

**VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Quality & Climate Division**

**TECHNICAL SUPPORT DOCUMENT FOR
PERMIT TO CONSTRUCT AND OPERATE**

**#AOP-16-027
PIN: #RU11-0260**

**Vermont Quarries Corp. - Danby Quarry
Danby, VT**

Date Permit Issued: February 1, 2017

**Owner/Operator: Vermont Quarries Corp.
1591 US Route 4
Mendon, VT 05701**

**Source: Marble Quarry and Processing Plant
Vermont Quarries Corp.
886 Quarry Hill Road
Danby, Vermont 05739**

**Prepared By:
Tony Mathis, Environmental Engineer
Air Quality & Climate Division**

This Technical Support Document details the Agency of Natural Resources, Department of Environmental Conservation, Air Quality & Climate 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.

1.0 INTRODUCTION

Vermont Quarries Corp. (also referred to herein as "Permittee") owns and operates a marble quarry and processing facility on Quarry Hill Road in the town of Danby, Vermont (also referred to herein as "Facility").

The Permittee has proposed to install two (2) diesel engine powered electrical generators to provide additional electrical power for Facility operations.

The engines powering these electrical generators each have a rated power output greater than 475 brake horsepower (bhp). Other equipment and operations at the Facility include various diesel engine powered air compressors, materials handling equipment, and a marble sealing operation (Prometec Line) that seals and reinforces marble slabs that are cut and processed at the Facility.

Administrative Milestones

Table 1-1: Administrative Summary	
Administrative Item	Result or Date
Date Application Received:	10/14/2016
Date Administratively Complete:	10/14/2016
Date & Location Receipt of Application Noticed:	10/14/2016 <i>Environmental Notice Bulletin</i>
Date Technically Complete:	10/28/2016
Date Draft Decision:	12/16/2016
Date & Location Draft Decision / Comment Period Noticed:	12/16/2016 <i>Environmental Notice Bulletin</i>
Date & Location Public Meeting Noticed:	None requested
Date & Location of Public Meeting:	None requested
Deadline for Public Comments:	12/27/2016
Date Proposed Decision:	02/01/2017
Classification of Source Under §5-401:	§5-401(6)(c): <i>Stationary reciprocating internal combustion engines using any fuel type and having a rating of 450 brake horsepower output or greater</i>
Classification of Application:	Subchapter X Major Source
New Source Review Designation of Source:	Minor Stationary Source
Facility SIC / NAICS Code(s):	1411 / 212311
Facility SIC / NAICS Code Description(s):	Dimension Stone / Dimension Stone Mining and Quarrying

The allowable emissions for the Facility are summarized below:

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The allowable emissions for the Facility are summarized below:

Table 1-2: Estimated Air Contaminant Emissions (tons/year)¹						
PM / PM₁₀ / PM_{2.5}	SO₂²	NO_x	CO	VOC	Total HAPs³	CO_{2e}⁴
0.6	0.01	9.9	6.2	<5	<10/25	1.072

¹ PM/PM₁₀/PM_{2.5} - particulate matter, particulate matter of 10 micrometers in size or smaller and particulate matter of 2.5 micrometers in size or smaller, respectively (unless otherwise specified, all PM is assumed to be PM₁₀ and PM_{2.5}); SO₂ - sulfur dioxide; NO_x - oxides of nitrogen measured as NO₂ equivalent; CO - carbon monoxide; VOCs - volatile organic compounds; HAPs - hazardous air pollutants as defined in §112 of the federal Clean Air Act.

² Commencing July 1, 2018 the allowed sulfur content of distillate and residual fuel oils will decrease to 0.0015% and 0.5% by weight respectively, further decreasing Facility allowed SO₂ emissions from fuel oil combustion unless otherwise already restricted by the permit herein.

³ For purposes of designation the Facility as a major or minor source of federal hazardous air pollutants (HAPs), the emissions of individual HAPs from the Facility are each <10 tpy and emissions of total HAPs combined are <25 tpy. Actual total combined HAPs from the Facility are estimated at <1 tpy

⁴ CO_{2e} 'at the stack' – includes emissions from biogenic sources. See section 3.3 for details. This is not a facility limit.

2.0 FACILITY DESCRIPTION AND LOCATION

2.1 Facility Locations and Surrounding Area

The Permittee owns and operates the marble quarry and processing operation located at 886 Quarry Hill Road, Danby, Vermont. The area surrounding the Facility is primarily forested hillsides located on the northeast flank of Dorset Peak.

The Facility is located approximately 2.8 kilometers south-southwest of downtown Danby, Vermont. It is located approximately 23 kilometers north of the Lye Brook Wilderness Area; and approximately 170 kilometers southwest of the Great Gulf and Dry River Wilderness Areas near Mt. Washington, New Hampshire. The nearest "sensitive location, with an elevation of 2,500 feet or more is Dorset Peak, which is approximately 1.1 kilometers to the southwest.

2.2 Facility Description

The Facility operations are listed under the Standard Industrial Classification (SIC) Code 1411, Dimension Stone, and the North American Industrial Classification System (NAICS) Code 212311, Dimension Stone Mining and Quarrying. The regulated sources of air contaminant emissions at the Facility are summarized in Table 2-1.

Table 2-1: Equipment Specifications			
Equipment Description	Rating^{1,2} bhp (kW)	Fuel Type	Date of Installation
350 kW electrical generator powered by a 2013 model year CAT C13 Tier 4i engine, serial number K3B00751	569 bhp (350 kW)	ULSD ³	12/2015
300 kW electrical generator powered by a 2005 model year CAT C9 Tier 3 engine, serial number X3R00220	480 bhp (300 kW)	ULSD ³	Spring 2016
Air Compressor – Atlas Copco XAVS 400 powered by a 125 bhp Tier 4i engine.	125 bhp	ULSD ³	Not Specified

Table 2-1: Equipment Specifications			
Equipment Description	Rating ^{1,2} bhp (kW)	Fuel Type	Date of Installation
Air Compressor Sullivan D210QJD5 powered by a 73 bhp non-certified engine.	73 bhp	ULSD ³	Not Specified
Air Compressor – Ingersoll-Rand P375WJD powered by a 115 bhp non-certified engine.	115	ULSD ³	Not Specified
Air Compressor –Sullair 185Q powered by a 61 bhp non-certified engine.	61	ULSD ³	Not Specified
Various pieces of off-road loading and earth-moving equipment	Varies	ULSD ³	Varies
Marble sealing operation (Prometec Line)	Varies	N/A	Not Specified

¹ bhp – brake horsepower rated output as specified by the manufacturer.

² kW – generator kilowatt electrical output.

³ ULSD – Ultra-low sulfur diesel fuel, with a sulfur content not to exceed 0.0015% (15 ppm) by weight.

2.3 Description of Compliance Monitoring Devices

This Facility is not equipped with devices to continuously monitor the emission of air contaminants to the ambient air.

2.4 Proposed Modifications to Facility

The Permittee has proposed to install two (2) diesel engine powered electrical generators one rated at 300 kW electrical output, and one rated at 350 kW electrical output, to provide additional electrical power for Facility operations.

The engines powering these electrical generators each have a rated power output greater than 475 brake horsepower (bhp). The engines powering these electrical generators are more fully described in Table 2-1.

Other pre-existing equipment and operations at the Facility that are sources of air emissions include various diesel engine powered air compressors, off-road materials handling equipment, and a marble sealing operation (Prometec Line) that seals and reinforces marble slabs that are cut and processed at the Facility.

2.5 Identification of Sources with Insignificant or Negligible Emissions

Although not required for determining applicability with Subchapter X, quantifiable emissions from “insignificant activities” must be included for the purposes of establishing whether or not a source is subject to other air pollution control requirements, including, but not limited to: reasonably available control technology, major source status, and Title V operating permit applicability.

Additionally, guidance provided by the U.S. EPA (entitled “White Paper for Streamlined Development of Part 70 Permit Applications”) lists activities which are considered as “trivial” sources of air contaminants, and may be presumptively omitted from operating permit applications.

Table 2-3 lists activities at the Facility which were considered negligible or exempt sources of air contaminant emissions, and therefore were not considered as emission sources as part of the Operating/Construction Permit review.

Table 2-2: Negligible Sources of Contaminant Emissions	
Equipment	Description
Solvent Cleaning in Maintenance Shop	Parts cleaning with mineral spirits
Fuel storage tank	One (1) 7,000-gallon capacity diesel storage tank. Estimated annual throughput: 70,000 gallons

It should be noted that a process or piece of equipment which is considered a “negligible activity” does not relieve the owner or operator from the responsibility of complying with any applicable requirements associated with said process or equipment.

2.6 Proposed Limitations

The Permittee has proposed to limit annual fuel usage at the Facility in all stationary and non-road diesel engine powered equipment such that diesel fuel usage does not exceed 95,000 gallons per calendar year, with additional individual fuel limits for each of the engines powering the electrical generators and air compressors. These limitations are intended to restrict emissions from the Facility to less than 10 tons per year for each criteria pollutant.

Agency guidance generally indicates that an increase in the emission of any individual criteria pollutant greater than 10 tons per year will require modeling to assess if this emission increase contributes to a violation of any national ambient air quality standard or significantly deteriorates air quality.

The permittee has also proposed to limit the use of diesel fuel at the Facility to the use of ultra-low sulfur diesel fuel (ULSD), with a fuel sulfur content not to exceed 0.0015% (15 ppm) by weight.

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 Estimating Potential Emission of Criteria Pollutants from the Existing Stationary Source

Emissions of criteria pollutants from the various sources at the Facility were estimated using the procedures described in the following subsections.

3.1.1 Diesel Engine Combustion Emissions

Diesel engines used at the Facility are associated with diesel-engine powered generators used to supply electrical power in portions of the quarries where line power is unavailable. There are also emissions associated with off-road haul trucks and materials handling equipment. The Agency has recently reviewed the use of off-road equipment at these types of facilities, and has determined that it is appropriate to include fuel usage for this equipment in the permit limitations, as they are a source of criteria pollutant emissions from the Facility.

Usage of diesel fuel in all stationary and non-road equipment at the Facility in 2015 was estimated to be approximately 58,000 gallons. This is less than the 95,000-gallon annual fuel usage limitation proposed by the Permittee in this application, so the fuel usage limit is not anticipated to hinder Facility operations.

Engine emissions from the Facility were based on the emissions from the six (6) engines described in Findings of Fact (A), with each engine having an annual fuel cap proposed by the Permittee. The heating value of ULSD was assumed to be 140,000 Btu/gallon. Emissions were estimated for each individual engine at its respective tier rating, and summed to estimated total engine emissions. This approach to estimating Facility emissions does not include specific information for the non-road equipment fleet.

Table 3-1: CAT C13 Diesel Engine – Estimated Emissions				
Emissions Certification: Tier 4i				
Fuel Consumption Rate at 100% Load: 25.3 gallons/hour				
Annual Fuel Consumption: 32,545 gallons ULSD				
Pollutant	Emission Factor			Allowable Emissions (ton/year)
	Factor	Units	Reference	
PM	0.015	g/bhp-hr ¹	Application for #AOP-16-027, emissions certification data for CAT C13 engine, Serial Number K3B00751	0.01
NO _x	1.5			1.21
CO	2.6			2.10
VOC	0.14			0.11
SO ₂	1.01S ²	lb/MMBtu ³	AP-42, Chapter 3, Stationary Internal Combustion Sources, Large Stationary Diesel and All Stationary Dual-fuel Engines, Table 3.4-1 (10/1996)	0.003
HAPs	0.00157			0.0020

¹ g/bhp-hr equals grams of pollutant emitted per brake horsepower hour at rated load and speed MMBtu

² S represents the weight % of sulfur in the oil. For example, if the fuel is 0.0015% sulfur, then S=0.0015

³ lb/MMBtu represents pounds of pollutant emitted per million British thermal units of heat input to the engine.

Table 3-2: CAT C9 Diesel Engine – Estimated Emissions				
Emissions Certification Tier 3 Fuel Consumption Rate at 100% Load: 22.7 gallons/hour Annual Fuel Consumption: 27,455 gallons ULSD				
Pollutant	Emission Factor			Allowable Emissions (ton/year)
	Factor	Units	Reference	
PM	0.015	g/bhp-hr ¹	40 CFR 89.1129(a)	0.10
NO _x	1.5			1.92
CO	2.6			1.66
VOC	0.14			---
SO ₂	1.01S ²	lb/MMBtu ³	AP-42, Chapter 3, Stationary Internal Combustion Sources, Large Stationary Diesel and All Stationary Dual-fuel Engines, Table 3.4-1 (10/1996)	0.003
HAPs	0.00157			0.0001

¹ g/bhp-hr equals grams of pollutant emitted per brake horsepower hour at rated load and speed MMBtu

² S represents the weight % of sulfur in the oil. For example, if the fuel is 0.0015% sulfur, then S=0.0015

³ lb/MMBtu represents pounds of pollutant emitted per million British thermal units of heat input to the engine.

Table 3-3: John Deere 4505HFC92 Diesel Engine – Estimated Emissions				
Emissions Certification Tier 4 Interim Fuel Consumption Rate at 100% Load: 6.9 gallons/hour Annual Fuel Consumption: 13,435 gallons ULSD				
Pollutant	Emission Factor			Allowable Emissions (ton/year)
	Factor	Units	Source	
PM	0.015	g/bhp-hr ¹	40 CFR 1039.102 Table 5	0.004
NO _x	0.30			0.08
CO	3.7			0.99
VOC	0.14			0.038
SO ₂	1.01S ¹	lb/MMBtu ²	AP-42, Chapter 3, Stationary Internal Combustion Sources, Large Stationary Diesel and All Stationary Dual-fuel Engines, Table 3.4-1 (10/1996)	0.001
HAPs	0.00157			AP-42, Chapter 3, Stationary Internal Combustion Sources, Gasoline and Diesel Industrial Engines, Table 3.3-2 (10/1996)

¹ S represents the weight % of sulfur in the oil. For example, if the fuel is 0.0015% sulfur, then S=0.0015

² lb/MMBtu represents pounds of pollutant emitted per million British thermal units of heat input to the engine.

Table 3-4: John Deere 4039DF Diesel Engine – Estimated Emissions				
Emissions Certification Uncertified Fuel Consumption Rate at 100% Load: 4.0 gallons/hour Annual Fuel Consumption: 6,310 gallons ULSD				
Pollutant	Emission Factor			Allowable Emissions (ton/year)
	Factor	Units	Source	
SO ₂	1.01S ¹	lb/MMBtu ²	AP-42, Chapter 3, Stationary Internal Combustion Sources, Large Stationary Diesel and All Stationary Dual-fuel Engines, Table 3.4-1 (10/1996)	0.001
PM	0.13		AP-42, Chapter 3, Stationary Internal Combustion Sources, Gasoline and Diesel Industrial Engines, Table 3.3-1 (10/1996)	0.18
NO _x	2.17			1.95
CO	2.68			0.42
VOC	0.10			0.159
HAPs	0.00157		AP-42, Chapter 3, Stationary Internal Combustion Sources, Gasoline and Diesel Industrial Engines, Table 3.3-2 (10/1996)	0.0007

¹ S represents the weight % of sulfur in the oil. For example, if the fuel is 0.0015% sulfur, then S=0.0015

² lb/MMBtu represents pounds of pollutant emitted per million British thermal units of heat input to the engine.

Table 3-5: John Deere 4505T-F150A Diesel Engine – Estimated Emissions				
Emissions Certification Uncertified Fuel Consumption Rate at 100% Load: 22.7 gallons/hour Annual Fuel Consumption: 9,968 gallons ULSD				
Pollutant	Emission Factor			Allowable Emissions (ton/year)
	Factor	Units	Source	
SO ₂	1.01S ¹	lb/MMBtu ²	AP-42, Chapter 3, Stationary Internal Combustion Sources, Large Stationary Diesel and All Stationary Dual-fuel Engines, Table 3.4-1 (10/1996)	0.001
PM	0.13		AP-42, Chapter 3, Stationary Internal Combustion Sources, Gasoline and Diesel Industrial Engines, Table 3.3-1 (10/1996)	0.22
NO _x	2.17			3.08
CO	2.68			0.66
VOC	0.10			0.251
HAPs	0.00157		AP-42, Chapter 3, Stationary Internal Combustion Sources, Gasoline and Diesel Industrial Engines, Table 3.3-2 (10/1996)	0.001

¹ S represents the weight % of sulfur in the oil. For example, if the fuel is 0.0015% sulfur, then S=0.0015

² lb/MMBtu represents pounds of pollutant emitted per million British thermal units of heat input to the engine.

Table 3-6: John Deere 4230D Diesel Engine – Estimated Emissions				
Emissions Certification Uncertified Fuel Consumption Rate at 100% Load: 22.7 gallons/hour Annual Fuel Consumption: 5,287 gallons ULSD				
Pollutant	Emission Factor			Allowable Emissions (ton/year)
	Factor	Units	Source	
SO ₂	1.01S ¹	lb/MMBtu ²	AP-42, Chapter 3, Stationary Internal Combustion Sources, Large Stationary Diesel and All Stationary Dual-fuel Engines, Table 3.4-1 (10/1996)	0.001
PM	0.13		AP-42, Chapter 3, Stationary Internal Combustion Sources, Gasoline and Diesel Industrial Engines, Table 3.3-1 (10/1996)	0.11
NO _x	2.17			1.63
CO	2.68			0.35
VOC	0.10			0.133
HAPs	0.00157		AP-42, Chapter 3, Stationary Internal Combustion Sources, Gasoline and Diesel Industrial Engines, Table 3.3-2 (10/1996)	0.0006

¹ S represents the weight % of sulfur in the oil. For example, if the fuel is 0.0015% sulfur, then S=0.0015

² lb/MMBtu represents pounds of pollutant emitted per million British thermal units of heat input to the engine.

3.1.2 Prometec Line Emissions

The Permittee, as part of the Application, estimated emissions from the Prometec line based on 4,160 hours per year of operation, and the composition of the products used for sealing and reinforcing the marble slabs. To allow for unrestricted operation of the Prometec line, the operating hours and usage rates were extrapolated to 8,760 hours per year. VOC concentrations and density for the various products used in sealing and reinforcing the marble slabs that are presented in Table 3-7 were provided as part of the Application.

Based on our review of the information presented in the Application, some portion of the Indurente BA50Q reacts during polymerization, and approximately 26.2% of the Indurente BA50Q is emitted to the air. It is the Agency's understanding that the Resina Limpid 1000Q polymerizes, and remains on the surface as a solid, so there are no emissions of the various compounds contained in this product to the atmosphere.

The majority of the emissions from the Prometec line are acetone, which is not a VOC. However, acetone is a Category 2 Hazardous Air Contaminant (HAC) as defined in Appendix C of the Regulations. A discussion regarding HAC emissions is presented in Section 3.2 of this document.

Table 3-7: Estimated VOC Emissions - Prometec Line										
Product	CAS #	Compound Name	VOC?	Estimated Annual use at 8,760 hours of Operation (gal)	Density (lb/gal)	Estimated Annual use at 8,760 hours of Operation (lb)	Percentage of Compound in Product	Percent Emitted to Air	Annual Emissions (lbs)	Annual Emissions (tons)
Indurente BA50Q				421	8.35	3,515.4				
	2855-13-2	3-Aminoethy-3,5,5-trimethylcyclohexylamine	Yes			1,757.7	50%	26.2%	460.5	0.23
	100-51-6	Benzyl alcohol	Yes			1,230.4	35%	26.2%	322.4	0.16
	2579-20-6	1,3-Bis(aminomethyl)cyclohexane	Yes			703.1	20%	26.2%	184.2	0.09
Resina Limpid 1000Q				1,053	9.35	9,845.6				
	25068-38-6	Bisphenol A epichlorohydrin	Yes		9.35	9,845.6	100%	0%	-	-
	16096-31-4	1,6-Hexanediol diglyddyl ether	Yes		1.87	1,969.1	20%	0%	-	-
	68081-84-5	Alkyl (C13-C15) glycidyl ether	Yes		0.93	984.6	10%	0%	-	-
	3101-60-8	p-tert-Buthylphenyl glycidyl ether	Yes		0.23	246.1	2.5%	0.0%	-	-
A0446	67-64-1	Acetone	No	1,053	6.55	6,896.4	100%	100%	6,896.4	3.45
Aerosil 200	112945-52-5	Silicon Dioxide	No	1,053	0.42	442.2-	100%	0%	-	-
Total Estimated VOC Emissions (tons) from Prometec Line										0.48

3.1.3 Emissions Summary

Table 3-8 summarizes the estimated and reported emissions from the various activities at the Facility, and identifies the allowable emissions from this Facility that will be established as part of this permit.

Table 3-8: Summary of Allowable Air Contaminant Emissions by Source (tons/year)						
Source	PM / PM₁₀ / PM_{2.5}	SO₂	NOx	CO	VOC	Total HAPs
Stationary and Non-Road Engines	0.58	0.01	9.87	6.19	0.69	0.004
Prometec Line	--	--	--	--	0.48	--
Estimated Facility Emissions	0.58	0.01	9.87	6.19	1.18	0.004
Allowable Facility Emissions	0.6	0.01	9.9	6.2	<5	<10/25

As summarized in Table 3-8above:

- The Facility has allowable emissions of all air contaminants in the aggregate of ten (10) or more tons per year: the Facility is therefore subject to Subchapter X of the Regulations and is designated as a Subchapter X Major Source.
- The Facility does not have allowable emissions of any contaminant which would classify the source as a "Major Source" and therefore is not subject to the new source review requirements of §5-502 of the Regulations.
- The Facility does not have allowable emissions of any contaminant which would classify the source as a "Title V Subject Source" and therefore is not subject to the federal operating permit requirements of 40 C.F.R. Part 70 or 71.

Accordingly, the Facility is classed as Subchapter X major source, and is required to obtain both an Air Pollution Control Permit to Construct and an Air Pollution Control Permit to Operate.

3.2 Estimated Emissions of Hazardous Air Contaminants from the Existing Stationary Source

Table 3-9 summarizes the estimated actual emissions of HACs. The Permittee, as part of the Application, estimated emissions from the Prometec line based on 4,160 hours per year of operation, and the reported composition of the products used for sealing and reinforcing the marble slabs. To allow for unrestricted operation of the Prometec line, the operating hours and usage rates were extrapolated to 8,760 hours per year. VOC concentrations and density for the various products used in sealing and reinforcing the marble slabs that are presented in Table 3-9 were provided as part of the Application.

Based on our review of the information presented in the Application, some portion of the Indurente BA50Q reacts during polymerization, and approximately 26.2% of the Indurente BA50Q is emitted to the air. It is the Agency's understanding that all of the Resina Limpid 1000Q polymerizes, and remains on the surface as a solid, so there are no emissions of the various compounds contained in this product to the atmosphere. Aerosil 200 is a chemically precipitated form of amorphous silica, but there is no CAS in Appendix C of the regulations that matches this particular form or amorphous silica.

Based on the Agency's review, no HACs were estimated to exceed their respective Action Levels.

Table 3-9: Estimated HAC Emissions - Prometec Line

Product	CAS #	Compound Name	HAC	Toxic Category	Estimated Annual use at 8,760 hours of Operation (gal)	Density (lb/gal)	Estimated Annual use at 8,760 hours of Operation (lb)	Percentage of Compound in Product	Percent Emitted to Air	Annual Emissions (lbs)	Annual Emissions (tons)	Emission Rate (lb/hr)	Emis Ra (lb/8
Indurente BA50Q					421	8.35	3,515.4						
	2855-13-2	3-Aminoethy-3,5,5-trimethylcyclohexylamine	No	--			1,757.7	50%	26.2%	460.5	0.23	0.0526	0.420
	100-51-6	Benzyl alcohol	Yes	3			1,230.4	35%	26.2%	322.4	0.16	0.0368	0.29
	2579-20-6	1,3-Bis(aminomethyl)cyclohexane	No	--			703.1	20%	26.2%	184.2	0.09	0.0210	0.168
Resina Limpid 1000Q					1,053	9.35	9,845.6			-			
	25068-38-6	Bisphenol A epichlorohydrin	Yes	2			9.35	100%	0%	-	-	0.0000	0.0000
	16096-31-4	1,6-Hexanediol diglyddyl ether	No	--			1.87	20%	0%	-	-	0.0000	0.0000
	68081-84-5	Alkyl (C13-C15) glycidyl ether	No	--			0.93	10%	0%	-	-	0.0000	0.0000
	3101-60-8	p-tert-Buthylphenyl glycidyl ether	No	--			0.23	2.5%	0.0%	-	-	0.0000	0.0000
A0446	67-64-1	Acetone	Yes	2	1,053	6.55	6,896.4	100%	100%	6,896.4	3.45	0.7873	6.298
Aerosil 200	112945-52-5	Silicon Dioxide	No	--	1,053	0.42	442.2-	100%	0%	-	-	0.0000	0.0000

¹ For Category 3 contaminants, emission rate is based on either the actual hours of operation or 2,000 hours/year of operation. For this estimate, operations at the Facility were assumed to be unrestricted, and emissions of Category 3 contaminants were estimated over 8,760 hours of operation. For Category 1 & 2 contaminants, the emission rate is based on 8,760 hours/year.

4.0 DISCUSSION OF SELECT APPLICABLE AND NON-APPLICABLE REQUIREMENTS

The Agency will assess compliance with these regulations during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of equipment and air pollution control devices, visual observations of emission points, and review of any records required by the Permit.

4.1 Vermont Air Pollution Control Regulations and Statutes

§5-201 and §5-202 - Open Burning Prohibited and Permissible Opening Burning

This emission standard, which regulates the open burning of materials, applies to the entire Facility. Open burning of materials is prohibited except in conformance with the requirements of this section

Based on information provided by the Permittee, open burning is not typically conducted at the Facility. During future inspections of the Facility, the Agency will verify if there has been open burning activity at the Facility and if these activities are in compliance with this requirement.

§5-211(2) - Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970

This emission standard applies to the entire Facility. The Agency will assess compliance with these emission standards in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of equipment and visual observations of emission points.

§5-221(1) - Prohibition of Potentially Polluting Materials in Fuel; Sulfur Limitation in Fuel

This prohibition applies to all stationary fuel burning equipment used on-site in addition to the non-road equipment in use at the Facility.

Based on the application submittal, the applicant is anticipated to comply with this requirement based on the use of ULSD fuel in all stationary and non-road diesel-powered equipment at the Facility. ULSD, by definition, contains not more 0.0015% (15 ppm) sulfur by weight.

§5-231(1)(a) - Prohibition of Particulate Matter; Industrial Process Emissions

Based on the application submitted and information available to the Agency, this Facility currently has no applicable operations subject to this regulation. Quarrying operations at the Facility are generally performed underground, and require the use of water sprays or similar control measures to minimize PM emissions from drilling and quarrying. It is likely that PM emissions from these activities are negligible. Fugitive PM emissions from haul roads and off-road material handling equipment will be minimized through the use of permit requirements intended to minimize the emissions of fugitive PM emissions.

Based on the above evaluation and permit requirements regarding fugitive PM emissions, the applicant is anticipated to comply with the respective particulate matter emission limits of this section.

§5-231(1)(b) - Prohibition of Particulate Matter; Industrial Process Emissions

Based on the application submitted and information available to the Agency, this Facility currently has no applicable operations subject to this regulation. The finishing operations on the Prometec Line are a water-wetted operation, and it is likely that PM emissions from this operation is negligible.

Based on the above evaluation and permit limitations regarding fugitive PM emissions, the applicant is anticipated to comply with the respective particulate matter emission limits of this section.

§5-231(3) - Prohibition of Particulate Matter; Combustion Contaminants

Based on the application submitted and information available to the Agency, this Facility currently has applicable fuel burning equipment subject to this regulation. The heat input for each piece of equipment identified in the Application is less than 10 MMBtu/hour, and accordingly, PM emissions from this equipment shall not exceed the limitations of §5-231(3)(a)(i), which states that emissions from these installations shall not exceed:

- (i) 0.5 pounds per hour per million BTU's of *heat input* in combustion installations where the *heat input* is 10 million BTU's or less per hour.

Based on information provided by the Permittee regarding the PM emissions characteristics of the equipment installed at this Facility, equipment at the Facility is anticipated to comply with these requirements

§5-231(4) - Prohibition of Particulate Matter; Fugitive Particulate Matter

This section requires the use of fugitive PM control equipment on all process operations and the application of reasonable precautions to prevent PM from becoming airborne during the handling, transportation, and storage of materials, or use of roads.

This requirement applies to the entire Facility, and the Facility is anticipated to comply with the fugitive emission limitations of this section by compliance with the fugitive emissions conditions included in this permit.

§5-241(1) & (2) - Prohibition of Nuisance and Odor

This requirement applies to the entire Facility and prohibits the discharge of air contaminants that would be a nuisance to the public or the discharge of objectionable odors beyond the property-line of the Facility.

Based on the application submittal and information available to the Agency, the Facility currently is in compliance with this regulation. The Agency will verify compliance with this requirement in the future during any inspections of the Facility. Additionally, the Agency investigates complaints that it receives in order to determine whether or not there is a violation of this requirement.

§5-253.1 – 5-253.20 - Control of Volatile Organic Compounds

Based on the application submittal and information available to the Agency, this Facility currently has no applicable operations subject to this regulation.

§5-253.14 - Solvent Metal Cleaning

This requirement applies to the cold solvent parts cleaning at the Facility and provides limits on the solvents used in the parts washers, and describes operational practices to be used with these parts washers.

Limitations that will require complying with this requirement have been included as part of this permit, and based on these limitations, the application submittal and information available to the Agency, this Facility currently is anticipated to comply with this regulation.

§5-261 - Control of Hazardous Air Contaminants

See Section 7.0 below.

§5-271 – Control of Air Contaminants from Stationary Reciprocating Internal Combustion Engines

This emission standard applies to all stationary reciprocating internal combustion engines with a brake horsepower output rating of 450 bhp or greater, and requires that stationary engines exceeding 450 bhp installed after July 1, 2007 be, at a minimum, Tier 2 emissions certified. This section applies to the 300 kW and 350 kW generators at the Facility.

Based on the application submittal and information available to the Agency, the Facility will be in compliance with this regulation, as the 300 kW and 350 kW generators at the Facility are emissions certified as Tier 3 and Tier 4i respectively. The Agency will verify compliance with this requirement in the future during any inspections of the Facility.

§5-402 – Written Reports When Required

This section gives the Agency authority to require the Facility to submit reports summarizing records required to be maintained by the Agency. The

The Agency will assess compliance with this regulation in the future during any inspections of the Facility.

§5-403 – Circumvention

This section prohibits the dilution or concealment of an air discharge in order to avoid air pollution control requirements. The Agency will assess compliance with this regulation in the future during any inspections of the Facility.

§5-404 – Methods for Sampling and Testing of Sources

This section allows the Agency to require testing of air emissions from the Facility and to specify the methods of testing.

The Agency will assess compliance with this regulation in the future during the performance of any required emissions testing at the Facility.

Subchapter VIII – Registration of Air Contaminant Source.

This Subchapter requires the owner or operator of a stationary source register with the Agency if the source produces five (5) tons per year or greater of actual emissions during the preceding calendar year. The owner or operator of a source is required to submit information regarding their operations and pay a fee based upon the quantity of emissions they produce and the fuels that they use at the source.

The Permittee is aware of this requirement through the Conditions contained in this Permit, and the Agency anticipates the Permittee will comply with this requirement annually on those years when Facility total emissions exceed 5 tons per year.

4.2 Federal Air Pollution Control Regulations and the Clean Air Act

Section 111 of the Clean Air Act - New Source Performance Standards (NSPS).

NSPSs are promulgated under Title 40 of the Code of Federal Regulations ("40 C.F.R.") Part 60. The NSPSs that were reviewed for applicability and the applicable NSPSs are summarized in the following table.

Table 4-2 Applicable Requirements from Section 111 of the Clean Air Act New Source Performance Standards (NSPSs)
<p>40 CFR Part 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984. Applies to each storage vessel with a capacity greater than or equal to 75 m³ (19,804 gal) that is used to store volatile organic liquids (including petroleum). This subpart does not apply to the following:</p> <ol style="list-style-type: none"> 1. Any storage vessel with a capacity less than 75 m³ 2. Any storage vessel storing a liquid with a vapor pressure less than 3.5 kPa 3. Any storage vessel with a capacity > 75 m³ and <151 m³ with a v.p. <15.0 kPa 4. Pressure vessels >29.7 psi and without emissions to the atmosphere. 5. Vessels permanently attached to mobile vehicles. 6. Vessels located at bulk gasoline plants. 7. Vessels located at gasoline service stations. <p>For affected facilities, there are recordkeeping requirements and depending upon the material stored there may be standards for the tank's vent system.</p> <p><i>The Facility has no storage tanks subject to this regulation.</i></p>

Table 4-2
Applicable Requirements from Section 111 of the Clean Air Act
New Source Performance Standards (NSPSs)

40 CFR Part 60, Subpart 000 - Standards of Performance for Nonmetallic Mineral Processing Plants. Applies to the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station for which construction, modification, or reconstruction is commenced after August 31, 1983. Also, crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement and subsequent affected facilities up to, but not including, the first storage silo or bin are subject to the provisions of this subpart. Does not apply to wet processing plants; Fixed sand and gravel plants and crushed stone plants with capacities, as defined in § 60.671, of 23 megagrams per hour (25 tons per hour) or less; Portable sand and gravel plants and crushed stone plants with capacities, as defined in § 60.671, of 136 megagrams per hour (150 tons per hour) or less; and Common clay plants and pumice plants with capacities, as defined in § 60.671, of 9 megagrams per hour (10 tons per hour) or less. Units manufactured after April 22, 2008 are subject to more stringent requirements.

The Permittee has indicated that they do not perform rock crushing activities at this Facility, and as such, the Facility is not subject to this Regulation.

40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE). Applies to CI RICE model year 2007 and later as well as those ordered after July 11, 2005 and with an engine manufacture date after April 1, 2006. This standard also applies to stationary CI RICE that are modified or reconstructed after July 11, 2005. This regulation established emission rates for affected engines, requires routine engine maintenance and sets maximum sulfur content for the diesel fuel. Beginning October 1, 2010 applicable engines shall only use diesel fuel with a maximum sulfur content of 15 ppm (ULSD).

Since Vermont has not taken delegation of this federal regulation, the U.S. EPA is the implementing authority and is responsible for determining applicability to either this regulation or federal non-road engine regulations.

Subpart IIII may apply to the CAT C9 and C13 engines, and the John Deere 4505HFC92 engine at the Facility, depending on their manner of use.

40 CFR Part 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. Applies to new spark ignition engines installed after June 12, 2006. Engines greater than 100 bhp firing landfill or digester gas must meet emission limits for NO_x, CO and VOC and, for units 500 bhp and less, shall have a on-time compliance test and, for units greater than 500 bhp, shall have a compliance test at least once every 8,760 hours of operation or every 3 years, whichever occurs first.

Since Vermont has not taken delegation of this federal regulation, the U.S. EPA is the implementing authority and is responsible for determining applicability of this regulation.

Subpart JJJJ is not anticipated to apply to the compression ignition engines at the Facility.

Section 112 of the Clean Air Act - National Emission Standards for Hazardous Air Pollutants (NESHAPs). NESHAPs are promulgated under 40 C.F.R. Part 61 and Part 63. Total HAP emissions are estimated to be less than 1 ton per year, so the Facility would be classified as an area source of HAPs. The applicable NESHAPs are summarized in the following table.

Table 4-3
Applicable Requirements from Section 112 of the Clean Air Act
National Emission Standards for Hazardous Air Pollutants (NESHAPs)

40 *CFR* Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines. Applies to new engines that commenced construction (installed) on or after June 12, 2006 at area sources of HAPs. Requires such engines to comply with NSPS Subpart IIII or JJJJ, as applicable. Also applies to existing engines that commenced construction (installed) prior to June 12, 2006 at area sources of HAPs. By May 3, 2013 requires engines equal and greater than 300 bhp to meet CO emission standards which may necessitate catalytic controls, must install crankcase ventilation system, and requires ULSD fuel. Engines <300 bhp need only meet maintenance requirements including changing oil & filter and, inspecting and replacing if necessary, air filter, hoses and belts. Does not apply to existing emergency units at an area source residential/commercial/institutional facility unless they are enrolled in demand response programs. Subject emergency units are subject to maintenance requirements, must install an elapsed hour meter and must use ULSD commencing January 1, 2015 if used for DR. For engines firing landfill or digester gas comprising 10% or more of the heat input, the engines are subject to management practices only (change oil & filter, inspect plugs, and inspect hoses and belts every 1440 hours or annually, whichever occurs first) as well as operating in accordance with manufacturer's recommendations and minimizing time at idle.

Since Vermont has not taken delegation of this federal regulation, the U.S. EPA is the implementing authority and is responsible for determining applicability to either this regulation or federal non-road engine regulations.

Subpart ZZZZ may apply to the CAT C9 and C13 engines, and the John Deere 4505HFC92, John Deere 4039DF, John Deere 4505T-F150A and John Deere 4230D engines at the Facility, depending on their manner of use.

Since the CAT C9 and C13 engines, and the John Deere 4505HFC92 engine commenced construction (installed) on or after June 12, 2006, if Subpart ZZZZ is determined to be applicable to these engines, these engines are anticipated to comply with the new engine requirements of Subpart ZZZZ by complying with Subpart IIII.

4.3 Non-Applicable Requirements for Which a Permit Shield Provision Has Been Requested

Pursuant to §5-1015(a)(14) of the Regulations, an owner/operator may request to be shielded from potentially applicable state or federal requirements. The Facility has not requested a permit shield from any specific, potentially applicable requirement. Accordingly, the Agency has not granted any permit shields for the Facility.

5.0 CONTROL TECHNOLOGY REVIEW FOR MAJOR SOURCES AND MAJOR MODIFICATIONS

The proposed project is designated as a subchapter X stationary source, and a Federal minor source and therefore is not subject to MSER review under §5-502 of the Regulations.

6.0 AMBIENT AIR QUALITY IMPACT EVALUATION

The proposed Facility is not anticipated to emit greater than 10 tpy of any non-VOC air contaminant. Therefore an impact evaluation was not necessary to assess compliance with the ambient air quality standards. The Agency has previously established that increases in emissions of less than 10 tpy do not pose a threat to the ambient air quality standards, nor are they expected to significantly deteriorate existing air quality.

7.0 HAZARDOUS AIR CONTAMINANTS

Pursuant to §5-261 of the *Regulations*, any stationary source subject to the rule¹ with current or proposed actual emissions of a hazardous air contaminant (HAC) equal to or greater than the respective Action Level (found in Appendix C of the *Regulations*) shall be subject to the Regulation and shall achieve the Hazardous Most Stringent Emission Rate (HMSER) for the respective HAC. HMSER is defined as a rate of emissions which the Secretary, on a case-by-case basis, determines is achievable for a stationary source based on the lowest emission rate achieved in practice by such a category of source and considering economic impact and cost. HMSER may be achieved through application of pollution control equipment, production processes or techniques, equipment design, work practices, chemical substitution, or innovative pollution control techniques.

The emission of hazardous air pollutants (“HAPs”) may also be regulated separately under to §112 of the Federal Clean Air Act. This facility has a permit condition limiting the emissions of HAPs to 10 ton/year of any single HAP and 25 tons/year of all HAPS combined, therefore the facility is not subject to the federal HAP standards.

As discussed in Section 3.2, the Facility is not anticipated to exceed any action levels and therefore is not subject to §5-261.

8.0 REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established a Reasonably Available Control Technology (“RACT”) requirement applicable to this Facility. Therefore, the source is currently in compliance with this requirement.

The Agency will notify the source if any applicable RACT requirement applies to this Facility in the future. If such RACT should apply to the source in the future, the Agency will ensure that the source complies with such requirement at that time.

¹ APCR §5-261(1)(c)(ii) provides that solid fuel burning equipment (not including incinerators) installed or constructed prior to January 1, 1993, and all fuel burning equipment which combust virgin liquid or gaseous fuel shall not be subject to the requirements of §5-261.