

State Registration Number  
N7754

**RENEWABLE OPERATING PERMIT  
STAFF REPORT**

ROP Number  
MI-ROP-N7754-2024

**Harbor Foam, Inc.**

State Registration Number (SRN): N7754

Located at

2950 Prairie Street SW, Suite 300, Grandville, Kent County, Michigan 49418

Permit Number: MI-ROP-N7754-2024

Staff Report Date: February 12, 2024

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) of the administrative rules promulgated under Act 451, requires that the Michigan Department of Environment, Great Lakes, and Energy (EGLE), 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

February 12, 2024 - STAFF REPORT

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### 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; and Michigan’s Administrative Rules for Air Pollution Control promulgated under 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:	Harbor Foam, Inc. 2950 Prairie Street SW, Suite 300 Grandville, Michigan 49418
Source Registration Number (SRN):	N7754
North American Industry Classification System (NAICS) Code:	326140
Number of Stationary Source Sections:	1
Is Application for a Renewal or Initial Issuance?	Renewal
Application Number:	202300008
Responsible Official:	Tate Kuperus, Operations Manager 616-855-8150 Laura Kuperus, V.P., Secretary Treasurer 616-356-8150
AQD Contact:	April Lazzaro, Senior Environmental Quality Analyst 616-558-1092
Date Application Received:	January 1, 2023
Date Application Was Administratively Complete:	January 27, 2023
Is Application Shield in Effect?	Yes
Date Public Comment Begins:	February 12, 2024
Deadline for Public Comment:	March 13, 2024

## Source Description

Harbor Foam, Inc. was founded in 2007 and produces expanded polystyrene foam (EPS) products. Harbor Foam is located in southwest Kent County surrounded by a mix of commercial, industrial and residential properties, including a wooded area and bordered to the south by the Buck Creek watershed. The company receives pentane impregnated polystyrene beads which are expanded with steam heat into larger spheres, then molded into large solid blocks of various densities and sizes. The blocks are aged, and then undergo post production operations such as wire cutting into specific shapes for their customers. The primary pollutant from this process is volatile organic compounds (VOCs).

Harbor Foam, Inc. receives the raw material as a very small, hollow polystyrene bead that is then expanded; pentane is the blowing agent contained in the bead which allows for the bead to expand when steam is applied. Steam is used to both expand and mold the beads. Harbor Foam, Inc. uses one 8.37 MMBTU boiler to create the necessary steam for the expansion and molding processes. Harbor Foam, Inc.'s permit includes two pre-expanders, a pre-puff storage room, one block mold and two shape molds. The majority of the pentane is emitted from pre-expansion and the pre-puff storage room. Once the regenerative thermal oxidizer (RTO) is installed and operational, the emissions from pre-expansion and the pre-puff storage room will be ducted to the unit for VOC control.

When the beads are ready to be molded, they are brought to the molding machines where additional steam is applied. When the blocks are appropriately aged, they are brought to the production area where they are cut to the appropriate length and thickness. The foam may also be embossed at this point in the production process.

Additional operations in the facility include grinding of the scrap foam. The scrap foam is ground and then is shipped off-site.

The Renewable Operating Permit (ROP) contains two emission units, EU35-07C and EUPLASTICRESIN. EU35-07C contains all the conditions from active Permit to Install (PTI) No. 35-07C and Harbor Foam, Inc. will operate under these conditions until the Non-Fugitive Enclosure (NFE) and RTO required in EUPLASTICRESIN by PTI No. 35-07D are installed and operational. Following installation and operation of the NFE and RTO, Harbor Foam, Inc. will cease operating under EU35-07C and will begin operating under EUPLASTICRESIN.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year **2022**.

### **TOTAL STATIONARY SOURCE EMISSIONS**

<b>Pollutant</b>	<b>Tons per Year</b>
Volatile Organic Compounds (VOCs)	121.53

The following table lists Hazardous Air Pollutant emissions as calculated for the year **2022** by the facility:

<b>Individual Hazardous Air Pollutants (HAPs) **</b>	<b>Tons per Year</b>
Total Hazardous Air Pollutants (HAPs)	<1

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

## 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 in Kent County, which is currently designated by the United States 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 (VOCs) 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 tpy and the potential to emit of all HAPs combined are less than 25 tpy.

No emission units at the stationary source were subject to the Prevention of Significant Deterioration regulations of the Michigan Air Pollution Control Rules Part 18, Prevention of Significant Deterioration of Air Quality of Act 451 or 40 CFR 52.21 because the facility accepted a Source-wide emission limit of less than 224 tons per year of VOC based on a 12-month rolling time period as determined at the end of each calendar month.

EU-Boiler is exempt from New Source Review (NSR) permitting requirements. Based on the size (<10 MMBTU/hr), the boiler is not subject to the New Source Performance Standards for Small Industrial-Commercial-Institutional Steam Generating Units, (40 CFR Part 60, Subpart Dc). Harbor Foam, Inc. is not a major source of HAPs; therefore, the boiler is not subject to the National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR Part 63, Subpart DDDDD). Harbor Foam, Inc. is an area source of HAPs; however, the boiler is natural gas fired and, therefore, not subject to the National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources (40 CFR Part 63, Subpart JJJJJ).

Harbor Foam, Inc. was issued Permit to Install (PTI) No. 35-07 on February 15, 2007, during the initial construction of the facility with a VOC limit of 80 tpy. The equipment identified in the permit (Hirsch 9000 resin pre-expander, canvas holding bags, Hirsch adjustable wall mold, hot room, wire cutting operations, embossing area, and other polystyrene foam producing operations) reflects the present-day state of the facility.

An emission limit increase for VOCs to 90 tpy was approved on April 3, 2012, by PTI No. 35-07A. An additional emission limit increase for VOCs to 139.8 tpy was approved on July 30, 2012, by PTI No. 35-07B. During the permitting process, the facility underwent a best available control technology (BACT) review per Rule 702 (a). A proposed average of 6.3 % pentane content by weight for the beads during operation was considered acceptable. No add-on controls were determined to be necessary to meet BACT.

A temporary emission limit increase for VOCs to 164.8 tpy per 12-month rolling time period as determined at the end of each calendar month was approved on August 24, 2021, by PTI No. 35-07C, effective from September 1, 2021, through February 28, 2022. This temporary increase included a ramp down period for each of the following 12-month rolling time periods effective from April 1, 2021, through July 1, 2022, after which emissions were to return to the previously permitted 139.8 tpy VOC limit.

Following a March 9, 2023, AQD inspection, the facility was sent a Violation Notice on March 31, 2023, for exceeding the VOC emission limit of 139.8 tons per year as stated in MI-ROP-N7754-2018, Special Condition I.1. and PTI No. 35-07C, Special Condition I.7. during the 12-consecutive month periods ending in July 2022 and August 2022 when 148.16 tons and 142.14 tons of VOC were emitted, respectively. The facility has since reduced emissions to meet their 139.8 tpy VOC emission limit.

On April 19, 2023, PTI No. 35-07D was approved for a VOC emission limit increase and the installation of new equipment (one block mold, two shape molds, and one pre-expander) and an RTO and NFE for control of the two pre-expanders and the pre-puff storage room. The RTO and NFE have not yet been installed, but the conditions of PTI No. 35-07D are being incorporated into the ROP and will become effective upon installation of the equipment.

Toxic air contaminants were evaluated according to Rule 225. Maximum hourly emissions of pentane were calculated using a 6.3% by weight pentane concentration in the bead minus a 2% by weight pentane concentration in the shipped product. Algorithms for determining allowable emission rates (AER) were used for the initial health-screening. The potential pentane emissions are below the 1-hour maximum AER calculated number from the initial threshold screening level (ITSL) of 17,700 µg/m<sup>3</sup> (8-hr), but not the 8-hr AER. A previously run SCREEN3 model result from PTI No. 35-07A was used and the worst-case potential pentane emissions were less than 20% of health-screening. The process as proposed was found to be acceptable per Rule 225.

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."

EUPLASTICRESIN (pre-expanders and pre-puff storage) have emission limitations or standards that are subject to the federal Compliance Assurance Monitoring rule pursuant to 40 CFR Part 64, because the units have potential pre-control emissions of VOC over the major source threshold of 100 tons per year. The pre-expanders and pre-puff storage will be controlled by a Regenerative Thermal Oxidizer (RTO) and non-fugitive enclosure (NFE).

The following Emission Units/Flexible Groups are subject to CAM upon installation of the control equipment:

Emission Unit/Flexible group ID	Pollutant / Emission Limit	UAR(s)	Control Equipment	Monitoring (Include Monitoring Range)	Emission Unit/ Flexible Group for CAM	PAM ? *
EUPLASTICRESIN (pre-expanders and pre-puff storage)	223.5 tpy	<b>R 336.1205</b> <b>R 336.1702(a)</b>	Regenerative Thermal Oxidizer	Combustion Temperature above 1,500° F	EUPLASTIC-RESIN	No
EUPLASTICRESIN (pre-expanders and pre-puff storage)	223.5 tpy	<b>R 336.1205</b> <b>R 336.1702(a)</b>	Non-Fugitive Enclosure	Differential Pressure across the enclosure of the capture system: 1.0 to -1.0 inches of water column	EUPLASTIC-RESIN	No

EUPLASTICRESIN (pre-expanders and pre-puff storage) will be controlled by an RTO equipped with a digital temperature monitoring device located in the combustion chamber. The RTO monitoring device monitors and records data once every 10 seconds. The NFE will have two independent monitoring devices which continuously monitor system pressure drop.

The RTO operating temperature is selected because it is indicative of the control system’s destruction efficiency. The NFE system static pressure is selected because it is indicative of the control system’s collection efficiency. The desired level of overall control efficiency is expected as a result of maintaining the capture system pressure and the operating temperature of the thermal oxidizer at or above a minimum value. If the operating pressure or temperature changes significantly, the control efficiency may be reduced.

To ensure consistent VOC control, the structural integrity of the capture and destruction systems will be inspected and maintained, and the control system will be calibrated periodically. This will indicate any problems with the control system that could result in decreased performance or efficiency. The frequency will be either weekly, monthly, quarterly, or annually, depending on the task. Additional details can be found as part of the company’s internal preventative maintenance program.

The selected indicator range for the oxidizer operating temperature is based on specifications for optimal performance provided by the equipment designer and is incorporated into the permit conditions as established by the AQD. The selected range for the capture system static pressure is based on the desire to maintain maximum collection efficiency for the controlled portions of the emission unit.

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-N7754-2018 are identified in Appendix 6 of the ROP.

PTI Number			
35-07	35-07A	35-07B	

**Streamlined/Subsumed Requirements**

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

**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 Not in the Draft ROP**

The following table lists PTI exempt processes that were not included in the Draft ROP pursuant to Rule 212(4). These processes are not subject to any process-specific emission limits or standards.

Emission Unit ID	Description of Emission Unit	Rule 212(4) Citation	PTI Exemption Rule Citation
EU-Boiler	Cleaver-Brooks 8.37 MMBTU/hr natural gas fired boiler	Rule 212(4)(c)	Rule 282(2)(b)(i)

### **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 EGLE, 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 Heidi Hollenbach, Grand Rapids 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.

State Registration Number  
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**RENEWABLE OPERATING PERMIT**  
**March 14, 2024 - STAFF REPORT ADDENDUM**

ROP Number  
MI-ROP-N7754-2024

**Purpose**

A Staff Report dated February 12, 2024, was developed to set forth the applicable requirements and factual basis for the draft Renewable Operating Permit (ROP) terms and conditions as required by Rule 214(1) of the administrative rules promulgated under Act 451. 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 Rule 214(3). In addition, this addendum describes any changes to the draft ROP resulting from these pertinent comments.

**General Information**

Responsible Official:	Tate Kuperus, Operations Manager 616-855-8150 Laura Kuperus, V.P., Secretary Treasurer 616-356-8150
AQD Contact:	April Lazzaro, Senior Environmental Quality Analyst 616-558-1092

**Summary of Pertinent Comments**

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

**Changes to the February 12, 2024 Draft ROP**

No changes were made to the draft ROP.