

## TECHNICAL FACT SHEET

Crest Marine: **PTI Application No. APP-2023-0083**

September 13, 2023

### Purpose and Summary

The Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), is proposing to act on Permit to Install (PTI) application No. APP-2023-0083 from Crest Marine. The permit application is for a new facility that will manufacture boats and fiberglass reinforced plastic (FRP) composite products. The proposed project is subject to permitting requirements of the Department's Rules for Air Pollution Control, as well as other state and federal regulations. Prior to acting on this application, the AQD is holding a public comment period, and if requested in writing, a virtual public hearing to allow all interested parties the opportunity to comment on the proposed PTI. All relevant information received during the comment period, and the virtual hearing, if held, will be considered by the decision maker prior to taking final action on the application.

### Background Information

The proposed facility would be located at 2710 South M-52 in Owosso, Michigan. The location is shown in Figure 1 to the right.

Crest Marine would manufacture FRP composite parts using two processes: an open lamination process and a resin transfer molding (RTM) process.

The open lamination process involves applying a polyester-based gelcoat to a mold to produce an exterior finish. To reinforce the product, a polyester resin with chopped fiberglass is then applied to the mold. In the RTM process, a polyester resin is injected into a mold cavity where the resin flows over already-placed reinforcement fibers.

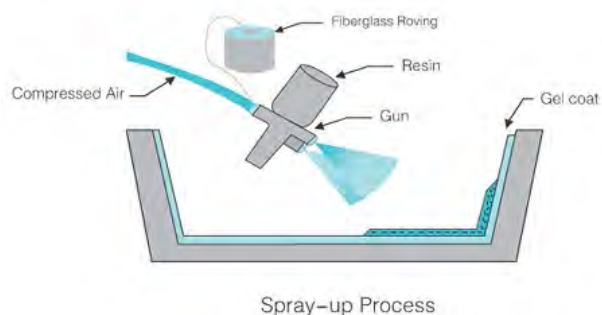
Once the FRP composite parts have hardened (cured), the finished product will be removed from the mold, trimmed of any excess material, and cleaned.

Fiberglass gelcoats and resins contain reinforcing filaments (fiberglass) and a volatile organic compound (VOC) called a monomer. The monomer in the gelcoat or resin reacts with a catalyst and polymerizes to form a reinforced plastic material embedded within the reinforcing filaments. During polymerization, most of the VOCs in the resins and catalysts form a solid resin matrix which encloses the reinforcing filaments. The VOCs that do not react will be emitted from the FRP parts as they cure.

Part of the process includes adhesives which polymerize very similarly to the reaction that occurs with the resins and gelcoats. Once the adhesive is applied, the monomer and catalyst polymerize to form a solid bond between parts. A small amount of unreacted VOCs will be emitted from these adhesives.



Figure 1: Proposed location of Crest Marine



**Figure 2. Typical open lamination process<sup>1</sup>**  
<sup>1</sup> Taishan Fiberglass, www.ctgf.com

VOC-based products will be used for cleaning and finishing of the FRP composite parts. These products include mold releases, mold cleaning compounds, repair compounds, and cleaning solvents. In addition, the company is proposing to use acetone for clean-up operations. Acetone is not considered a VOC, as it is not photoreactive in the atmosphere and is excluded from the [USEPA definition of a VOC](#). Acetone clean-up solvent that is not recovered and recycled is considered to be emitted.

As the processes at this proposed facility will have air emissions, the review of the proposed project evaluated all applicable rules and regulations to protect public health and the environment.

### Proposed Facility and Present Air Quality

The United States Environmental Protection Agency (USEPA) has developed health-protective standards for specific air pollutants. These standards are called the National Ambient Air Quality Standards (NAAQS). There are NAAQS for [some pollutants](#), including sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide, carbon monoxide, particulate matter equal to or less than 10 microns in diameter (PM<sub>10</sub>), particulate matter equal to or less than 2.5 microns in diameter (PM<sub>2.5</sub>), ozone, and lead.

The facility is proposed to be located in Shiawassee County, which is currently meeting all of the NAAQS. The purpose of air monitoring stations is to assess the air quality in a specific region or area of the state. They are not used to determine if a specific industrial facility is in compliance with their air permit or to measure a facility's emissions. The AQD does not operate any air monitoring stations in Shiawassee County. There are monitoring stations in Clinton County to the West, and a monitoring station in Genesee County to the East. The Clinton County station measures ozone, and the Genesee County station measures ozone and PM<sub>2.5</sub>.

### Pollutant Emissions

The following table provides the estimated total maximum potential emissions for each regulated pollutant from the proposed project:

**Table 1: EMISSION SUMMARY**

Pollutant	Potential Emissions, tons per year (tpy)
VOCs	33.6
Hazardous Air Pollutants (HAPs)	
• Styrene	15.8
• All other HAPs	3
• Total HAPs (Styrene + other HAPs)	18.8
Acetone	10.0

The potential emissions of all other regulated pollutants are expected to be negligible.

Crest Marine's potential to emit (PTE) of each regulated pollutant will be below 250 tpy. Therefore, the facility would not be considered a major source subject to the Prevention of Significant Deterioration (PSD) Regulations in Part 18 of the Michigan Air Pollution Control Rules. As the PTE of each regulated pollutant will be below 100 tpy, and the facility will be located in an area in attainment for all regulated pollutants, the facility would also not be considered a major source subject to the Nonattainment New Source Review Regulations in Part 19 of the Michigan Air Pollution Control Rules.

Under this permit action, the proposed facility would become a major source under Title 40 of the Code of Federal Regulations (CFR) Parts 63 and 70 for its PTE of styrene, which is a HAP. The major source thresholds for HAPs are greater than 10 tpy of any individual HAP, or 25 tpy of total combined HAPs. The application is requesting over 10 tpy of styrene emissions.

## Pollutant Emissions

The primary pollutant emitted from reinforced plastic (fiberglass) production facilities is styrene, which is a HAP. To minimize emissions and reduce potential odors from the facility, the proposed permit contains material, operational, and equipment restrictions. These restrictions include a styrene content limit in materials as applied; handling materials in a manner to minimize fugitive emissions; and capturing and storing waste materials properly to minimize fugitive emissions. Additionally, the proposed permit requires Crest Marine to implement and maintain a nuisance minimization plan (NMP) for odors. The NMP will include procedures for minimizing the release of odors to the outside air, address any odor complaints, and procedures for corrective action to address any odor issues.

Odors are regulated by Michigan Air Pollution Rule R 336.1901, which prohibits the emission of air contaminants that causes an unreasonable interference with the comfortable enjoyment of life and property. The permit application was reviewed following the [Air Quality Division Policy and Procedure \(AQD-021\) Application of Rule 901\(b\) in the Permit to Install Review Process](#).

## Key Permit Review Issues

Staff evaluated the facility to identify all state rules and federal regulations which are, or may be, applicable. The tables in Appendix 1 summarize those rules and regulations.

- **Federal NESHAP Regulations**

National Emission Standards for Hazardous Air Pollutants (NESHAP) were established under 40 CFR Part 61 or Part 63. The proposed facility would manufacture boats and FRP composite parts. Thus, this facility will be subject to the NESHAP in [40 CFR Part 63 Subpart VVVV](#) for Boat Manufacturing; and the NESHAP in [40 CFR Part 63 Subpart WWWW](#) for Reinforced Plastic Composites Production.

These regulations apply to new and existing boat manufacturing and reinforced plastic composites production facilities which are major sources of HAP emissions. Recordkeeping, emission limits and operational practices are the main requirements of these NESHAP. Specific requirements related to the regulations are included in the proposed permit.

A Risk and Technology Review (RTR) conducted by the USEPA evaluated the risk of HAP emissions from facilities operating under these NESHAP. The RTR determined the requirements of the NESHAP provide an ample margin of safety to protect public health.

- **Rule 224 T-BACT Analysis**

Michigan Air Pollution Control Rule R 336.1224 requires Best Available Control Technology (BACT) for toxic air contaminants (TACs), referred to as T-BACT. However, the requirements of Rule 224 do not apply to TACs that are VOCs and are in compliance with VOC BACT.

The only non-VOC TAC subject to T-BACT review is acetone from clean-up operations at the proposed facility. The proposed permit contains an acetone emission limit of 10.0 tpy as well as process and operational restrictions on the use and storage of the acetone cleaning solvent. Add-on control of the proposed 10.0 tpy of acetone emissions was determined to not be cost effective. The restrictions in the proposed permit meets the requirements of T-BACT for the proposed process.

- **Rule 225 Toxics Analysis**

EGLE Air Pollution Control Rules require that the ambient air concentration of TACs be compared against their respective health-based screening levels. These screening levels are defined as concentrations measured in micrograms per cubic meter with specific averaging times of 1-hour, 8-hour, 24-hour, and/or annual averaging.

An RTR was completed for NESHAP VVVV and WWWW; and was promulgated by the USEPA on March 20, 2020. The RTR determined that the NESHAP provides an ample margin of safety to protect public health. All of Crest Marine's proposed emission units, except for EUADHESIVE, will be subject to these NESHAP and will have to comply with their requirements. Per Rule 225, HAP emissions from emission units subject to NESHAPs are not evaluated under Michigan's Air Toxic rules since potential health impacts from the HAP emissions were already reviewed under the RTR.

The TAC emissions that were subject to review under Rule 225 are all of the emissions from EUADHESIVE as well as all non-HAP VOCs and acetone from the other emission units. These emissions were evaluated using the Allowable Emission Rate Methodology of Rule 227(1)(a) and were found to meet their respective screening levels and comply with the requirements of Rule 225.

- **Rule 702 VOC Emissions**

This rule requires an evaluation of the following four items to determine what will result in the lowest maximum allowable emission rate of VOCs:

- a) BACT or a limit listed by the Department on its own initiative.
- b) New Source Performance Standards.
- c) VOC emission rate specified in another permit.
- d) VOC emission rate specified in the Part 6 rules for existing sources.

An evaluation of these four items determined that a VOC BACT limit (Rule 702) analysis would dictate the lowest maximum allowable emission rate of VOCs from the proposed facility. Per that evaluation, the following requirements were placed in the proposed permit to meet BACT:

- VOC emission limits;
- Material limits on the allowable styrene and methyl methacrylate content of resins and gelcoats used;
- Operational requirements for proper storage and handling of materials;
- Equipment requirements specifying which equipment can be used for applying different resins and gelcoats.

Crest Marine also submitted a BACT cost analysis with the application evaluating if the installation of add-on control equipment such as a catalytic oxidizer, recuperative thermal oxidizer, or a regenerative thermal oxidizer would be cost effective. The AQD reviewed this analysis and agreed with the conclusion that it would not be cost effective to install control equipment for the proposed project.

- **Criteria Pollutants Modeling Analysis**

Modeling analyses for criteria pollutants are typically done using a computer simulation program that predicts where impacts for pollutants could occur using several variables. As VOCs have no respective NAAQS or PSD increment, modeling is not performed for them. The proposed emissions for all other criteria pollutants are below their respective significant emission rate (SER) for regulated New Source Review pollutants. Following the AQD's [Dispersion Modeling Guidance for Federally Regulated Pollutants AQD-22](#), the project is considered a Minor SER greenfield. As such, emissions are not anticipated to interfere with the NAAQS or PSD increment.

## Key Aspects of Draft Permit Conditions

- **Emission Limits (By Pollutant)**

The proposed permit includes emission limits for the following pollutants:

- VOCs: 33.6 tpy (based on a 12-month rolling time period as determined at the end of each calendar month).
- Acetone: 10.0 tpy (based on a 12-month rolling time period as determined at the end of each calendar month).

- **Material Limits**

The proposed permit includes the following material limits for resins:

Material	Limit
Open Molding Resins	Maximum 32.0% styrene by weight
RTM Resins	Maximum 40.0% styrene by weight

The proposed permit includes the following material limits for gelcoats:

Material	Maximum VOC Content (wt %) based on 12-month calendar average
Pigmented gelcoats	33
Clear gelcoats	48
Tooling gelcoats	40

- **Process/Operational Restrictions**

The proposed permit includes the following process/operational restrictions:

- All waste materials shall be captured and stored in closed containers. Waste materials shall be disposed of in an acceptable manner and in compliance with all applicable state rules and federal regulations.
- All spent filters shall be disposed in a manner which minimizes the introduction of air contaminants to the outer air.

- All VOC and/or HAPs containing materials shall be handled in a manner to minimize the generation of fugitive emissions. All containers be kept covered at all times except when operator access is necessary.
- No later than 45 days after permit issuance am NMP for odors shall be submitted, implemented, and maintained.
- **Design/Equipment Parameters**

The proposed permit requires the use of the following application methods:

  - Resin application using mechanical non-atomized applicators.
  - Gelcoat application using mechanical (atomizing and non-atomized) applicators.
- **Recordkeeping Requirements**

The proposed permit includes the following monthly recordkeeping to demonstrate compliance with all of the other requirements:

  - The identity and amount of each material used and reclaimed.
  - The VOC, styrene, methyl methacrylate and acetone content of each material used.
  - Emission calculations.
- **Federal Regulations**

The proposed production of fiberglass boats is subject to NESHAP 40 CFR Part 63 Subpart VVVV for Boat Manufacturing; and the proposed production of FRP parts is subject to NESHAP 40 CFR Part 63 Subpart WWWW for Reinforced Plastic Composites Production. The emission limits from each NESHAP are included in the proposed permit along with operational, testing, recordkeeping, and reporting requirements.

## Conclusion

Based on the analyses conducted to date, AQD staff concludes that the proposed project would comply with all applicable state and federal air quality requirements. AQD staff also concludes that this project, as proposed, would not violate the federal NAAQS or the state and federal PSD Increments.

Based on these conclusions, a proposed permit with terms and conditions which would ensure the proposed facility design and operation are enforceable was developed. The proposed permit includes sufficient monitoring, recordkeeping, and reporting to determine compliance with applicable rules and regulations. If the permit application is deemed approvable, the delegated decision maker may determine a need for additional or revised conditions to address issues raised during the public participation process.

If you would like additional information about this proposal, please contact Jeff Khaled, AQD, at 517-582-5117 or [KhaledJ@Michigan.gov](mailto:KhaledJ@Michigan.gov).

**Appendix 1  
STATE AIR REGULATIONS**

State Rule	Description of State Air Regulations
R 336.1201	Requires an Air Use Permit for new or modified equipment that emits, or could emit, an air pollutant or contaminant. However, there are other rules that allow smaller emission sources to be installed without a permit (see Rules 336.1279 through 336.1290 below). Rule 336.1201 also states that the Department can add conditions to a permit to assure the air laws are met.
R 336.1205	Outlines the permit conditions that are required by the federal Prevention of Significant Deterioration (PSD) Regulations and/or Section 112 of the Clean Air Act. Also, the same types of conditions are added to their permit when a plant is limiting their air emissions to legally avoid these federal requirements. (See the Federal Regulations table for more details on PSD.)
R 336.1224	New or modified equipment that emits toxic air contaminants must use the Best Available Control Technology for Toxics (T-BACT). The T-BACT review determines what control technology must be applied to the equipment. A T-BACT review considers energy needs, environmental and economic impacts, and other costs. T-BACT may include a change in the raw materials used, the design of the process, or add-on air pollution control equipment. This rule also includes a list of instances where other regulations apply and T-BACT is not required.
R 336.1225 to R 336.1232	The ambient air concentration of each toxic air contaminant emitted from the project must not exceed health-based screening levels. Initial Risk Screening Levels (IRSL) apply to cancer-causing effects of air contaminants and Initial Threshold Screening Levels (ITSL) apply to non-cancer effects of air contaminants. These screening levels, designed to protect public health and the environment, are developed by Air Quality Division toxicologists following methods in the rules and USEPA risk assessment guidance.
R 336.1279 to R 336.1291	These rules list equipment to processes that have very low emissions and do not need to get an Air Use permit. However, these sources must meet all requirements identified in the specific rule and other rules that apply.
R 336.1301	Limits how air emissions are allowed to look at the end of a stack. The color and intensity of the color of the emissions is called opacity.
R 336.1331	The particulate emission limits for certain sources are listed. These limits apply to both new and existing equipment.
R 336.1370	Material collected by air pollution control equipment, such as dust, must be disposed of in a manner, which does not cause more air emissions.
R 336.1401 and R 336.1402	Limit the sulfur dioxide emissions from power plants and other fuel burning equipment.
R 336.1601 to R 336.1651	Volatile organic compounds (VOCs) are a group of chemicals found in such things as paint solvents, degreasing materials, and gasoline. VOCs contribute to the formation of smog. The rules set VOC limits or work practice standards for existing equipment. The limits are based upon Reasonably Available Control Technology (RACT). RACT is required for all equipment listed in Rules 336.1601 through 336.1651.
R 336.1702	New equipment that emits VOCs is required to install the Best Available Control Technology (BACT). The technology is reviewed on a case-by-case basis. The VOC limits and/or work practice standards set for a particular piece of new equipment cannot be less restrictive than the Reasonably Available Control Technology limits for existing equipment outlined in Rules 336.1601 through 336.1651.
R 336.1801	Nitrogen oxide emission limits for larger boilers and stationary internal combustion engines are listed.
R 336.1901	Prohibits the emission of an air contaminant in quantities that cause injurious effects to human health and welfare, or prevent the comfortable enjoyment of life and property. As an example, a violation may be cited if excessive amounts of odor emissions were found to be preventing residents from enjoying outdoor activities.
R 336.1910	Air pollution control equipment must be installed, maintained, and operated properly.

State Rule	Description of State Air Regulations
R 336.1911	When requested by the Department, a facility must develop and submit a malfunction abatement plan (MAP). This plan is to prevent, detect, and correct malfunctions and equipment failures.
R 336.1912	A facility is required to notify the Department if a condition arises which causes emissions that exceed the allowable emission rate in a rule and/or permit.
R 336.2001 to R 336.2060	Allow the Department to request that a facility test its emissions and to approve the protocol used for these tests.
<p data-bbox="180 459 358 674"><b>R 336.2801 to R 336.2804 Prevention of Significant Deterioration (PSD) Regulations</b></p> <p data-bbox="180 705 358 825"><b>Best Available Control Technology (BACT)</b></p>	<p data-bbox="397 430 1459 550">The PSD rules allow the installation and operation of large, new sources and the modification of existing large sources in areas that are meeting the National Ambient Air Quality Standards (NAAQS). The regulations define what is considered a large or significant source, or modification.</p> <p data-bbox="397 569 1459 688">In order to assure that the area will continue to meet the NAAQS, the permit applicant must demonstrate that it is installing the BACT. By law, BACT must consider the economic, environmental, and energy impacts of each installation on a case-by-case basis. As a result, BACT can be different for similar facilities.</p> <p data-bbox="397 707 1459 850">In its permit application, the applicant identifies all air pollution control options available, the feasibility of these options, the effectiveness of each option, and why the option proposed represents BACT. As part of its evaluation, the Air Quality Division verifies the applicant's determination and reviews BACT determinations made for similar facilities in Michigan and throughout the nation.</p>
R 336.2901 to R 336.2903 and R 336.2908	<p data-bbox="397 863 1459 1129">Applies to new "major stationary sources" and "major modifications" as defined in R 336.2901. These rules contain the permitting requirements for sources located in nonattainment areas that have the potential to emit large amounts of air pollutants. To help the area meet the NAAQS, the applicant must install equipment that achieves the Lowest Achievable Emission Rate (LAER). LAER is the lowest emission rate required by a federal rule, state rule, or by a previously issued construction permit. The applicant must also provide emission offsets, which means the applicant must remove more pollutants from the air than the proposed equipment will emit. This can be done by reducing emissions at other existing facilities.</p> <p data-bbox="397 1148 1459 1228">As part of its evaluation, the AQD verifies that no other similar equipment throughout the nation is required to meet a lower emission rate and verifies that proposed emission offsets are permanent and enforceable.</p>

### FEDERAL AIR REGULATIONS



Citation	Description of Federal Air Regulations or Requirements
<p><b>Section 109 of the Clean Air Act – National Ambient Air Quality Standards (NAAQS)</b></p>	<p>The United States Environmental Protection Agency has set maximum permissible levels for seven pollutants. These NAAQS are designed to protect the public health of everyone, including the most susceptible individuals, children, the elderly, and those with chronic respiratory ailments. The seven pollutants, called the criteria pollutants, are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter less than 10 microns (PM10), particulate matter less than 2.5 microns (PM2.5), and sulfur dioxide (SO<sub>2</sub>). Portions of Michigan are currently non-attainment for either ozone or SO<sub>2</sub>. Further, in Michigan, State Rules 336.1225 to 336.1232 are used to ensure the public health is protected from other compounds.</p>
<p><b>40 CFR 52.21 – Prevention of Significant Deterioration (PSD) Regulations</b></p> <p><b>Best Available Control Technology (BACT)</b></p>	<p>The PSD regulations allow the installation and operation of large, new sources and the modification of existing large sources in areas that are meeting the NAAQS. The regulations define what is considered a large or significant source, or modification.</p> <p>In order to assure that the area will continue to meet the NAAQS, the permit applicant must demonstrate that it is installing BACT. By law, BACT must consider the economic, environmental, and energy impacts of each installation on a case-by-case basis. As a result, BACT can be different for similar facilities.</p> <p>In its permit application, the applicant identifies all air pollution control options available, the feasibility of these options, the effectiveness of each option, and why the option proposed represents BACT. As part of its evaluation, the Air Quality Division verifies the applicant's determination and reviews BACT determinations made for similar facilities in Michigan and throughout the nation.</p>
<p><b>40 CFR 60 – New Source Performance Standards (NSPS)</b></p>	<p>The United States Environmental Protection Agency has set national standards for specific sources of pollutants. These New Source Performance Standards (NSPS) apply to new or modified equipment in a particular industrial category. These NSPS set emission limits or work practice standards for over 60 categories of sources.</p>
<p><b>40 CFR 63— National Emissions Standards for Hazardous Air Pollutants (NESHAP)</b></p>	<p>The United States Environmental Protection Agency has set national standards for specific sources of pollutants. The National Emissions Standards for Hazardous Air Pollutants (NESHAP) (a.k.a. Maximum Achievable Control Technology (MACT) standards) apply to new or modified equipment in a particular industrial category. These NESHAPs set emission limits or work practice standards for over 100 categories of sources.</p>
<p><b>Section 112 of the Clean Air Act</b></p> <p><b>Maximum Achievable Control Technology (MACT)</b></p> <p><b>Section 112g</b></p>	<p>In the Clean Air Act, Congress listed 189 compounds as Hazardous Air Pollutants (HAPS). For facilities which emit, or could emit, HAPS above a certain level, one of the following two requirements must be met:</p> <ol style="list-style-type: none"> <li>1) The United States Environmental Protection Agency has established standards for specific types of sources. These Maximum Achievable Control Technology (MACT) standards are based upon the best-demonstrated control technology or practices found in similar sources.</li> <li>2) For sources where a MACT standard has not been established, the level of control technology required is determined on a case-by-case basis.</li> </ol>

**Notes:** An "Air Use Permit," sometimes called a "Permit to Install," provides permission to emit air contaminants up to certain specified levels. These levels are set by state and federal law, and are set to protect health and

welfare. By staying within the levels set by the permit, a facility is operating lawfully, and public health and air quality are protected.

**The Air Quality Division does not have the authority to regulate noise, local zoning, property values, off-site truck traffic, or lighting.**

These tables list the most frequently applied state and federal regulations. Not all regulations listed may be applicable in each case. Please refer to the draft permit conditions provided to determine which regulations apply.