

VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division

TECHNICAL SUPPORT DOCUMENT
FOR
PERMIT TO CONSTRUCT AND OPERATE
AOP-03-009

Date Permit Issued: February 6, 2008

HBH Prestain, Inc., Hale Plant
East Arlington, Vermont

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This Technical Support Document details the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division review for the Air Pollution Control Permit to Construct and is intended to provide additional technical information, discussion and clarification in support of the Permit. It is not intended to provide a comprehensive review of the Facility or permit process or duplicate the information contained in the Permit.

<p>Facility: HBH Prestain, Inc. Hale Road East Arlington, Vermont 05252</p>	<p>Facility / Applicant – Contact Person: HBH Prestain, Inc. R.D. #2, Box 1052 Arlington Vermont 05250</p> <p>Contact person: Mark Bannon, P.E., AICP Bannon Engineering Post Office Box 171 Randolph, VT 05060</p> <p>Telephone: Phone: 802.728.6500 Cell: 802.279.6500</p>
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1.0 INTRODUCTION

HBH Prestain, Inc. (also referred to herein as “Permittee”) owns and operates a clapboard priming and painting facility (also referred to herein as "Facility") on Hale Road in East Arlington, Vermont. Wooden clapboards, trim boards and various other building siding products are primed, painted and/or stained on one of four coating lines.

The allowable emissions for the Facility are summarized in Table 1-1 below:

Table 1-1: Allowable Air Contaminant Emissions (tons/year) ¹					
<i>PM/PM₁₀</i>	<i>SO₂</i>	<i>NOx</i>	<i>CO</i>	<i>VOC</i>	<i>Total HAPs ²</i>
8.4	0.2	2.5	0.3	<100	<10/25

¹ PM/PM10 - particulate matter, SO2 - sulfur dioxide, NOx - oxides of nitrogen, CO - carbon monoxide, HAPs - hazardous air pollutants.

² Emissions of individual HAPs each < 10 tpy and emissions of total HAPs combined <25 tpy. Actual total combined HAPs for 2006 < 1 tpy.

2.0 FACILITY DESCRIPTION AND LOCATION

2.1 Facility Location and Surrounding Area

HBH owns and operates the prestaining facility on Maple Street in East Arlington, Vermont. The Facility is located at the site of the former Hale Furniture facility which has been renovated to accommodate the prestaining operations. The area surrounding the Facility is primarily residential. The Facility is located less than 100 kilometers from the Lye Brook Wilderness area in Manchester, Vermont and greater than 100 kilometer from the Great Gulf and Dry River Wilderness areas in New Hampshire. The Facility location and layout are depicted in Appendix A of this Technical Analysis.

2.2 Facility Description and Explanation of Process

HBH applies latex and/or oil based coatings using roll coaters to wooden clapboards, trim boards and various other wood trim and building siding products used predominantly for residential building construction. Precut clapboards and trim boards are shipped to the facility by wholesalers or local retail lumber yards for coating. HBH then coats the boards as specified, dries the lumber, and ships it back. HBH does not own the lumber and only provides the service of prestaining. No woodworking operations are performed at the Facility.

HBH currently operates two roll coating lines and two spray booths with overspray filters. Plant No. 1 (coating line #1 and spray coating line #2) and a waterbased latex line is operated in Room .2 (spray coating line #3, prior location specified as Plant 2). These three lines are collectively limited to less than 50 tons per year of VOC emissions, limiting the source to a minor stationary source status. A fourth coating line in Room 3 (coating line #4, prior location specified as Room 2) is predominately for the application of oil based coatings. This coating line is restricted to less than 50 tons per year of VOC emissions, subjecting it to major source review under 5-502 of the Vermont Air Pollution Control Regulations.

Wooden boards are inspected and a knot sealer is applied when necessary. The boards are then dried overnight. The conveyor feeds the boards through a series of rollers where the coating is applied and spread. A catch basin beneath the boards collects excess coating and returns it to the tank. The board passes through rollers and revolving brushes (approximately 15 inches in length) and finally under an air knife which smoothes and helps remove excess paint.

Various coatings are applied to the boards including prime coatings designed to provide a waterproof seal and base coat, latex top coats, oil based stains and alkyd primers, all of which contain VOCs. Coating is applied at a rate ranging from 0.004 to 0.005 gallons of coating per BF.

The primary base coat is a gray color which is applied in anticipation of a top coat. One coating line in Plant No. 1 also applies clear sealers that are designed to provide a clear waterproof seal. It is applied to boards that will not be further treated. It is designed to provide a water proof seal that will allow the natural color of the wood to be visible when in place on a building. There is a second coating line in Plant No. 1 which is also permitted to use low solvent oil based coatings. At this time HBH is using this line primarily to apply latex coatings. In Plant No. 1 after the application of the coating the boards are placed on racks to air dry over night.

The roll coater oil based products are rolled into a drying tunnel for product curing. Room 3(coating line #4 oil coater) has a drying tunnel similar to the existing one in Plant No. 1. The air flow is approximately 15,000 acfm vented to the ambient air through two roof vents with a computerized control system to discharge the air at preset intervals. The tunnel is continuously vented during the day. The tunnel is heated at night via two liquid propane fueled duct heaters and a recirculating fan system to keep the air flow uniform throughout the tunnel. At night, the tunnel is sealed and vented twice a night for 10 minutes each time. The primary unit has a rated heat input of 0.35 MMBTU/hr and a secondary unit with a rated heat input of 0.40 MMBTU/hr.

In Room 2, a single coating line is manually fed into the latex roll coater. After the coating is applied the board is automatically loaded into an Infatrol® oven unit. This unit consists of a 1.8 MMBTU/hr liquid propane fueled heater with an approximate 1000 acfm exhaust fan for which the damper system is controlled by a computer to vary the flow to allow for proper product curing. The boards from this line come out dry and are manually unloaded and stacked.

2.3 Description of Equipment

Equipment specifications are detailed in Table 2-1.

Table 2-1 Equipment Specifications(Coating Lines)		
Description		Installation Date
Plant 1: Roll coating line #1		1995
Plant 1: Coating line #2, spray booth with fiberglass overspray filters, latex only		1995
Room 2: Coating line #3, spray booth with fiberglass overspray filters, latex only		2007
Room 3: Roll coating line #4		1999
Fuel Burning Equipment(Propane Drying Tunnels)		
Description	Equipment Rating	Manufacturer/Installation Date
Drying Tunnel Primary Propane Heaters for Plant 1	Actual Rating: 0.35 MMBTU/ hr w/ air flow of 15,000 acfm exhaust fan	Manufacturer: Jackson and Church Duct Furnace Date of Installation: Plant 1:1995
Drying Tunnel Primary Propane Heaters for Room 3	Actual Rating: 0.35 MMBTU/ hr w/ air flow of 15,000 acfm exhaust fan	Manufacturer: Jackson and Church Duct Furnace Date of Installation: Room 3: 1999
Drying Tunnel Secondary Propane Heaters for Plant 1	Actual Rating:0.40 MMBTU/hr w/ air flow of 15,000 acfm exhaust fan	Manufacturer: Reznor Duct Furnace Date of Installation: Plant 1:1995
Drying Tunnel Secondary Propane Heaters for Room 3	Actual Rating:0.40 MMBTU/hr w/ air flow of 15,000 acfm exhaust fan	Manufacturer: Reznor Duct Furnace Date of Installation: Room 3: 1999
Drying Oven with Propane Heaters for Room 2	Actual Rating: 1.8 MMBTU/hr w/ air flow of 1,000 acfm exhaust fan	Date of Installation: 1995

Fuel Burning Equipment(Propane Heaters)		
Description	Equipment Rating	Manufacturer/Installation Date
LP Gas Fired Unit Heaters	Actual Rating: Plant 1: 0.125 MMBTU/hr Room 2: 0.15 MMBTU/hr Office Area: 0.12 MMBTU/hr Room 3: 0.125 MMBTU/hr	Manufacturer: Various Date of Installation: 1995 and 1999

2.4 Enforceable Operating Restrictions

The Permittee has the following permit limits:

- 2.4.1 Combined emissions of volatile organic compounds (“VOCs”) from coating lines #1, 2, and 3 shall not equal or exceed 50 tons per year based on any rolling twelve consecutive calendar month period. [10 V.S.A. §556(c)] [10 V.S.A. §556a(d)]

Compliance with this limitation shall be based on daily recordkeeping of the quantity of each coating used in the coating line and monthly calculations of the quantity of VOC emitted. For the purposes of these calculations, 100 percent of the VOC content of the coatings shall be assumed to be emitted. [§5-404 of the Regulations]

[Permit AOP-98-003]

- 2.4.2 Emissions of volatile organic compounds (“VOCs”) from coating line #4 shall not equal or exceed 50 tons per year based on any rolling twelve consecutive calendar month period. [10 V.S.A. §556(c)] [10 V.S.A. §556a(d)]

Compliance with this limitation shall be based on daily recordkeeping of the quantity of each coating used in the coating line and monthly calculations of the quantity of VOC emitted. For the purposes of these calculations, 100 percent of the VOC content of the coatings shall be assumed to be emitted. [§5-404 of the Regulations]

[Permit AOP-98-003]

3.0 QUANTIFICATION OF POLLUTANTS

The quantification of emissions from a stationary source is necessary in order to establish the regulatory review process necessary for the operating permit application and to determine applicability with various air pollution control requirements. These determinations are normally based upon allowable emissions. Allowable emission is defined as the emission rate calculated using the maximum rated capacity of the source and, if applicable, either: (a) the applicable emission standard contained in the *Regulations*, if any, or (b) the emission rate or design, operational or equipment standard specified in any order or agreement issued under the *Regulations* that is state and federally enforceable. An applicant may impose in its application an emission rate or design, or an operational or equipment limitation which may be incorporated in the Permit to restrict operation to a lower level. Such limitations may include fuel restrictions or

production limits.

3.1 Designation of the Facility for the Permit to Operate

The designation of the Facility for the Permit to Operate is determined by its allowable emissions following issuance of the permit, taking into account any limitations contained in the permit that restrict the Facility’s allowable emissions. The regulated sources of air contaminants at the Facility, and the calculated allowable emissions for each are detailed in Tables 3-1. Total Facility allowable emissions are summarized in Table 1-1

Table 3-1: Estimated for Propane Emissions				
for Plant 1 and 2, Office Space, and Room2				
Emission estimate based on annual fuel cap of 355, 991 gallons per year.	Emission Factor			Allowable Emissions, tons/yr
	Factor	Units	Source lbs.	
PM ¹	0.5	lbs/MMBTU '5-231 Regulations	16,731.60	8.4
SO ₂ ²	1	lb/1000 gal AP-42 Section 1.5 - Liquefied Petroleum Gas Combustion [rev-10/96]	355.99	0.2
NO _x	14		4,983.88	2.5
CO	1.9		676.38	0.3
VOC	0.5		178.00	0.0

¹ Based on '5-231 regulation limit of 0.5 lbs/MMBTU and 33,463 MMBTU consumed per year.
² S equals the sulfur content expressed in gr/100 ft3. The sulfur content of propane is assumed to be 10 gr/100 ft3 for this calculation, example .01*S is (0.1 * 10.0 = 1 lb/1000gal)

3.2 Estimating Actual Emissions of Hazardous Air Contaminants from the Existing Stationary Source.

Based on the Facility’s annual registration information for the reporting years 2006 and 2005, the following table summarizes the estimated actual emission rate of HACs from the facility. To be conservative, for each HAC emitted, the year with the highest emission rate was used in this evaluation. The Facility initiated the permit renewal process prior to the current Action Level revision, it is subject to the Action Levels and HAAS in the version of that rule existing at the time of the application. The review level of (2-butoxyethoxy)-ethanol is currently compliant, but will exceed the Action Level under the recent revision to §5-261.

Table 3-2: Quantification of HAC Emissions						
Compound	Toxic Cat.	CAS #	2006/2005 Emissions		Action Level, lbs/8 hrs	Action Exceeded ? Y or N
			lbs/yr	lbs/8hr		
Stoddard Solvent	2	8052-41-3	69.25241	59.19658	1037.50000	N
Xylene	2	1330-20-7	1.51017	1.29089	86.30000	N
1,2 Propylene Carbonate	3	108-32-7	0.25309	0.21634	53.0000	N
1, 2 Propanediol	3	57-55-6	.27147	0.23205	67.0000	N
Ethyl Benzene	3	100-41-4	0.34387	0.29393	1830.0000	N
2-(2-Butoxyethoxy) Ethanol	3	112-34-5	3.02013	2.58159	15.60000	N

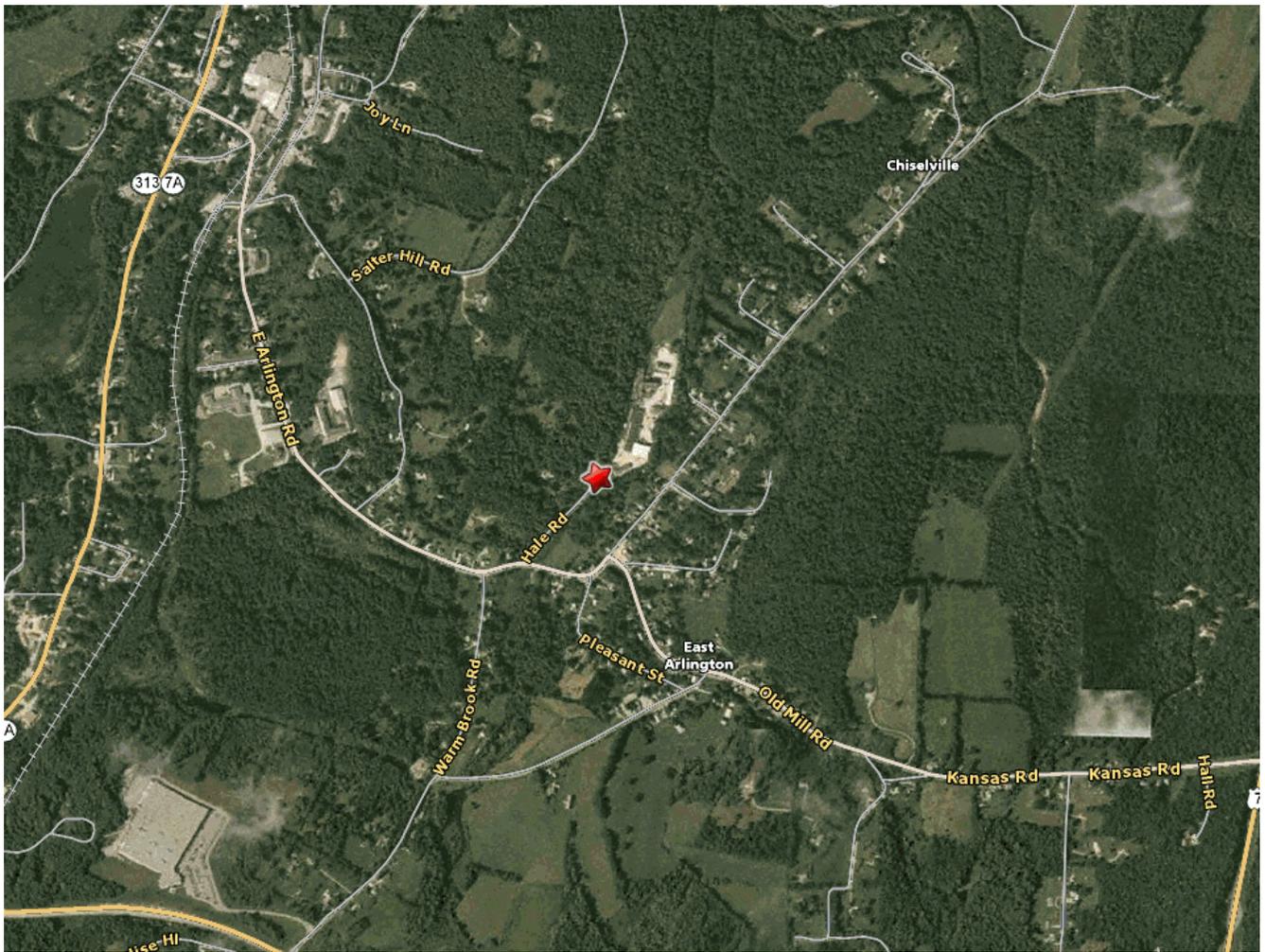
¹ For category 3 contaminants, emission rate is based on 2000 hours/year of operation. For category 1 & 2 contaminants, the emission rate is based on 8760 hours/year.

APPENDICES

APPENDIX A – Map of Location

APPENDIX B: Calculation of Emissions

APPENDIX A



**APPENDIX B
Emission Calculations**

Coating Line Operations –

Existing permit limits VOC emissions to less than 100 tons per year.

Propane Combustion

-All combustion emissions, except particulate matter, were derived using emission factors published by regulatory limit of 5-231 of the *Regulations* and the emission factors from *AP-42* Section 1.5 - Liquefied Petroleum Gas Combustion [rev-10/96] were used.

Table B-1: Estimated for Propane Capacity for Plant 1 and 2, Office Space, and Room2				
Description	Emission Factor			Allowable Emissions, MMBTU/year
	No. Units	Rating	Units	
Heating Furnace: Plant 1 and Room 3	2	0.125	MMBTU/hr	2190.00
Heating Furnace :Room 2	1	0.150		1314.00
Heating Furnace: Office Space	1	0.120		1051.20
Drying Tunnel : Plant 1 and Room 3 coating lines 1, 2, 4	2	0.350		6132.00
Drying Tunnel : Plant 1 and Room 3 coating lines 1, 2, 4	2	0.400		7008.00
Drying Oven: Room 2	1	1.800		15768.00
Total				33,463.20

Total Number of Gallons
Assuming .094 MMBTU/gal for Propane
355,991 gal/year

Calculations:

$$\text{Propane Capacity (gal / year)} = 33,463.20 \frac{\text{MMBTU}}{\text{year}} \div .094 \frac{\text{MMBTU}}{\text{gal}}$$

$$PM_{10} = 0.5 * \frac{lb}{MMBTU} * 33,463.20 \frac{MMBTU}{year} * \frac{1}{2000} \frac{tons}{lb}$$

$$SO_2 = 1 \frac{lb}{1000gal} * 355,991 \frac{gal}{year} * \frac{1}{2000} \frac{tons}{lb}$$

*Note: S equals the sulfur content expressed in gr/100 ft3. The sulfur content of propane is assumed to be 10 gr/100 ft3 for this calculation, example .01*S is (0.1 * 10.0 = 1 lb/1000gal)*

$$NO_x = 14 \frac{lb}{1000gal} * 355,991 \frac{gal}{year} * \frac{1}{2000} \frac{tons}{lb}$$

$$CO = 1.9 \frac{lb}{1000gal} * 355,991 \frac{gal}{year} * \frac{1}{2000} \frac{tons}{lb}$$

$$VOC = .5 \frac{lb}{1000gal} * 355,991 \frac{gal}{year} * \frac{1}{2000} \frac{tons}{lb}$$

Table B-2: Estimated for Propane Emissions for Plant 1 and 2, Office Space, and Room2				
Emission estimate based on annual fuel cap of 355, 991 gallons per year.	Emission Factor			Allowable Emissions, tons/yr
	Factor	Units	Source lbs.	
PM ¹	0.5	lbs/MMBTU '5-231 Regulations	16,731.60	8.4
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¹ Based on '5-231 regulation limit of 0.5 lbs/MMBTU and 33,463 MMBTU consumed per year.
² S equals the sulfur content expressed in gr/100 ft3. The sulfur content of propane is assumed to be 10 gr/100 ft3 for this calculation, example .01*S is (0.1 * 10.0 = 1 lb/1000gal)

Table B-3: Allowable Air Contaminant Emissions (tons/year)¹					
<i>PM/PM₁₀</i>	<i>SO₂</i>	<i>NO_x</i>	<i>CO</i>	<i>VOC</i>	<i>Total HAPs²</i>
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¹ PM/PM10 - particulate matter, SO2 - sulfur dioxide, NOx - oxides of nitrogen, CO - carbon monoxide, HAPs - hazardous air pollutants.

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