Mixing Room and a 98 percent destruction of this VOC.
3. The destruction efficiency of the regenerative thermal oxidizer for VOC shall be at least 98%.
4. The total quantity of VOC emissions discharged to the regenerative thermal oxidizer from the A-Lam, HS-Lam, L-Lam and Lam-4 fabric coating lines and the Mixing Room shall not exceed 410 pounds per hour, the maximum loading capacity in lbs/hr of the oxidizer.
5. The emissions of air contaminants discharged to the atmosphere from the regenerative thermal oxidizer and the gas tenter frame shall not exceed the limitations in Table 1. These limitations were established to ensure that emissions from this facility do not exceed any of the Acceptable Ambient Levels (AALs) listed in Air Pollution Control Regulation No. 22. The limitations shown in pounds per year are calculated on a 12-month rolling basis.
6. The VOC content of each coating used on the gas tenter frame shall not exceed 2.9 lbs. of VOC per gallon of coating (minus water).

B. Operating Requirements

1. The operating temperature of the regenerative thermal oxidizer shall be maintained at or above 1500°F whenever VOC is being discharged to the oxidizer. This minimum temperature may be revised based on the results of emission testing.
2. The operating temperature of the regenerative thermal oxidizer shall never exceed 1800°F.

3. The A-Lam, HS-Lam, L-Lam and Lam-4 coating equipment shall each be equipped with an interlock to prevent operation of the coating equipment if the operating temperature of the regenerative thermal oxidizer is less than 1500°F.
4. All access doors and windows in the laminating area that includes the A-Lam, HS-Lam, L-Lam and Lam-4 equipment, shall be closed during routine operation. Brief, occasional openings of doors to allow for entering and exiting the laminating area and the Mixing Room are acceptable. Plastic strip curtains in place of doors constitute closed doors.
5. Air passing through any opening in the laminating area and the Mixing Room shall flow into the room continuously.
6. All cleaning of the A-Lam, HS-Lam L-Lam and Lam-4 coating equipment and the Mixing Room equipment with VOC containing material shall be conducted with the air pollution control system operating. VOC emissions generated during cleaning shall be captured and contained and discharged through the regenerative thermal oxidizer for destruction.
7. Any material containing dimethyl formamide, toluene, methyl ethyl ketone, methyl isobutyl ketone or isopropyl alcohol shall be used only on equipment that discharges to the regenerative thermal oxidizer.
8. The gas tenter frame shall not be used for any process having the potential to emit one hundred pounds or more per day, or ten pounds or more per hour of any air contaminant.

C. Continuous Monitoring

1. The operating temperature of the regenerative thermal oxidizer shall be continuously monitored and recorded.

D. Stack Testing

1. Within 180 days of the issuance of this approval, performance testing shall be conducted to demonstrate compliance with all applicable emission limitations.
2. A stack testing protocol shall be submitted to the Office of Air Resources for review and approval at least 60 days prior to the performance of any stack tests. The owner/operator shall provide the Office of Air Resources at least 60 days prior notice of any stack test.
3. All test procedures used for stack testing shall be approved by the Office of Air Resources prior to the performance of any stack tests.
4. The owner/operator shall install any and all test ports or platforms necessary to conduct the required stack testing, provide safe access to any platforms and provide the necessary utilities for sampling and testing equipment.

5. All testing shall be conducted under operating conditions deemed acceptable and representative for the purpose of assessing compliance with the applicable emissions limitations.
6. A final report of the results of stack testing shall be submitted to the Office of Air Resources no later than 60 days following completion of testing.
7. All stack testing must be observed by the Office of Air Resources or its authorized representatives to be considered acceptable.

E. Record Keeping and Reporting

1. The owner/operator shall collect, record and maintain the following information each month for each coating line and air pollution control device:
 - a. The name and identification number of each coating used on the A-Lam, HS-Lam, L-Lam and Lam-4 lines;
 - b. The mass of VOC per unit volume of coating solids, as applied, the volume solids content, as applied, and the volume, as applied, of each coating used;
 - c. The type and amount of solvent used for diluents and clean up operations;
 - d. A log of operating time for the capture system, control device, monitoring equipment and the A-Lam, HS-Lam, L-Lam and Lam-4 coating equipment;
 - e. A maintenance log for the capture system, control devices, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages;
 - f. All three-hour periods of operation in which the average operating temperature of the regenerative thermal oxidizer was more than 50°F below the average operating temperature recorded during the most recent performance test that demonstrated that the facility was in compliance, and;
 - g. The operating temperature of the regenerative thermal oxidizer.
2. The owner/operator shall, on a daily basis, determine:
 - a. the total quantity of toluene, methyl ethyl ketone, methyl isobutyl ketone, methanol and isopropyl alcohol discharged to the atmosphere from the regenerative thermal oxidizer, and;
 - b. the total quantity of methanol discharged to the atmosphere from the gas tenter frame, and;

- c. the total combined quantity of formaldehyde discharged to the atmosphere from the regenerative thermal oxidizer and gas tenter frame.

The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources upon request.

- 3. The owner/operator shall notify the Office of Air Resources within 24 hours, whenever:
 - a. the total quantity of toluene or methyl ethyl ketone discharged to the atmosphere from the regenerative thermal oxidizer exceeds 8.2 pounds per hour or 195 pounds per day, or;
 - b. the total quantity of isopropyl alcohol or methanol discharged to the atmosphere from the regenerative thermal oxidizer exceeds 8.2 pounds per hour, or;
 - c. the total quantity of methyl isobutyl ketone discharged to the atmosphere from the regenerative thermal oxidizer exceeds 195 pounds per day, or;
 - d. the total quantity of methanol discharged to the atmosphere from the gas tenter frame exceeds 9.9 pounds per hour, or;
 - e. the total combined quantity of formaldehyde discharged to the atmosphere from the regenerative thermal oxidizer and gas tenter frame exceeds 1.66 pounds per hour or 79.9 pounds per day.
- 4. The owner/operator shall, on a monthly basis, no later than 5 days after the first of the month, determine:
 - a. the total quantity of dimethyl formamide, methanol and toluene discharged to the atmosphere from the regenerative thermal oxidizer during the previous 12 months, and;
 - b. the total quantity of methanol discharged to the atmosphere from the gas tenter frame during the previous 12 months, and;
 - c. the total combined quantity of formaldehyde discharged to the atmosphere from the regenerative thermal oxidizer and gas tenter frame during the previous 12 months.

The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources upon request.

- 5. The owner/operator shall notify the Office of Air Resources in writing, within 15 days, whenever:

- a. the total quantity of dimethyl formamide, methanol or toluene discharged to the atmosphere from the regenerative thermal oxidizer during the previous 12 months exceeds 71,000 pounds, or;
 - b. the total quantity of methanol discharged to the atmosphere from the gas tenter frame during the previous 12 months exceeds 36,000 pounds, or;
 - c. the total combined quantity of formaldehyde discharged to the atmosphere from the regenerative thermal oxidizer and gas tenter frame for the previous 12 months exceeds 291.9 pounds.
6. The owner/operator shall notify the Office of Air Resources in writing of the date of actual start-up of the Lam-4 coating line, no later than 15 days after such date.
7. Except as allowed under Condition E.5, the owner/operator must notify the Office of Air Resources no later than 24 hours after an exceedance of any emission limitation is discovered. The notification required under Conditions E.3, E.5 and this condition shall include:
 - a. Identification of the emission limitation exceeded
 - b. Suspected reason for the exceedance
 - c. Corrective action taken or to be taken
 - d. Anticipated length of the exceedance
8. The owner/operator shall notify the Office of Air Resources of any anticipated noncompliance with the terms of this permit or any other applicable air pollution control rules and regulations.
9. The owner/operator shall notify the Office of Air Resources, in writing, of any noncompliance with the terms of this permit or any other air pollution control rule or regulation within 30 calendar days of becoming aware of such occurrence and supply the Director with the following information
 - a. The name and location of the facility;
 - b. The subject source(s) that caused the noncompliance with the permit term;
 - c. The time and date of first observation of the incident of noncompliance;
 - d. The cause and expected duration of the incident of noncompliance;
 - e. The estimated rate of emissions (expressed in lbs/hr or lbs/day) during the incident and the operating data and calculations used in estimating the emission rate;

- f. The proposed corrective actions and schedule to correct the conditions causing the incidence of noncompliance.
10. The owner/operator, before changing the method of compliance from control devices to daily-weighted averaging or complying coatings, shall submit a Compliance Certification Plan to the Office of Air Resources for review and approval. Such plan shall include:
- a. The name and location of the facility.
 - b. The name, address, and telephone number of the person responsible for the facility.
 - c. The name and identification number of the emission units which will comply by means of daily-weighted averaging or complying coatings.
 - d. For daily-weighted averaging:
 - (1) The instrument or method by which the owner/operator will accurately measure or calculate the volume of each coating (excluding water), as applied, used each day on each emission unit.
 - (2) The method by which the owner/operator will create and maintain records each day as required by Subsection 19.5.2(c) of APC Regulation No. 19.
 - (3) The time at which the facility's day begins if a time other than midnight local time is used to define a day.
 - e. For complying coatings:
 - (1) The name and identification number of each coating, as applied, on each coating line or operation.
 - (2) The mass of VOC per volume coating (excluding water) and the volume of each coating (excluding water), as applied.
 - f. Information describing the effect of the change on emissions of any air contaminant.
 - g. A demonstration that emissions from the stationary source will not cause an increase in the ground level ambient concentration at or beyond the property line in excess of that allowed by APC Regulation No. 22.
11. The owner/operator shall notify the Office of Air Resources in writing of any planned physical or operational change to any equipment covered under this approval that would:

- a. Change the representation of the facility in the application.
- b. Alter the applicability of any state or federal air pollution rules or regulations.
- c. Result in the violation of any terms or conditions of this permit.
- d. Qualify as a modification under APC Regulation No. 9.

Such notification shall include:

- Information describing the nature of the change.
- Information describing the effect of the change on the emission of any air contaminant.
- The scheduled completion date of the planned change.

Any such change shall be consistent with the appropriate regulation and have the prior approval of the Director.

12. The owner/operator shall maintain a record of all measurements, performance evaluations, calibration checks, and maintenance or adjustments for each continuous monitor.
13. All records required in this permit shall be maintained for a minimum of five years after the date of each record and shall be made available to representatives of the Office of Air Resources upon request.

F. Other Permit Conditions

1. To the extent consistent with the requirements of this permit and applicable federal and state laws, the equipment shall be designed, constructed, and operated in accordance with the representation of the equipment in the permit application.
2. The owner/operator shall shut down the A-Lam, HS-Lam, L-Lam or Lam-4 fabric coating equipment in the event of a malfunction of the emission capture system and/or regenerative thermal oxidizer that results in, or that could result in, emissions in excess of the permit limits. The coating equipment shall remain shutdown until the malfunction has been identified and corrected.
3. There shall be no bypassing of the regenerative thermal oxidizer during times when VOC is being discharged to the control device.
4. The emissions capture system for the A-Lam, HS-Lam, L-Lam and Lam-4 fabric coating equipment and the Mixing Room, when in place and operating shall meet the criteria for a permanent total enclosure contained in 40 CFR 51, Appendix M,

Method 204 "Criteria for and Verification of a Permanent or Temporary Total Enclosure."

5. The facility is subject to the requirements of the Federal Maximum Achievable Control Technology Standard §40 CFR 63 Subpart OOOO-National Emissions Standards for Hazardous Air Pollutants: Printing, Coating, and Dyeing of Fabrics and Other Textiles. Compliance with all applicable provisions of these regulations is required.
6. Employees of the Office of Air Resources and its authorized representatives shall be allowed to enter the facility at all times for the purpose of inspecting any air pollution source, investigating any condition it believes may be causing air pollution or examining any records required to be maintained by the Office of Air Resources.
7. At all times, including periods of startup, shutdown and malfunction, the owner/operator shall, to the extent practicable, maintain and operate the facility in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Office of Air Resources which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

G. Malfunctions

1. Malfunction means a sudden and unavoidable breakdown of process or control equipment. In the case of a malfunction of any air pollution control system, all reasonable measures shall be taken to assure resumption of the designed control efficiency as soon as possible. In the event that the malfunction of an air pollution control system is expected or may reasonably be expected to continue for longer than 24 hours and if the owner or operator wishes to operate the source on which it is installed at any time beyond that period, the Director shall be petitioned for a variance under Section 23-23-15 of the General Laws of Rhode Island, as amended. Such petition shall include, but is not limited to, the following:
 - a. Identification of the specific air pollution control system and source on which it is installed;
 - b. The expected period of time that the air pollution control system will be malfunctioning or out of service;
 - c. The nature and quantity of air contaminants likely to be emitted during said period;
 - d. Measures that will be taken to minimize the length of said period;

- e. The reasons that it would be impossible or impractical to cease the source operation during said period.
2. The owner/operator may seek to establish that a malfunction of any air pollution control system that would result in noncompliance with any of the terms of this permit or any other applicable air pollution control rules and regulations was due to unavoidable increases in emissions attributable to the malfunction. To do so, the owner/operator must demonstrate to the Office of Air Resources that:
- a. The malfunction was not attributable to improperly designed air pollution control equipment, lack of preventative maintenance, careless or improper operation, or operator error;
 - b. The malfunction was not part of a recurring pattern indicative of inadequate design, operation, or maintenance;
 - c. Repairs were performed in an expeditious fashion. Off-shift labor and overtime should be utilized, to the extent practicable, to ensure that such repairs were completed as expeditiously as practicable.
 - d. All possible steps were taken to minimize emissions during the period of time that the repairs were performed.
 - e. Emissions during the period of time that the repairs were performed will not:
 - (1) Cause an increase in the ground level ambient concentration at or beyond the property line in excess of that allowed by Air Pollution Control Regulation No. 22; and
 - (2) Cause or contribute to air pollution in violation of any applicable state or national ambient air quality standard.
 - f. The reasons that it would be impossible or impractical to cease the source operation during said period.
 - g. The owner/operator's action in response to the excess emissions were documented by properly signed, contemporaneous operating logs or other relevant evidence.

This demonstration must be provided to the Office of Air Resources, in writing, within two working days of the time when the malfunction occurred and contain a description of the malfunction, any steps taken to minimize emissions and corrective actions taken.

The owner/operator shall have the burden of proof in seeking to establish that noncompliance was due to unavoidable increases in emissions attributable to the malfunction.

H. Trial Surface Coating Operations

1. The owner/operator may conduct trial surface coating operations subject to the following conditions. Trial surface coating operations do not include the production for sale of established products through established processes.
 - a. The owner/operator shall comply with the provisions of Air Pollution Control Regulation No. 9 by limiting the total quantity of emissions discharged to the atmosphere, from the trial surface coating operations to no more than:
 - (1) 10 pounds per hour or 100 pounds per day of VOC, whichever is more stringent; and,
 - (2) the minimum quantity for any listed toxic air contaminant, as specified in Appendix A of Air Pollution Control Regulation No. 9.
 - b. The owner/operator shall comply with the provisions of Air Pollution Control Regulation No. 19 by limiting emissions from the trial surface coating operations to no more than:
 - (1) 4.79 pounds of VOC per gallon of solids if add-on VOC control equipment is used on the surface coating line, or;
 - (2) 2.9 pounds of VOC per gallon of coating, minus water, if add-on VOC control equipment is not used on the surface coating line
 - c. The owner/operator shall maintain the following records to determine compliance with Air Pollution Control Regulation No. 9 for the trial surface coating operations. These records shall be maintained for a period of five (5) years and shall be available for inspection by the Office of Air Resources and the Environmental Protection Agency upon request for the purpose of determining compliance with this condition. These records shall include the following:
 - (1) The date, start time and end time for each coating trial and the quantity of coating used for each coating trial;
 - (2) The name, identification number and amount used each hour and each day of each coating, as applied.
 - (3) For each coating used, the VOC content in, pounds of VOC per gallon of coating and pounds of VOC per gallon of coating solids, as applied, and the quantity of any listed toxic air contaminant in pounds per gallon of coating as applied;

- (4) The type and amount of any solvent used for diluents and cleanup operations.
 - (5) Records of any and all calculations documenting the as applied VOC content in pounds per gallon of coating and pounds per gallon of coating solids and the listed toxic air contaminant content in pounds per gallon of coating.
- d. The owner/operator shall notify the Office of Air Resources in writing, within 5 days, whenever the total quantity of emissions discharged to the atmosphere, from the trial operations exceeds:
- (1) 10 pounds per hour or 100 pounds per day of VOC, whichever is more stringent; or,
 - (2) the minimum quantity for any listed toxic air contaminant, as specified in Appendix A of Air Pollution Control Regulation No. 9.
- e. The owner/operator shall notify the Office of Air Resources in writing, within 5 days, whenever the VOC emissions from the trial operations exceeds:
- (1) 4.79 pounds of VOC per gallon of solids if add-on VOC control equipment is used on the surface coating line, or;
 - (2) 2.9 pounds of VOC per gallon of coating, minus water, if add-on VOC control equipment is not used on the surface coating line

Table 1. Emission Limitations

Pollutant	Stack	Limitation		
		pounds/hour	pounds/day	pounds/year
Dimethyl Formamide	Oxidizer			71,000
Toluene	Oxidizer	8.2	195	71,000
Methyl Ethyl Ketone	Oxidizer	8.2	195	
Isopropyl Alcohol (IPA)	Oxidizer	8.2		
Methyl Isobutyl Ketone	Oxidizer		195	
Methanol	Oxidizer	8.2		71,000
	Gas Tenter Frame	9.9		36,000
Formaldehyde	Oxidizer and Gas Tenter Frame	1.66	79.9	291.9