

Michigan Department of Environmental Quality
Air Quality Division

State Registration Number
N6944

**RENEWABLE OPERATING PERMIT
STAFF REPORT**

ROP Number
MI-ROP-N6944-2017

REX PERFORMANCE PRODUCTS, LLC

SRN: N6944

Located at

2700 Wills Street, Marysville, St. Clair, Michigan 48040

Permit Number: MI-ROP-N6944-2017

Staff Report Date: October 31, 2016

This Staff Report is published in accordance with Sections 5506 and 5511 of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Specifically, Rule 214(1) requires that the Michigan Department of Environmental Quality (MDEQ), Air Quality Division (AQD), prepare a report that sets forth the factual basis for the terms and conditions of the Renewable Operating Permit (ROP).

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RENEWABLE OPERATING PERMIT

OCTOBER 31, 2016 - STAFF REPORT

Purpose

Major stationary sources of air pollutants, and some non-major sources, are required to obtain and operate in compliance with an ROP pursuant to Title V of the federal Clean Air Act of 1990 and Michigan's Administrative Rules for Air Pollution Control pursuant to Section 5506(1) of Act 451. Sources subject to the ROP program are defined by criteria in Rule 211(1). The ROP is intended to simplify and clarify a stationary source's applicable requirements and compliance with them by consolidating all state and federal air quality requirements into one document.

This Staff Report, as required by Rule 214(1), sets forth the applicable requirements and factual basis for the draft ROP terms and conditions including citations of the underlying applicable requirements, an explanation of any equivalent requirements included in the draft ROP pursuant to Rule 212(5), and any determination made pursuant to Rule 213(6)(a)(ii) regarding requirements that are not applicable to the stationary source.

General Information

Stationary Source Mailing Address:	REX Performance Products, LLC 2700 Wills Street Marysville, Michigan 48040
Source Registration Number (SRN):	N6944
North American Industry Classification System (NAICS) Code:	326150
Number of Stationary Source Sections:	1
Is Application for a Renewal or Initial Issuance?	Renewal
Application Number:	201600047
Responsible Official:	Don Tate, President 810-320-3002
AQD Contact:	Sebastian Kallumkal, Sr. Environmental Engineer 586-753-3738
Date Application Received:	February 16, 2016 June 27, 2016 (modified application to incorporate PTI No. 162-00F)
Date Application Was Administratively Complete:	February 18, 2016
Is Application Shield In Effect?	Yes
Date Public Comment Begins:	October 31, 2016
Deadline for Public Comment:	November 30, 2016

Source Description

REX Performance Products, LLC (Formerly Fagerdala USA Marysville, Inc. and Michigan Foam and Fabrication, LLC) is located at 2700 Wills Street, Marysville, Michigan. The facility manufactures extruded polyethylene foam products, such as swimming pool noodles, support for mattresses, booms, etc. The initially installed two extruders (EUEXTRUDER2 and EUEXTRUDER3 500 lb/hr each) and one extruder (EUEXTRUDER1, 600 lb/hr) use polyethylene or other polymer beads and isobutane (blowing agent) as the raw materials. The melted plastic can be fed to either profile or a sheet die. On May 17, 2016, PTI No. 162-00F was approved for the installation of a 4th extruder (EUEXTRUDER4) and a reclaim extruder (EURECLAIM2). This extruder uses the same raw materials and produces similar products. The facility operates 24 hours per day and 5-6 days per week and about 50 weeks per year.

The facility is located in a mostly industrial area. It is surrounded by Busha Highway (M29) to the east, Wills Street to the south. The nearest residential area appears to be more than a mile away.

The blowing agent, Isobutane, is injected into the extruders to mix with the melted plastic. The melted plastic is then transported down the barrel under pressure to mix the blowing agent thoroughly with the plastic and develop the correct pressure and temperature within the melt to produce the desired properties in the finished product. As the mix is pushed out of the die, the release of pressure allows the blowing agent to expand causing the formation of cells in the plastic, which produce the foam property. Most of the isobutane is released into the manufacturing room during the production, cooling and packaging process and some is retained within the foam cells.

The facility also recycles scrap foam from its production process. The recycled foam is first ground and melted. The melted foam is extruded through a strand/palletizing die and immediately cut into beads (EURECLAIM and EURECLAIM2). This extrusion and cutting occurs in water bath so that the beads are instantly cooled to prevent agglomeration and are then transported by the cooling water to a separator. After the water is removed, the beads are sent to a centrifugal bead dryer to remove remaining moisture. The beads are boxed, stored, and eventually returned to the production line along with new feed stock and converted to foam. The captured isobutane that is in the foam cells is released during this process.

The facility's VOC (isobutane) emissions are controlled with an Air Code Ionization Control System (ICS). The ICS consists of a series of ion generators (ionization tubes) which provide positive and negative ions to the air supply fans located within the extrusion production (extrusion hall) area. The ions react with the VOC molecules, at room temperature, to reduce them to carbon dioxide (CO₂) and water. The ions are dispersed through ventilation supply (exhausts) to all areas of the production floor room and the reclaim room. These rooms meet the requirements for a permanent total enclosure, accounting for 100% capture and act as the reaction chamber for the ICS. The exhaust from the production room to the atmosphere is through two (2) axial fans. Each exhaust hood consists of two (2) inlets and one outlet through the wall of the production room at about 15 feet from the floor. The ROP requires at least once every six months, the permittee to verify the direction of air flow at each natural draft opening (NDO) is into the non-fugitive enclosure, using a smoke test (i.e., smoke bomb, smoke tube) or an approved alternate method.

These exhaust ducts are equipped with sampling systems designated to collect and direct the two sample streams to a common mixing header where they are continuously monitored by a VOC analyzer utilizing flame ionization. Initially two VOC analyzers were installed in May 1, 2006. The initial emission testing and Relative Accuracy Test Audit (RATA) for these monitors were completed on June 15, 2006. The tests showed noncompliance with the emission limits in the PTI and the RATA requirements. So the facility replaced these two monitors with one single monitor and repeated the tests on February 6, 2007. The ROP requires that the permittee perform quality assurance procedures prescribed in Appendix F of 40 CFR 60 in each calendar quarter when EUEXTRUDER1, EUEXTRUDER2, EUEXTRUDER3, EUEXTRUDER4, EURECLAIM or EURECLAIM2 is operated.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year **2015**.

TOTAL STATIONARY SOURCE EMISSIONS

Pollutant	Tons per Year
Carbon Monoxide (CO)	NA
Lead (Pb)	NA
Nitrogen Oxides (NO _x)	NA
Particulate Matter (PM)	NA
Sulfur Dioxide (SO ₂)	NA
Volatile Organic Compounds (VOCs)	178.32

The following table lists Hazardous Air Pollutant emissions as calculated for the year 2015 by AQD:

Individual Hazardous Air Pollutants (HAPs) **	Tons per Year
Total Hazardous Air Pollutants (HAPs)	NA***

**As listed pursuant to Section 112(b) of the federal Clean Air Act.

*** Isobutane is not listed as HAP. The facility is a true minor of HAP emissions.

See Parts C and D in the ROP for summary tables of all processes at the stationary source that are subject to process-specific emission limits or standards.

Regulatory Analysis

The following is a general description and history of the source. Any determinations of regulatory non-applicability for this source are explained below in the Non-Applicable Requirement part of the Staff Report and identified in Part E of the ROP.

The stationary source is located in St.Clair County, which is currently designated by the U.S. Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70, because the potential to emit of volatile organic compounds exceeds 100 tons per year.

The stationary source is considered to be a minor source of HAP emissions because the potential to emit of any single HAP regulated by the federal Clean Air Act, Section 112, is less than 10 tons per year and the potential to emit of all HAPs combined are less than 25 tons per year.

No emissions units at the stationary source are currently subject to the Prevention of Significant Deterioration regulations of Part 18, Prevention of Significant Deterioration of Air Quality of Act 451, because at the time of New Source Review permitting the potential to emit of volatile organic compounds was less than 250 tons per year.

FGFACILITY (EUEXTRUDER1, EUEXTRUDER2, EUEXTRUDER3, EUEXTRUDER4, EURECLAIM and EURECLAIM2) at the stationary source is not subject to the New Source Performance Standards.

FGFACILITY (EUEXTRUDER1, EUEXTRUDER2, EUEXTRUDER3, EUEXTRUDER4, EURECLAIM and EURECLAIM2) at the stationary source is not subject to the Maximum Achievable Control Technology Standards.

FGFACILITY (EUEXTRUDER1, EUEXTRUDER2, EUEXTRUDER3, EUEXTRUDER4, EURECLAIM and EURECLAIM2) at the stationary source is not subject to the National Emission Standard for Hazardous Air Pollutants.

Facility's initial permit to install (PTI No. 162-00) was modified a few times to address compliance issues and for new installations. In March 2006, the facility entered into a Consent Order (AQD No. 4-2006) with MDEQ - AQD to address the compliance issues. This consent order was null and void upon the entry of new consent order AQD No. 21-2010 which was in effect since January 18, 2011. This new consent order AQD No. 21-2010 was proposed and finalized to allow the facility to continue its manufacturing and related processes in the absence of Title V application shield and in compliance with PTI No. 162-00E requirements. PTI No. 162-00F was approved for the installation EUEXTRUDER4 and EURECLAIM2.

Currently applicable requirements in the Appendix A of the PTI 162-00F is included in Appendix 9 of the draft ROP. Item 7 in the Appendix A of the PTI is included in the Appendix 7 of the draft ROP. Item 7 was modified to include calibration gases other than isobutane. Item 6 in the Appendix A of the PTI is included in the FGFACILITY, SC V.3 of the draft ROP. SC V.3 was revised to include details from Quality Assurance Procedures in Appendix F of 40 CFR Part 60.

FGFACILITY in PTI No. 162-00F does not have any source-wide opt-out requirements. Therefore the requirements in this PTI are listed in a Flexible Group Requirement Table of draft ROP instead of Source-Wide Requirement Table.

The monitoring conditions contained in the ROP are necessary to demonstrate compliance with all applicable requirements and are consistent with the "Procedure for Evaluating Periodic Monitoring Submittals."

The emission limitations or standards for VOC from FGFACILITY (EUEXTRUDER1, EUEXTRUDER2, EUEXTRUDER3, EUEXTRUDER4, EURECLAIM and EURECLAIM2) at the stationary source are exempt from the federal Compliance Assurance Monitoring (CAM) regulation under 40 CFR 64.2(b)(1)(vi), because the 8-hr and tons per year VOC emission limitations meet the CAM exemption for a continuous compliance determination method. Therefore, FGFACILITY (EUEXTRUDER1, EUEXTRUDER2, EUEXTRUDER3, EUEXTRUDER4, EURECLAIM and EURECLAIM2) is exempt from CAM requirements for the 8-hr and tons per year VOC emission limits.

Please refer to Parts B, C and D in the draft ROP for detailed regulatory citations for the stationary source. Part A contains regulatory citations for general conditions.

Source-wide Permit to Install (PTI)

Rule 214a requires the issuance of a Source-wide PTI within the ROP for conditions established pursuant to Rule 201. All terms and conditions that were initially established in a PTI are identified with a footnote designation in the integrated ROP/PTI document.

The following table lists all individual PTIs that were incorporated into previous ROPs. PTIs issued after the effective date of ROP No. MI-ROP-N6944-2011 are identified in Appendix 6 of the ROP.

PTI Number			
162-00E			

Streamlined/Subsumed Requirements

This ROP does not include any streamlined/subsumed requirements pursuant to Rules 213(2) and 213(6).

Equivalent Requirements

The conversion factor that the facility uses and that is described in the PTI to convert the compliance assurance monitor response "PPM" to "lb/hr" (VOC limit in the PTI) are different. This conversion factor is stated in Appendix A, Item 7 of PTI 162-00F. The reason for this discrepancy is that the facility uses propane as the calibration gas and uses the propane conversion factor to convert "PPM" to "lb/hr". The conversion factor in the PTI 162-00F is valid if the facility uses isobutane as the calibration gas. It is necessary to make the requirements of the permit and practices at the facility consistent.

Upon review of the Operational Memorandum 1 and R 336.1212(5), it was identified that modifications to existing monitoring, recordkeeping and reporting requirements are types of changes that can be submitted as a proposed equivalent requirement as a part of an application for an ROP. The proposed change is a requirement related to monitoring. Therefore this requirement could be modified through ROP permit without PTI modification.

The PTI 162-00F, Appendix A, Item 7 which gives the equation to convert "PPM" to lb/hr, states that the "Compliance **may** be demonstrated by calculating hourly emissions with the following formula". Therefore this requirement could be modified if necessary.

Existing Requirement:

Compliance may be demonstrated by calculating hourly emissions with the following formula:

$$\text{VOC Pound/Hour} = \text{average PPM} * 0.000000150846 * \text{SCFM} * 60 \text{ Minutes/Hour (isobutane basis)}$$

Where:

Average PPM = the hourly average measurement of the VOC monitor in parts per million

SCFM: standard cubic feet per minute

SCFM = the average exhaust flow rate from the permanent total enclosure measured during the last compliance test or other measurement approved by the district supervisor.

Proposed Equivalent Requirement:

Compliance may be demonstrated by calculating hourly emissions with the following formula:

$$\text{VOC Pound/Hour} = \text{Average PPM} * \text{CGF} * \text{SCFM} * 60 \text{ Minutes/Hour}$$

Where:

Average PPM = the hourly average measurement of the VOC monitor in Parts per Million (PPM)

CGF = Calibration Gas Factor to convert from PPM to pound/dry standard cubic foot

$$\text{CGF for methane} = 0.00000004162 = 4.162 \times 10^{-8}$$

$$\text{CGF for propane} = 0.0000001144 = 1.144 \times 10^{-7}$$

$$\text{CGF for isobutane} = 0.0000001508 = 1.508 \times 10^{-7}$$

$$\text{CGF for hexane} = 0.0000002236 = 2.236 \times 10^{-7}$$

SCFM = Standard Cubic Feet Per Minute, the average exhaust flow rate from the permanent total enclosure measured during the last compliance test or other measurement approved by the district supervisor.

Non-applicable Requirements

Part E of the ROP lists requirements that are not applicable to this source as determined by the AQD, if any were proposed in the ROP Application. These determinations are incorporated into the permit shield provision set forth in Part A (General Conditions 26 through 29) of the ROP pursuant to Rule 213(6)(a)(ii).

Processes in Application Not Identified in Draft ROP

The following table lists processes that were included in the ROP Application as exempt devices under Rule 212(4). These processes are not subject to any process-specific emission limits or standards in any applicable requirement.

Exempt Emission Unit ID	Description of Exempt Emission Unit	Rule 212(4) Exemption	Rule 201 Exemption
EU-ISOBUTANETANK	11,000 gallon above-ground isobutane storage tank, manufactured by Praxair. Installed on 8/1/2004.	R 336.1212(4)(c)	R 336.1284(b)
EU-SHREDDER1	200 pound capacity, uncontrolled and internally vented, raw material shredder used for the reclamation of scrap material generated during normal production activity. Installed on 8/4/2004.	R 336.1212(3)(f)	R 336.1285(l)(vi)
EU-SHREDDER2	200 pound capacity, uncontrolled and internally vented, raw material shredder used for the reclamation of scrap material generated during normal production activity. Installed on 8/4/2004.	R 336.1212(3)(f)	R 336.1285(l)(vi)
EUROOFFURN	Five 1.488 MMTBU/HR, natural gas fired, roof mounted, furnaces to provide heat to the extrusion hall and warehouse areas. Lennox model c-33-50/60C-2F-1. Installed on 8/1/2004.	R 336.1212(4)(b)	R 336.1282(b)
EU-OFFICEFURN	Two (2), natural gas fired, conventional home furnaces to provide heat to the office space in the front of the building. Each unit is rated at 110,000 BTU/hr. Installed on 1/1/2004.	R 336.1212(4)(b)	R 336.1282(b)
EU-OFFICEWTRHTR	One (1) natural gas fired, water heater to provide hot running water to the office sink and employee bathrooms. 40,000 BTU/hr. Installed on 8/1/2004.	R 336.1212(4)(b)	R 336.1282(b)

Draft ROP Terms/Conditions Not Agreed to by Applicant

This draft ROP does not contain any terms and/or conditions that the AQD and the applicant did not agree upon pursuant to Rule 214(2).

Compliance Status

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements as of the effective date of this ROP.

Action taken by the MDEQ, AQD

The AQD proposes to approve this ROP. A final decision on the ROP will not be made until the public and affected states have had an opportunity to comment on the AQD's proposed action and draft permit. In addition, the USEPA is allowed up to 45 days to review the draft ROP and related material. The AQD is not required to accept recommendations that are not based on applicable requirements. The delegated decision maker for the AQD is Joyce Zhu, Southeast Michigan Acting District Supervisor. The final determination for ROP approval/disapproval will be based on the contents of the ROP Application, a judgment that the stationary source will be able to comply with applicable emission limits and other terms and conditions, and resolution of any objections by the USEPA.

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DECEMBER 7, 2016 - STAFF REPORT ADDENDUM

MI-ROP-N6944-2017

Purpose

A Staff Report dated October 31, 2016, was developed in order to set forth the applicable requirements and factual basis for the draft Renewable Operating Permit (ROP) terms and conditions as required by R 336.1214(1). The purpose of this Staff Report Addendum is to summarize any significant comments received on the draft ROP during the 30-day public comment period as described in R 336.1214(3). In addition, this addendum describes any changes to the draft ROP resulting from these pertinent comments.

General Information

Responsible Official:	Don Tate, President 810-320-3002
AQD Contact:	Sebastian Kallumkal, Sr. Environmental Engineer 586-753-3738

Summary of Pertinent Comments

No pertinent comments were received during the 30-day public comment period.

Changes to the October 31, 2016 Draft ROP

No changes were made to the draft ROP.

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JANUARY 25, 2017 - STAFF REPORT ADDENDUM

MI-ROP-N6944-2017

Purpose

A Staff Report dated October 31, 2016, was developed in order to set forth the applicable requirements and factual basis for the draft Renewable Operating Permit (ROP) terms and conditions as required by R 336.1214(1). The purpose of this Staff Report Addendum is to summarize any significant comments received on the proposed ROP during the 45-day EPA comment period as described in R 336.1214(6). In addition, this addendum describes any changes to the proposed ROP resulting from these pertinent comments.

General Information

Responsible Official:	Don Tate, President 810-320-3002
AQD Contact:	Sebastian Kallumkal, Sr. Environmental Engineer 586-753-3738

Summary of Pertinent Comments

No pertinent comments were received during the 45-day EPA comment period.

Changes to the December 7, 2016 Proposed ROP

No changes were made to the proposed ROP.