**TECHNICAL SUPPORT DOCUMENT**

**Air Discharge Permit 24-3665**
**Air Discharge Permit Application CL-3259**

**Issued: October 30, 2024**

**Fiber Glass Systems, L.P. – Ridgefield Facility**

**SWCAA ID – 0150**

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# ABBREVIATIONS

*List of Acronyms*

ACMA ......... American Composites Manufacturer's Association
ADP ............ Air Discharge Permit
AP-42 .......... EPA. *"AP-42, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources."* Fifth Edition.
AQMD ......... Air Quality Management District
ASIL............ Acceptable Source Impact Level
BACT........... Best Available Control Technology
BART .......... Best Available Retrofit Technology
CAM ........... Compliance Assurance Monitoring
CAS #........... Chemical Abstracts Service registry number
CCBM.......... Closed cavity bag molding
CFR............. Code of Federal Regulations
CR ............... Corrosion Resistant (Resin)
EPA............. U.S. Environmental Protection Agency
EU ............... Emission Unit
FIT .............. Fluid impingement technology
FRP ............. Fiberglass reinforced product
HS ............... High Strength (Resin)
HVLP........... High Volume, Low Pressure
LAER........... Lowest Achievable Emission Rate
MACT.......... Maximum Achievable Control Technology (40 CFR 61)
Mfr .............. Manufacturer
MSDS .......... Material Safety Data Sheet
NESHAP...... National Emission Standard for Hazardous Air Pollutants (40 CFR 63)
NOV............. Notice of Violation
NSPS............ New Source Performance Standard (40 CFR 60)
PSD ............. Prevention of Significant Deterioration
PV ................ Point Value
RACT........... Reasonably Available Control Technology
RCW ............ Revised Code of Washington
RTM............. Resin transfer molding
SCC.............. Source Classification Code
SDS .............. Safety Data Sheet
SQER .......... Small Quantity Emission Rate listed in WAC 173-460
Standard ....... Standard conditions of temperature, 68 °F and pressure, 29.92 inches of mercury per SWCAA 400-030(113).
SWCAA ....... Southwest Clean Air Agency
T-BACT ....... Best Available Control Technology for toxic air pollutants
TDS.............. Technical Data Sheet
TSD.............. Technical Support Document
VARTM ....... Vacuum Assisted Resin Transfer Method
WAC ............ Washington Administrative Code

*List of Units and Measures*

| | |
|---|---|
| μg | Microgram |
| $\mu g/m^3$ | Micrograms per cubic meter |
| acfm | Actual cubic feet per minute ($ft^3/min$) |
| Btu | British thermal unit |
| Btu/gal | Heat content expressed in Btu per gallon |
| dscf | Dry standard cubic foot |
| dscm | Dry standard cubic meter, also $Nm^3$, dry |
| g/dscm | Grams per dry Standard cubic meter |
| gr/dscf | Grains per dry Standard cubic foot |
| hp | Horsepower |
| Mg | Megagram, also metric ton |
| MMBtu | Million Btu |
| MMcf | Million cubic feet |
| ppm | Parts per million |
| ppmv | Parts per million by volume |
| ppmvd | Parts per million by volume, dry |
| ppmw | Parts per million by weight |
| psi | Pounds per square inch |
| psig | Pounds per square inch, gage pressure |
| tpy | Tons per year |

*List of Chemical Symbols, Formulas, and Pollutants*

| | |
|---|---|
| $C_3H_8$ | Propane |
| $CH_4$ | Methane |
| CO | Carbon monoxide |
| $CO_2$ | Carbon dioxide |
| $CO_2e$ | Carbon dioxide, equivalent |
| DMP | Dimethylphthalate |
| HAP | Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act |
| MEKP | Methyl ethyl ketone peroxide |
| MMA | Methyl methacrylate |
| $N_2O$ | Nitrous oxide |
| $NO_x$ | Nitrogen oxides |
| $O_2$ | Oxygen |
| $O_3$ | Ozone |
| PM | Particulate matter with an aerodynamic diameter <100 µm (includes both filterable PM measured by EPA Method 5 and condensable PM measured by EPA Method 202) |
| $PM_{10}$ | PM with an aerodynamic diameter ≤10 µm (includes both filterable PM measured by EPA Method 201 or 201A and condensable PM measured by EPA Method 202) |
| $PM_{2.5}$ | Particulate matter with an aerodynamic diameter ≤2.5 µm (includes both filterable PM measured by EPA Method 201 or 201A and condensable PM measured by EPA Method 202) |
| PVA | Polyvinyl alcohol |
| $SO_2$ | Sulfur dioxide |
| TAP | Toxic air pollutant pursuant to WAC 173-460 |
| TSP | Total Suspended Particulate |
| VOC | Volatile organic compound |

Terms not otherwise defined have the meaning assigned to them in the referenced regulations or the dictionary definition, as appropriate.

## 1. FACILITY IDENTIFICATION

| | |
|---|---|
| Applicant Name: | Fiber Glass Systems, L.P. – Ridgefield Facility |
| Applicant Address: | 5985 S. 6th Way, Ridgefield, WA 98642 |
| Facility Name: | Fiber Glass Systems, L.P. – Ridgefield Facility |
| Facility Address: | 5985 S. 6th Way, Ridgefield, WA 98642 |
| Contact Person: | Joe Spencer, Production Manager |
| SWCAA Identification: | 0150 |
| Primary Process: | Fiberglass Reinforced Products |
| SIC/NAICS Code: | 3089: Plastics Products, Not Elsewhere Classified<br>326199: All Other Plastics Product Manufacturing |
| Facility Classification: | Title V |

## 2. FACILITY DESCRIPTION

Fiber Glass Systems, L.P. – Ridgefield Facility (FGS) designs and manufactures fiberglass reinforced products (FRP) using multiple application methods, including open molding, closed molding, spray lay-up, chopper gun lay-up, and filament winding.

## 3. CURRENT PERMITTING ACTION

This permitting action is in response to Notice of Violation 10852 for installation of equipment without submitting an Air Discharge Permit (ADP) application. ADP Application CL-3259 dated January 10, 2024, was submitted by FGS requesting the following:

- Approval to operate an existing unpermitted Greenheck natural gas-fired air handling unit.

ADP 24-3665 will supersede ADP 21-3494 in its entirety.

## 4. PROCESS DESCRIPTION

4.a. General fiberglass reinforced product (FRP) manufacture. FGS produces composite products using FRP and wood and metal molds. Product lines include stop logs, flap gates, manholes, flumes, shelters, scum skimmers, troughs, closure kits (contact molded pipe), tank covers/bottoms, contact molded fittings (flanges, elbows, reducers), and filament wound tanks and piping. FRP molds are fabricated on-site in the Lamination Shop using patterns that are stocked by FGS or supplied by customers. The mold is sprayed with a primer and releasing agent and then sprayed with a gel coat, which provides a smooth, durable, and scratch-resistant surface. Tooling resins and a variety of core materials and fiberglass are applied after the gel coat to create a mold structure. After the mold is removed from the pattern, gel coat, fiberglass, and resin are applied to the mold to make the final product. There are several techniques that can be used to make FRP, but these techniques typically fall in one of two categories, open molding or closed molding.

Open molding is a technique where a single mold is used and the fiberglass and resin are applied to the mold, either mechanically or by hand, to manufacture the final product. In hand lay-up, fiberglass and gel coat are applied to the mold using rollers and brushes. In mechanical application, resin and chopped glass are sprayed onto the mold. Chop spray-up is a mechanical application technique where, just prior to exiting the gun, strands of fiberglass fed through a chopper motor are combined with non-atomized resin as they are sprayed into the mold. If a gel coat is applied, it is applied using a high-volume low pressure (HVLP) or air-assisted airless spray gun.

Closed molding utilizes a two-piece mold where the resin is applied under vacuum or under direct pressure. Resin transfer molding (RTM) is a closed molding technique where the core material or fiberglass is placed in the molds and resin is injected into the mold under pressure. Closed Cavity Bag Molding (CCBM) is a variation of RTM that uses a reusable, flexible silicone mat as the male mold. Vacuum infusion uses a vacuum instead of direct pressure to distribute the resin in the mold. In all closed molding techniques, the mold remains closed during the curing process and the material is not exposed to the ambient air and emissions are less than open molding.

In infusion, a bottom mold is used. The mold is gel coated, then covered in core material and fiberglass mat. A "peel ply" and mesh are added, along with a perforated, or spiral cut delivery tuber, before added in the vacuum bag film. A vacuum is applied, and the resin is pulled into the mold, saturating the fiberglass, until it reaches the discharge point and is allowed to cure.

Filament winding is an open molding technique where fiberglass strand (filament) and resin are wound around a mold, which in this case consists of a cylindrical mandrel secured between two support stocks. The fiberglass stand is passed through a resin bath, which moves along the length of the winder as the mandrel turns, winding the resin-coated fiberglass at an angle until the desired tube thickness is reached. Resin-coated fiberglass strand winds around the mandrel at an angle of 10° to 90° until the desired thickness is achieved. Filament winding is sometimes supplemented with spray chop applied resin/glass.

After being cured, and depending upon product specifications, the resulting poles or pipes may be ground or sanded to make a smooth surface. Portions of poles may be ground or sanded to fit different sections together.

Facilities subject to Subpart WWWW are required to comply with lower emission limits. Compliance is achieved by utilizing resins and gel coats with a lower HAP content, by implementing emission reduction work standards, and by implementing alternative manufacturing techniques, such as closed molding.

Particulate matter (PM) is controlled using 1½″ Superior SmartMedia SM 30 filters with a manufacturer specified arrestance of 99.08%. Several areas in which FRP is being manufactured are equipped with filter banks that vertically discharge. In the current permitting action, an additional filter bank and discharge stack is being proposed for the filament winder area.

4.b. Molding and Tooling. FGS manufactures its own molds (or tools) for the fiberglass products. Mold fabrication activities include hand lay-up and spray lay-up of catalyzed resin and reinforcing material, bonding of fiberglass components, and encasement of metal or wooden support structures. Upon curing, molds are removed from patterns and used in the lamination shop. Smaller components are attached to the larger components in the assembly area using adhesives. Once bonded, the assembled parts are moved to the gutting area where additional fiberglass and resin are applied and any repairs necessary are performed.

4.c. Post-cure Oven. For some products, increased or altered impact toughness and tensile strength is necessary. A natural gas-fired oven is used for this purpose.

4.d. Sanding/Finishing. Once the products are cured and removed from the molds, many will need to have overspray removed, sanded, or defects repaired. Final products may also be spray coated, polished, or decals applied.

4.e. Space Heating. Two natural gas-fired heaters are attached to the ventilation system in the Lamination and Mold Shops to provide building heat and to condition the space for optimal curing of the resins. They are rated at 3.888 MMBtu/hr each and are internally venting. An additional 1.58 MMBtu/hr Greenheck air handling unit was approved as part of this permitting process.

4.f. Comfort Heating. Two ceiling-mounted, internally venting, radiant natural gas fired space heaters provide space heat to the Industrial Assembly Area. These two units are externally vented through a 4″ stack.

## 5. EQUIPMENT/ACTIVITY IDENTIFICATION

5.a. Lamination Shop (General). The lamination shop is divided into several areas, each with specific equipment or activities. FGS has a Frees, Inc. ventilation system that was installed to minimize worker exposure to styrene and to reduce odor. The system takes in outside air through the Weather-Rite space heaters, which heat the air as necessary for optimal resin curing, ventilate the lamination and molding areas, and then vent through the individual stacks. Ventilation through the stacks is not independently controlled. The individual stacks and the associated equipment are described below:

5.b. Mold Fabrication Shop. The Mold Fabrication Shop, also known as the "Tooling Shop", is equipped with six 1½″ Chemco T12 filter media for PM control, which has a removal efficiency of 98.30%. The area is equipped with one Glas-Craft LPA-II-AAC tooling gun.

| | |
|---|---|
| Stack ID: | Stack #4 |
| Stack Flow: | 10,000 acfm |
| Stack Height: | 44′ 4″ |
| Stack Diameter: | 34″, circular |
| Fan: | 7.5-hp fan (28″ diameter and 1,535 rpm) |

5.c. Lamination Shop, FRP Manufacture, RTM/VARTM. If some PM is created during the RTM or VARTM processes, PM in each area is controlled by six 1½″ Chemco T12 filter media, which has a removal efficiency of 98.30%. The area is vented through two stacks (Stack #1 and Stack #5). There are four Magnum Venus RTM spray guns in this area.

| | |
|---|---|
| Stack ID: | Stack #1 (south end, VARTM area) |
| Stack Flow: | 23,000 acfm |
| Stack Height: | 44′ 4″ |
| Stack Diameter: | 42″, circular |
| Fan: | 15-hp fan (36″ diameter and 1,397 rpm) |

| | |
|---|---|
| Stack ID: | Stack #5 (north end, RTM area) |
| Stack Flow: | 5,000 acfm |
| Stack Height: | 44′ 4″ |
| Stack Diameter: | 42″, circular |
| Fan: | 3-hp fan (21″ diameter and 1,851 rpm) |

5.d. Lamination Shop, Spray Lay-up/Chop Guns #1, #2, and #3. Two main chop lay-up areas (Chop Areas #1 and #2) are along the south wall of the lamination shop, separated by a wall, but open to the main shop area. PM is controlled in each area by six 1½″ Chemco T12 filter media, which has a removal efficiency of 98.30%. Each area also has a single Magnum Venus fluid impingement technology (FIT) non-atomized spray gun. The chop lay-up area (both filter banks) is vented through stack #2. A third chop lay-up gen is located across the shop and is controlled by a filter bank and exhausted through Stack #8.

| | |
|---|---|
| Stack ID: | Stack #2 |
| Stack Flow: | 20,000 acfm |
| Stack Height: | 44′ 4″ |
| Stack Diameter: | 42″, circular |
| Fan: | 15-hp fan (36″ diameter and 1,296 rpm) |

| | |
|---|---|
| Stack ID: | Stack #8 |
| Stack Flow: | 12,000 acfm |
| Stack Height: | 44′ 4″ |
| Stack Diameter: | 42″, circular |
| Fan: | 15-hp fan (36″ diameter and 1,296 rpm) |

5.e. Lamination Shop, Molding and Assembly Area. Production molds are produced on-site from patterns supplied by customers. The area is equipped with one Venus FIT, non-atomizing spray gun. This area is vented through Stack #3.

| | |
|---|---|
| Stack ID: | Stack #3 |
| Stack Flow: | 20,000 acfm |
| Stack Height: | 44′ 4″ |
| Stack Diameter: | 42″, circular |
| Fan: | 15-hp fan (36″ diameter and 1,296 rpm) |

5.f. Lamination Shop, Infusion Area. Although some assembly also takes place here, some products are manufactured using infusion molding, a closed mold technique. PM is controlled by twelve 1½″ Chemco T12 filter media, which has a removal efficiency of 98.30%. There are two Magnum Venus FIT non-atomized spray guns, one in each area. This area is vented through stack #9.

| | |
|---|---|
| Stack ID: | Stack #9 |
| Stack Flow: | 23,000 acfm |
| Stack Height: | 44′ 4″ |
| Stack Diameter: | 42″, circular |
| Fan: | 15-hp fan (36″ diameter and 1,296 rpm) |

5.g. Lamination Shop, FRP Manufacture, Gel Coat, Gel Coat Areas #1, #2, and #3. Three gel coat areas are located along the north wall. PM is controlled in each area by six 1½″ Chemco T12 filter media, which has a removal efficiency of 98.30%. Each area has a single Magnum Venus Plastics Talon spray gun. Each gel coat area is vented through an individual stack (stacks #6, #7, and #8).

| | |
|---|---|
| Stack ID: | Stack #6 |
| Stack Flow: | 12,000 acfm |
| Stack Height: | 44′ 4″ |
| Stack Diameter: | 42″, circular |
| Fan: | 15-hp fan (36″ diameter and 1,296 rpm) |

| | |
|---|---|
| Stack ID: | Stack #7 |
| Stack Flow: | 12,000 acfm |
| Stack Height: | 44′ 4″ |
| Stack Diameter: | 42″, circular |
| Fan: | 15-hp fan (36″ diameter and 1,296 rpm) |

5.h. Space Heaters – Lamination Shop. The air handling system is equipped with two natural gas-fired space heating units that are used to heat make-up air for the lamination and mold fabrication shop during the winter. The heaters are rated at 3.888 MMBtu/hr and are located along the north wall. The heaters do not vent to dedicated stacks but are generally vented through the lamination shop and mold fabrication shop stacks.

| | |
|---|---|
| Manufacturer: | Weather-Rite, LLC |
| Model Number: | TT-230 |
| Serial Number: | Unknown |
| Heat Rate: | 3.888 MMBtu/hr, each |
| Burner Manufacturer: | Unknown |
| Burner Model Number: | Unknown |
| Exhaust Flow: | 659 acfm (estimated using EPA Method 19 at 3% $O_2$) |

5.i. Filament Winders. The winders each have a winder motor (one is SM-Cyclo HM 3185 B 10 hp and the other is Baldor Reliance ZDVSNM233T 15 hp) and a carriage motor (one is Unimount 125 G401020 5 hp and the other is Baldor Reliance ZDNM3767T 5 hp). The two filament winders are 40′ long and 1″ to 96″ diameter, depending on the mandrel used. Resin is applied at approximately 150 gal/hr. The filament winder area vents through two identical stacks, equipped with a filter bank. The winders are in the Industrial Assembly Area.

| | |
|---|---|
| Stack ID: | Stack #11 |
| Stack Flow: | 16,000 acfm |
| Stack Height: | 50′ 6″ |
| Stack Diameter: | 36″, circular |
| Fan: | 15-hp fan (36″ diameter and 1,296 rpm) |

| | |
|---|---|
| Stack ID: | Stack #12 |
| Stack Flow: | 16,000 acfm |
| Stack Height: | 50′ 6″ |
| Stack Diameter: | 36″, circular |
| Fan: | 15-hp fan (36″ diameter and 1,296 rpm) |

5.j. Comfort Heaters – Industrial Assembly Area. Two identical natural gas-fired suspended infrared tube heaters are located along the roof of the Industrial Assembly Area to provide heat. These heaters vent to common stack located approximately halfway along the building ridge.

| | |
|---|---|
| Stack ID: | Stack #10 |
| Manufacturer: | W. W. Grainger Inc. |
| Model Number: | Dayton 7D847 |
| Serial Number: | 8429-1, 8429-2 |
| Heat Rate: | 0.150 MMBtu/hr, each |
| Burner Manufacturer: | Detroit Radiant |
| Burner Model Number: | 7D847 (uses the same model number) |
| Stack Flow: | 25.4 acfm, each (estimated using EPA Method 19 at 3% $O_2$) |
| Stack Temperature: | 160 °F (estimate) |
| Stack Dimensions: | 4″ diameter, circular |

5.k. Make-up Air Handling Unit – Industrial Assembly Area. A Greenheck Air Handling Unit will be used to provide heated air for optimal resin curing. The unit is located outside at the south end of the building.

| | |
|---|---|
| Manufacturer: | Greenheck |
| Model Number: | VSU-120-120-H30 |
| Serial Number: | 19222203 |
| Heat Rate: | 1.5848 MMBtu/hr |
| Flow rate: | 15,000 cfm (13,195.78 dscfm calculated) |
| Emission Certification: | American National Standards Institute (ANSI) Z84.4 |

- Carbon Dioxide – 4000 ppm
- Carbon Monoxide – 5 ppm
- Aliphatic Aldehydes – 1.0 ppm
- Nitrogen Dioxide – 0.5 ppm

5.l. Lynbar Oven. At the south end of the Finishing Shop, FGS operates a custom-made Lynbar natural gas-fired oven rated at 0.385 MMBtu/hr. The oven is set to 240 °F and is fired for approximately 40 minutes for each heat-treating session. There is no exhaust stack for the oven, although there is an intake stack.

5.m. Insignificant Emission Units. The following pieces of facility equipment have been determined to have insignificant emissions, and are not registered as emission units:

- *Small Batch Guns*. FGS has six lower capacity guns that are used for small jobs that do not necessitate the use of the higher flow guns, such as producing a single part with a customer specified resin or gel coat color not typically produced at the facility. The small batch guns have a capacity of about two quarts and are high transfer efficiency spray guns.
- *Acetone Distillation Unit*. The unit is a Finish Thompson Inc. "Little Still" (m/n LS15-E, s/n 13638D12) solvent evaporator, which is electrically operated. The still has a 15-gal capacity with a 100–320 °F temperature range and is electrically operated. The primary purpose of the distillation unit is waste reduction. When operating, the unit evaporates the acetone for collection; acetone is not emitted to the ambient air and the solids are disposed of as waste. Based on manufacturer's data there is more than 99+% recovery of solvent.
- *Evaporation Unit*. Near the acetone distillation unit, Ershigs also has a small, electrically-operated evaporation unit that is used to evaporate spent, waterborne emulsifier. The unit is an EMC Water Eater (m/n 85E, s/n 8756213) Wastewater Evaporator. It has an 85-gal capacity and can evaporate 4–6 gal/hr of water. The water in the spent emulsifier evaporates, and then exhausts to ambient air. The remaining constituents consist mostly of cured polyester resin which is collected as a solid. Collected resin from the evaporator is either disposed of as waste or ground up and reused.
- *Waterjet Table*. The waterjet is used to cut blocks of FRP into specific patterns using a garnet slurry in the water. The garnet is collected below the water surface and is not recoverable, it is disposed off-site. There does not appear to be any evidence of fugitive dust from this source (located outside), and none is expected, since the garnet is injected into the water stream.

- *Resin Storage Tanks*. A single 6,000-gal tank for bulk resin storage located in a separate portion of the Lamination Shop to the northeast (housed inside building and moderately temperature controlled). The tank is equipped with conservation vents and emergency vents; however, it does not produce any emissions to ambient air during normal operation. The large tank is filled every seven to ten days. Often 55-gallon drums are used for temporary storage for use in the Lamination Shop.

5.n. Equipment/Activity Summary.

| ID No. | Generating Equipment/Activity | Control Equipment |
|---|---|---|
| **Lamination Shop** | | |
| 1 | Hand Lay-up, Resin | Fabric Filtration |
| 2 | Hand Lay-up, Gel Coat | Fabric Filtration |
| 3 | Assembly Area/RTM (Stack #1) | Fabric Filtration |
| 4 | Spray Lay-up/Chop Gun #1 (Stack #2) | Fabric Filtration |
| 5 | Spray Lay-up/Chop Gun #2 (Stack #2) | Fabric Filtration |
| 6 | Spray Lay-up/Chop Gun #3 (Stack #8) | Fabric Filtration |
| 7 | Molding Area, Gel Coat (Stack #3) | Fabric Filtration |
| 8 | Tooling Area, Gel Coat (Stack #4) | Fabric Filtration |
| 9 | RTM/VARTM Area (Stack #5) | Fabric Filtration |
| 10 | Spray Lay-up/Gel Coat Gun #1 (Stack #6) | Fabric Filtration |
| 11 | Spray Lay-up/Gel Coat Gun #1 (Stack #7) | Fabric Filtration |
| 12 | Infusion Area, Resin (Stack #9) | Fabric Filtration |
| 13 | Weather-Rite Make-up Air Handling Unit (2 units) | Ultralow Sulfur Fuel (Natural Gas) |
| **Industrial Assembly Area** | | |
| 14 | Filament Winder #1 (Stack #11/#12) | Fabric Filtration |
| 15 | Filament Winder #2 (Stack #11/#12) | Fabric Filtration |
| 16 | Grainger Dayton Space Heaters, 2 units (Stack #10) | Ultralow Sulfur Fuel (Natural Gas) |
| 17 | Lynbar Post-Cure Oven | Ultralow Sulfur Fuel (Natural Gas) |
| 18 | Greenheck Make-up Air Handling Unit | Ultralow Sulfur Fuel (Natural Gas) |

## 6. EMISSIONS DETERMINATION

Unless otherwise specified by SWCAA, actual emissions must be determined using the specified input parameter listed for each emission unit and the following hierarchy of methodologies:
(a) Continuous emissions monitoring system (CEMS) data;
(b) Source emissions test data (EPA reference method). When source emissions test data conflicts with CEMS data for the time period of a source test, source test data must be used;

(c) Source emissions test data (other test method); and
(d) Emission factors or methodology provided in this TSD.

6.a. Lamination Shop, Filament Winders, and Mold Fabrication Shop. FRP manufacture, except for filament winding, occurs in the Lamination shop. Activities include spray and hand lay-up of resins, spray lay-up of gel coats, and closed molding. In addition, some finishing and repair work also occurs in the shop, which would include the use of coatings, putties, foams, and solvents.

The primary emissions from FRP are VOCs, HAPs, and TAPs, with smaller quantities of PM. In addition, FGS is subject to 40 CFR 63 Subpart WWWW, which has methods of determining compliance that are based upon product usage rates. Such methods generate specific or facility-wide average VOC emission rates, but do not speciate the pollutants.

*VOC, HAP, and TAP*

With some pollutant exceptions for resins and gel coats listed below, VOC, HAP, and TAP emissions are calculated using a mass balance approach, using the product usage, application method (as appropriate), and VOC, TAP, or HAP content. The Safety Data Sheet (SDS) or Technical Data Sheet (TDS) is used to determine the VOC, HAP, and TAP content in a specific product. Where a range is given, the average value may be used, unless better information is available. Emissions are determined by multiplying the mass of product used (in lb) by the percent VOC, HAP, or TAP. Such an approach would apply to resin, gel coats, surface coating products, solvents, foams, putties, or any other VOC, HAP, or TAP-containing product.

VOC, TAP, and HAP emissions from monomers (styrene [100-42-5], methyl methacrylate [80-62-6], vinyl toluene [25013-15-4], α-methyl styrene [98-83-9], methyl styrene [611-15-4, 622-97-9, and 100-80-1], chlorostyrene [1331-28-8], and diallyl phthalate [131-17-9]) are adjusted per the equations listed in Table 1, based on the individual HAP percent, the application method, and the vapor suppression factor (if applicable). A separate factor for each of the listed HAPs above, which are also listed TAPs, must be determined based on the product content of the individual HAP; total HAP is not used for emission purposes.

Table 1 lists equations for use in determining individual TAP and HAP emissions only for the monomers listed above. For example, if a monomer contains acetone, benzene, styrene, and ethylbenzene, only the styrene emissions are calculated using the Table 1 formulas and the other components must be calculated using mass balance, with no adjustment. The only exception is for closed mold processes for which there are no specific emission factors, it is assumed that 1% of any monomer is actually emitted and 99% is incorporated into the product. The input "%HAP" is the percent of the individual HAP in the resin of gel coat and "%VSE" is the vapor suppression effectiveness. Both values are entered as a decimal (e.g., 37% is entered as 0.37). For *compliance* purposes, the *maximum* value must be used, but for *emission* purposes, the *average* may be used. In some circumstances, for a conservative approach the maximum may be used. Note however, the total sum of TAPs calculated this way may exceed 100%. The vapor suppression effectiveness, if applicable, is determined from the manufacturer SDS or TDS, or calculated using the procedure listed in 40 CFR 63 Subpart WWWW Appendix A (March 20, 2020).

**TABLE 1**

| Application Method and Process Stream | HAP Criteria | HAP Emission Factor Equation (lb HAP/ton resin or gel coat) [a, b, c] |
|---|---|---|
| **(1) Open Molding,** | | |
| **(a) Manual Resin Application** | | |
| (i) Non-vapor suppressed resin | < 33% | 0.126 × %HAP × 2000 |
| | ≥ 33% | [(0.286 × %HAP) − 0.0529] × 2000 |
| (ii) Vapor suppressed resin | < 33% | 0.126 × %HAP × 2000 × [1 − (0.5 × %VSE)] |
| | ≥ 33% | [(0.286 × %HAP) − 0.0529] × 2000 × [1 − (0.5 × %VSE)] |
| (iii) Vacuum bagging/closed mold with roll out | < 33% | 0.126 × %HAP × 2000 × 0.8 |
| | ≥ 33% | [(0.286 × %HAP) − 0.0529] × 2000 × 0.8 |
| (iv) Vacuum bagging/closed mold without roll out | < 33% | 0.126 × %HAP × 2000 × 0.5 |
| | ≥ 33% | [(0.286 × %HAP) − 0.0529] × 2000 × 0.5 |
| **(b) Atomized Mechanical Resin Application** | | |
| (i) Non-vapor suppressed resin | < 33% | 0.169 × %HAP × 2000 |
| | ≥ 33% | [(0.714 × %HAP) − 0.18] × 2000 |
| (ii) Vapor suppressed resin | < 33% | 0.169 × %HAP × [1 − (0.45 × %VSE)] × 2000 |
| | ≥ 33% | [(0.714 × %HAP) − 0.18] × 2000 × [1 − (0.45 × %VSE)] |
| (iii) Vacuum bagging/closed mold with roll out | < 33% | 0.169 × %HAP × 2000 × 0.85 |
| | ≥ 33% | [(0.714 × %HAP) − 0.18) × 2000 × 0.85] |
| (iv) Vacuum bagging/closed mold without roll out | < 33% | 0.169 × %HAP × 2000 × 0.55 |
| | ≥ 33% | [(0.714 × %HAP) − 0.18) × 0.55] × 2000 |
| **(c) Non-atomized Mechanical Resin Application** | | |
| (i) Non-vapor suppressed resin | < 33% | 0.107 × %HAP × 2000 |
| | ≥ 33% | [(0.157 × %HAP) − 0.0165] × 2000 |
| (ii) Vapor suppressed resin | < 33% | 0.107 × %HAP × 2000 × [1 − (0.45 × %VSE)] |
| | ≥ 33% | [(0.157 × %HAP) − 0.0165] × 2000 × [1 − (0.45 × %VSE)] |
| (iii) Vacuum bagging/closed mold with roll out | < 33% | 0.107 × %HAP × 2000 × 0.85 |
| | ≥ 33% | [(0.157 × %HAP) − 0.0165] × 2000 × 0.85 |
| (iv) Vacuum bagging/closed mold without roll out | < 33% | 0.107 × %HAP × 2000 × 0.55 |
| | ≥ 33% | [(0.157 × %HAP) − 0.0165] × 2000 × 0.55 |

**TABLE 1**

| Application Method and Process Stream | HAP Criteria | HAP Emission Factor Equation (lb HAP/ton resin or gel coat) [a, b, c] |
|---|---|---|
| **(d) Atomized Mechanical Resin Application with Robotic or Automated Spray Control** [d] | | |
| Non-vapor suppressed resin | < 33% | 0.169 × %HAP × 2000 × 0.77 |
| | ≥ 33% | 0.77 × [(0.714 × %HAP) − 0.18] × 2000 |
| **(e) Filament Application (Resin)** [e] | | |
| (i) Non-vapor suppressed resin | < 33% | (0.184 × %HAP) × 2000 |
| | ≥ 33% | [(0.2746 × %HAP) − 0.0298] × 2000 |
| (ii) Vapor suppressed resin | < 33% | (0.12 × %HAP) × 2000 |
| | ≥ 33% | [(0.2746 × %HAP) − 0.0298] × 2000× 0.65 |
| **(f) Atomized Spray Gel Coat Application** | | |
| Non-vapor suppressed gel coat | < 33% | (0.445 × %HAP) × 2000 |
| | ≥ 33% | [(1.03646 × %HAP) − 0.195] × 2000 |
| **(g) Non-Atomized Spray Gel Coat Application** | | |
| Non-vapor suppressed gel coat | < 19% | (0.185 × %HAP) × 2000 |
| | ≥ 19% | [(0.4506 × %HAP) − 0.0505] × 2000 |
| **(h) Manual Gel Coat Application** [f] | | |
| Non-vapor suppressed gel coat [f] | < 33% | (0.126 × %HAP) × 2000 |
| | ≥ 33% | [(286 × %HAP) − 0.0529] × 2000 |
| **(2) Centrifugal Casting** [g, h] | | |
| **(a) Vented molds with heated air blown through molds** | | |
| Non-vapor suppressed resin | All | (0.558 × %HAP) × 2000 |
| **(b) Vented molds, but air vented through the molds is not heated** | | |
| Non-vapor suppressed resin | All | (0.026 × %HAP) × 2000 |

[a] The organic HAP emissions factors have units of lb organic HAP per ton of resin or gel coat applied.

[b] Percent HAP means total weight percent of organic HAP (styrene, methyl methacrylate, and any other organic HAP) in the resin or gel coat prior to the addition of fillers, catalyst, and promoters. Input the percent HAP as a decimal, i.e., 33 percent HAP should be input as 0.33, not 33.

[c] The VSE factor means the percent reduction in organic HAP emissions expressed as a decimal measured by the VSE test method of 40 CFR 63 Subpart WWWW Appendix A.

[d] This equation is based on an organic HAP emissions factor equation developed for mechanical atomized controlled spray. It may only be used for automated or robotic spray systems with atomized spray. All spray operations using handheld spray guns must use the appropriate mechanical atomized or mechanical nonatomized organic HAP emissions factor equation. Automated or robotic spray systems using nonatomized spray should use the appropriate nonatomized mechanical resin application equation.

[e] Applies only to filament application using an open resin bath. If resin is applied manually or with a spray gun, use the appropriate manual or mechanical application organic HAP emissions factor equation.

[f] Do not use this equation for determining compliance with emission limits in ADP 24-3665 Appendix A Table 2 (40 CFR 63 Subpart WWWW Table 3, in effect March 20, 2020). To determine compliance with emission limits the Permittee must treat all gel coat as if were applied as part of the gel coat spray application operations. If the Permittee applies gel coat by manual techniques only, the Permittee must

**TABLE 1**

| Application Method and Process Stream | HAP Criteria | HAP Emission Factor Equation (lb HAP/ton resin or gel coat) [a, b, c] |
|---|---|---|

treat the gel coat as if it were applied with atomized spray and use Equation 1.f. to determine compliance with the appropriate emission limits in ADP 24-3665 Appendix A Table 2 (40 CFR 63 Subpart WWWW Table 3, in effect March 20, 2020). To estimate emissions from manually applied gel coat, the Permittee may either include the gel coat quantities applied manually with the quantities applied using spray, or use this equation to estimate emissions from the manually applied portion of the gel coat.

[g] These equations are for centrifugal casting operations where the mold is vented during spinning. Centrifugal casting operations where the mold is completely sealed after resin injection are closed molding operations.

[h] If a centrifugal casting operation uses mechanical or manual resin application techniques to apply resin to an open centrifugal casting mold, the Permittee must use the appropriate open molding equation with covered cure and no rollout to determine an emission factor for operations prior to the closing of the centrifugal casting mold. If the closed centrifugal casting mold is vented during spinning, the Permittee must use the appropriate centrifugal casting equation to calculate an emission factor for the portion of the process where spinning and cure occur. If a centrifugal casting operation uses mechanical or manual resin application techniques to apply resin to an open centrifugal casting mold, and the mold is then closed and is not vented, the Permittee must treat the entire operation as open molding with covered cure and no rollout to determine emission factors.

Dimethyl phthalate (DMP) [131-11-3] has a very small, but non-zero, vapor pressure. To determine the VOC, TAP, and HAP emissions, it is assumed that DMP is emitted at a rate proportional to styrene according to the ratio of the two chemicals' vapor pressure. Haberlein cited 0.01 mm Hg for DMP and 5 mm Hg for styrene, resulting in a ratio of 0.0022. FGS is currently using the Haberlein ratio. The value should be multiplied by the corresponding Table 1 factor using the percent styrene in the resin. For products that do not contain styrene, it should be assumed that all the DMP is emitted.

Methyl ethyl ketone peroxide (MEKP) [1338-23-4] is a VOC and a listed TAP, however, MEKP is completely consumed when combined with resin and therefore is not emitted to the ambient air[1]. As such, although MEKP usage is documented, the emissions of MEKP to ambient air are assumed to be zero. As MEKP reacts with resin, small amounts of acetic acid may form, but SWCAA assumes this to be negligible.

The portion of non-volatile, solid HAPs and TAPs (e.g., iron oxide, carbon black, etc.) that are sprayed or applied into molds is assumed to be incorporated into the fiberglass product and not directly emitted to ambient air. Any overspray from the application is assumed to be particulate matter and is discussed in the next section.

> *For example*: Resin A has a production usage of 1,000 pounds, manually applied, and is not vapor suppressed. The SDS for Resin A states that it is 70% VOC, 40% styrene, 10% ethyl benzene, 5% DMP, and 2% MEKP. Based on Table 1 (adjusted to a lb/lb basis), the applicable emission factor equation is 1.a.i.

[1] Haberlein, Robert A. *Emission Factors for Liquid Organic Peroxide Catalysts used in open molding of Composites*. 1999. Engineering Environmental.

**<u>Styrene</u>**
**1,000 lb × 40% styrene = 400.0 lb styrene total**
**1.a.i. equation: EF = ((0.286 × %HAP) – 0.0529)**
**EF = ((0.286 × 0.40) – 0.0529) = 0.0615 lb styrene/lb resin**
**EF = 61.5 lb styrene/lb resin**

**1,000 lb × 0.0615 lb styrene/lb resin = 61.50 lb styrene emitted**
**(or 400.0 lb styrene total – 61.50 lb emitted = 338.5 lb styrene bound)**
**<u>Ethylbenzene</u>**
**1,000 lb × 10% ethylbenzene = 100.0 lb ethylbenzene**

**<u>DMP</u>**
**1,000 lb × 5% DMP = 50.0 lb DMP total**
**1,000 lb × 5% DMP × (0.0615 lb styrene/lb resin × 0.0022) = 0.0068 lb DMP emitted**
**(or 50.0 lb DMP total – 0.0068 lb emitted = ~50.0 lb DMP bound)**

**<u>MEKP</u>**
**1,000 lb × 2% MEKP × 0.00 = 0.00 lb MEKP emitted**

**<u>VOC, adjusted</u>**
**1,000 lb × 70% – 338.5 lb styrene, bound – 50.0 lb DMP, bound**
**= 264.5 lb VOC emitted**

*Particulate Matter*
PM is primarily emitted during spray lay-up or hand lay-up of resins and gel coats; closed molding (RTM/VARTM) is assumed to have negligible PM emissions. In correspondence dated September 11, 2007, FGS provided a method of determining a PM emission factor for resin and gel coat application. Based on direct measurement of filter mass before and after resin and gel coat application, emission factors of 0.0187 lb PM/lb gel coat and 0.0035 lb PM/lb resin were determined. This method of determining PM emission factors is not a reference method and has not been rigorously reviewed. Because the data is based on direct measurement, SWCAA accepts the data as valid for this determination. However, if an alternate method is determined to be more accurate for this source, SWCAA will reevaluate the emissions determination.

*For example:* Resin A has a production usage of 1,000 pounds and Gel Coat B has a production usage of 5,000 pounds.

**<u>Particulate Matter from Application</u>**
**1,000 lb resin/yr × 0.0035 lb PM/lb resin = 3.5 lb PM/yr**
**5,000 lb gel coat/yr × 0.0187 lb PM/lb gel coat = 93.5 lb PM/yr**

Many of the products, after curing, are sanded or ground to meet product specifications. There is a certain portion of the generated dust that could be considered PM. SWCAA assumes that a minimum of 1% of the total resin and gel coat used in production may be emitted as PM. Since the areas where sanding and grinding may occur, mostly in the Lamination Shop, have fan-induced, filtered airflow, emissions from sanding and grinding can be determined using the above assumption and the capture or control efficiency of the filters.

*For example.* Facility-wide, total resins usage is 200,000 lb and total gel coat usage is 100,000 lb. The filter media has a control efficiency of 95%.

**Particulate Matter from Grinding and Sanding**
**200,000 lb resin × 1% × (1 – 95%) = 100 lb PM**
**100,000 lb gel coat× 1% × (1 – 95%) = 50 lb PM**

Annual emissions must be determined by the methodology specified above, unless otherwise specified by SWCAA.

6.b. Weather-Rite Make-up Air Handling Units – Lamination Shop. Maximum emissions for the two make-up units are determined based upon the rated heat input of 3.888 MMBtu/hr each, maximum hours of operation (8,760 hr/yr), and a heat content of 1,020 Btu/ft³. Maximum emissions from the make-up units, combined, are calculated to be:

| Pollutant | Emission Factors lb/MMcf | lb/hr * | Emissions tpy | Source |
|---|---|---|---|---|
| $NO_x$ | 100 | 0.381 | 1.669 | AP-42 § 1.4 (7/1998) |
| CO | 84 | 0.320 | 1.403 | AP-42 § 1.4 (7/1998) |
| VOC (as $C_3H_8$) | 5.5 | 0.0210 | 0.092 | AP-42 § 1.4 (7/1998) |
| $SO_2$ | 0.6 | $2.29\times10^{-3}$ | 0.010 | AP-42 § 1.4 (7/1998) |
| PM | 7.6 | 0.0290 | 0.127 | AP-42 § 1.4 (7/1998) |
| $PM_{10}$ | 7.6 | 0.0290 | 0.127 | Assumed equal to PM |
| $PM_{2.5}$ | 7.6 | 0.0290 | 0.127 | Assumed equal to PM |
| $CO_2e$ | 119,400 | 445.0 | 1,994. | 40 CFR 98 † |
| benzene [71-43-2] | 0.0021 | $8.0\times10^{-6}$ | $3.51\times10^{-5}$ | AP-42 § 1.4 (7/1998) |
| formaldehyde [50-00-0] | 0.075 | $2.9\times10^{-4}$ | $1.25\times10^{-3}$ | AP-42 § 1.4 (7/1998) |

* The calculation assumes maximum fuel rate is 3.888 MMBtu/hr.

† The $CO_2e$ emission factor is derived from 40 CFR 98 Subpart C (11/29/2013) with base factors of 117.0 lb/MMBtu $CO_2$, 0.05512 lb/MMBtu $CH_4$, and 0.0657 lb/MMBtu $N_2O$, including by the greenhouse warming potential (GWP) multipliers of $CO_2$=1, $CH_4$=25, and $N_2O$=298.

Annual emissions must be determined by the fuel usage multiplied by the emission factors above, unless otherwise specified by SWCAA. In situations where only one gas meter for the facility is available, gas usage may be proportionally assigned to the individual emission units.

6.c. Comfort Heaters – Industrial Assembly Area. Maximum emissions for the two comfort heaters are determined based upon the rated heat input of 0.150 MMBtu/hr (each), 8,760 hr/yr operation, and a heat content of 1,020 Btu/ft³, Natural Gas Combustion. Maximum emissions from the comfort heaters, each, are calculated to be:

| Pollutant | Emission Factors lb/MMcf | lb/hr * | Emissions tpy | Source |
|---|---|---|---|---|
| $NO_x$ | 123.42 | 0.0182 | 0.0795 | Mfr data (100 ppm) † |
| CO | 75.48 | 0.0111 | 0.0486 | Mfr data (10 ppm) † |
| VOC (as $C_3H_8$) | 5.5 | $8.09\times10^{-4}$ | $3.54\times10^{-3}$ | AP-42 § 1.4 (7/1998) |
| $SO_2$ | 0.6 | $8.82\times10^{-5}$ | $3.86\times10^{-4}$ | AP-42 § 1.4 (7/1998) |
| PM | 7.6 | $1.12\times10^{-3}$ | $4.89\times10^{-3}$ | AP-42 § 1.4 (7/1998) |
| $PM_{10}$ | 7.6 | $1.12\times10^{-3}$ | $4.89\times10^{-3}$ | Assumed equal to PM |
| $PM_{2.5}$ | 7.6 | $1.12\times10^{-3}$ | $4.89\times10^{-3}$ | Assumed equal to PM |
| $CO_2e$ | 119,400 | 17.6 | 76.94 | 40 CFR 98 ‡ |
| benzene [71-43-2] | $2.1\times10^{-3}$ | $3.09\times10^{-7}$ | $1.4\times10^{-6}$ | AP-42 § 1.4 (7/1998) |
| formaldehyde [50-00-0] | 0.075 | $1.10\times10^{-5}$ | $4.8\times10^{-5}$ | AP-42 § 1.4 (7/1998) |

* The calculation assumes maximum fuel rate is 0.150 MMBtu/hr.

† Based on conversation (11/8/2021) with Detroit Radiant, the manufacture of the burner. Stated concentrations are maximums.

‡ The $CO_2e$ emission factor is derived from 40 CFR 98 Subpart C (11/29/2013) with base factors of 117.0 lb/MMBtu $CO_2$, 0.05512 lb/MMBtu $CH_4$, and 0.0657 lb/MMBtu $N_2O$, including by the greenhouse warming potential (GWP) multipliers of $CO_2$=1, $CH_4$=25, and $N_2O$=298.

Annual emissions must be determined by the fuel usage multiplied by the emission factors above, unless otherwise specified by SWCAA. In situations where only one gas meter for the facility is available, gas usage may be proportionally assigned to the individual emission units.

6.d. Greenheck Make-up Air Handling Unit – Industrial Assembly Area. Maximum emissions for the make-up air unit are determined based upon the rated heat input of 1.58 MMBtu/hr, 8,760 hr/yr operation, and a heat content of 1,020 Btu/ft³, Natural Gas Combustion. NOx and CO emissions are calculated using the ANSI standard and the exhaust flow rate provided by the manufacturer. Maximum emissions from the unit are calculated to be:

| Pollutant | Emission Factors lb/MMcf | lb/hr * | Emissions tpy | Source |
|---|---|---|---|---|
| $NO_x$ | 30.6 | 0.0475 | 0.208 | Mfr data (0.5 ppm) † |
| CO | 84 | 0.288 | 1.26 | Mfr data (5 ppm) † |
| VOC (as $C_3H_8$) | 5.5 | $8.54\times10^{-3}$ | 0.0374 | AP-42 § 1.4 (7/1998) |
| $SO_2$ | 0.6 | $7.76\times10^{-3}$ | 0.0340 | AP-42 § 1.4 (7/1998) |

| Pollutant | Emission Factors lb/MMcf | lb/hr * | Emissions tpy | Source |
|---|---|---|---|---|
| PM | 7.6 | $1.18\times10^{-3}$ | 0.052 | AP-42 § 1.4 (7/1998) |
| $PM_{10}$ | 7.6 | $1.18\times10^{-3}$ | 0.052 | Assumed equal to PM |
| $PM_{2.5}$ | 7.6 | $1.18\times10^{-3}$ | 0.052 | Assumed equal to PM |
| $CO_2e$ | 119,400 | 185 | 812.43 | 40 CFR 98 ‡ |
| benzene [71-43-2] | $2.1\times10^{-3}$ | $3.26\times10^{-6}$ | $1.43\times10^{-5}$ | AP-42 § 1.4 (7/1998) |
| formaldehyde [50-00-0] | 0.075 | $1.16\times10^{-4}$ | $5.10\times10^{-4}$ | AP-42 § 1.4 (7/1998) |

* The calculation assumes maximum fuel rate is 1.58 MMBtu/hr.

† Based on standards stated in memo dated July 17, 2023, from Philip Staszak of the Greenheck Fan Corporation.

‡ The $CO_2e$ emission factor is derived from 40 CFR 98 Subpart C (11/29/2013) with base factors of 117.0 lb/MMBtu $CO_2$, 0.05512 lb/MMBtu $CH_4$, and 0.0657 lb/MMBtu $N_2O$, including by the greenhouse warming potential (GWP) multipliers of $CO_2$=1, $CH_4$=25, and $N_2O$=298.

6.e. Lynbar Oven. Maximum emissions for the Lynbar oven are determined based upon the rated heat input of 0.382 MMBtu/hr, 8,760 hr/yr operation, a heat content of 1,020 Btu/ft³ for natural gas, and emission factors from AP-42. Maximum emissions are calculated to be:

| Pollutant | Emission Factors lb/MMcf | lb/hr * | Emissions tpy | Source |
|---|---|---|---|---|
| $NO_x$ | 100 | 0.0374 | 0.164 | AP-42 § 1.4 (7/1998) |
| CO | 84 | 0.0315 | 0.138 | AP-42 § 1.4 (7/1998) |
| VOC (as $C_3H_8$) | 5.5 | $2.06\times10^{-3}$ | 0.0090 | AP-42 § 1.4 (7/1998) |
| $SO_2$ | 0.6 | $2.25\times10^{-4}$ | 0.0010 | AP-42 § 1.4 (7/1998) |
| PM | 7.6 | $2.85\times10^{-3}$ | 0.012 | AP-42 § 1.4 (7/1998) |
| $PM_{10}$ | 7.6 | $2.85\times10^{-3}$ | 0.012 | Assumed equal to PM |
| $PM_{2.5}$ | 7.6 | $2.85\times10^{-3}$ | 0.012 | Assumed equal to PM |
| $CO_2e$ | 119,400 | 44.7 | 192.9 | 40 CFR 98 † |
| benzene [71-43-2] | 0.0021 | $7.9\times10^{-7}$ | $3.50\times10^{-6}$ | AP-42 § 1.4 (7/1998) |
| formaldehyde [50-00-0] | 0.075 | $2.8\times10^{-5}$ | $1.23\times10^{-4}$ | AP-42 § 1.4 (7/1998) |

* The calculation assumes maximum fuel rate is 0.382 MMBtu/hr.

† The $CO_2e$ emission factor is derived from 40 CFR 98 Subpart C (11/29/2013) with base factors of 117.0 lb/MMBtu $CO_2$, 0.05512 lb/MMBtu $CH_4$, and 0.0657 lb/MMBtu $N_2O$, including by the greenhouse warming potential (GWP) multipliers of $CO_2$=1, $CH_4$=25, and $N_2O$=298.

Annual emissions must be determined by the fuel usage multiplied by the emission factors above, unless otherwise specified by SWCAA. In situations where only one gas meter for the facility is available, gas usage may be proportionally assigned to the individual emission units.

6.f. Emissions Summary

| Air Pollutant | Potential to Emit (tpy) | Project Impact (tpy) |
|---|---|---|
| $NO_x$ | 3.88 | +0.22 tpy |
| CO | 4.32 | +1.28 tpy |
| VOC | 45.20 | +0.06 tpy |
| $SO_2$ | 0.074 | +0.052 tpy |
| Lead | Not Applicable | Not Applicable |
| PM | 2.53 | +0.01 |
| $PM_{10}$ | 2.53 | +0.01 |
| $PM_{2.5}$ | 2.53 | +0.01 |
| $CO_2/CO_2e$ | 5.151 | +996.52 |
| $NH_3$ | Not Applicable | Not Applicable |
| $H_2S$ | Not Applicable | Not Applicable |
| $O_3$ | Not Applicable | Not Applicable |

| Toxic/Hazardous Air Pollutant | Potential to Emit (tpy) | Project Impact (tpy)* |
|---|---|---|
| acetone [67-64-1] | 11.050 | +0.000 |
| acetophenone [98-86-2] | — | +0.000 |
| aluminum trihydroxide [21645-51-2] | — | +0.000 |
| α-methyl styrene [98-83-9] | 0.240 | +0.000 |
| antimony pentoxide [1314-60-9] | — | +0.000 |
| benzene [71-43-2] | $7.65\times10^{-5}$ | $+1.4\times10^{-5}$ |
| p-benzoquinone [106-51-4] | — | +0.000 |
| benzoyl peroxide [94-36-0] | — | +0.000 |
| n-butyl acetate [123-86-4] | 0.027 | +0.000 |
| carbon black [1333-86-4] | $2.6\times10^{-3}$ | +0.000 |
| cobalt and compounds, total [7440-48-4] | 0.106 | +0.000 |
| cumene [98-82-8] | 0.032 | +0.000 |
| cyclohexane [110-82-7] | 0.042 | +0.000 |
| n,n-dimethylaniline [121-69-7] | 0.132 | +0.000 |
| dimethyl phthalate [131-11-3] | 2.602 | +0.000 |
| diphenylmethane4,4'-diisocyanate [101-68-8] | — | +0.000 |
| ethylbenzene [100-41-4] | 0.020 | +0.000 |
| ethylene glycol [107-21-1] | $1.0\times10^{-3}$ | +0.000 |

| Toxic/Hazardous Air Pollutant | Potential to Emit (tpy) | Project Impact (tpy)* |
|---|---|---|
| formaldehyde [50-00-0] | $3.2{\times}10^{-3}$ | $+5.1{\times}10^{-4}$ |
| n-hexane [110-54-3] | $5.6{\times}10^{-3}$ | +0.000 |
| hexane, other isomers | 0.045 | +0.000 |
| hydrogen peroxide [7722-84-1] | 0.055 | +0.000 |
| hydroquinone [123-31-9] | — | +0.000 |
| isobutyl acetate [110-19-0] | 0.014 | +0.000 |
| isopropyl alcohol [67-63-0] | 0.014 | +0.000 |
| methacrylic acid [79-41-4] | 0.109 | +0.000 |
| methanol [67-56-1] | $8.6{\times}10^{-4}$ | +0.000 |
| methyl ethyl ketone (mek) [78-93-3] | 0.355 | +0.000 |
| methyl methacrylate [80-62-6] | — | +0.000 |
| α-methyl styrene [98-83-9] | 0.982 | +0.000 |
| pentane [109-66-0] | $5.6{\times}10^{-3}$ | +0.000 |
| styrene [100-42-5] | 33.080 | +0.000 |
| toluene [108-88-3] | 0.129 | +0.000 |
| VM & P naphtha [8032-32-4] | $5.4{\times}10^{-3}$ | +0.000 |
| xylenes (m-, o-, p-isomers) [1330-20-7] | $3.7{\times}10^{-3}$ | +0.000 |

The PTE represents the maximum anticipated emission rate, based on the usage and application methods used from 2014 through 2019 allowing a 20% increase and adjusting for the removal of the spray booth and addition of the filament winders; a 25% increase was used for acetone. Note that the emissions used for comparison in ADP 09-2880 represent the facility's predicted emissions, not the PTE, and the method by which emissions were calculated in 2009 is very different from that currently. Caution should be used when comparing these numbers. Any pollutant listed as "—" represents a pollutant that the facility did emit in the past but may or may not be emitted in the future or emitted in very small quantities (2 lb/yr).

While every effort has been made to validate these numbers, the PTE represents an estimate of the types and quantities of emissions for this facility. Future types and quantities of pollutants may be different.

## 7. REGULATIONS AND EMISSION STANDARDS

Regulations have been established for the control of emissions of air pollutants to the ambient air. Regulations applicable to the proposed facility that have been used to evaluate the acceptability of the proposed facility and establish emission limits and control requirements include, but are not limited to, the following regulations, codes, or requirements. These items establish maximum emissions limits that could be allowed and are not to be exceeded for new or existing facilities.

More stringent limits are established in this Permit consistent with implementation of Best Available Control Technology (BACT):

7.a. 40 CFR 60.7 "Notification and Recordkeeping" requires that notification must be submitted to SWCAA, the delegated authority, for date construction commenced, anticipated initial startup, and initial startup. There are no New Source Performance Standards that apply to any unit at the facility; therefore, this regulation does not apply.

7.b. 40 CFR 63.7 "Performance testing requirements" requires that emission tests be conducted according to test methods approved in advance by the permitting authority and a copy of the results be submitted to the permitting authority. FGS is subject to 40 CFR 63 Subpart WWWW. This subpart does not require any additional testing; therefore, this citation in the regulation no longer applies.

7.c. 40 CFR 63.9 "Notification Requirements" requires that the delegated authority be notified when any unit subject to 40 CFR 63 begins initial startup. FGS is subject to 40 CFR 63 Subpart WWWW and a Notification of Compliance Status (NOCS) was electronically submitted to EPA's CEDRI system per § 63.9(b)(1)(ii) on January 24, 2022.

7.d. 40 CFR 63 Subpart WWWW "NESHAP for Reinforced Plastic Composites Production" [§63.5780 *et. al.*] establishes standards for reinforced plastic composites production, requires that facilities demonstrate initial and continuous compliance with the HAP emissions standards, and applies to all new and existing reinforced plastic composites production facilities that are located at a major source of HAP emissions. FGS became a major source of HAPs (styrene) under a previous permitting action; therefore, the facility is subject to this regulation.

7.e. 40 CFR 64 "Compliance Assurance Monitoring" requires the owner or operator of selected pollutant specific emission units at a major stationary source to develop and implement a monitoring plan that provides a reasonable assurance of compliance with applicable emission limitations or standards. Assuming a total resin and gel coat usage of 2,300,000 lb/yr (based on historical max plus 20%) and 1% loss as PM due to sanding and grinding, a total of 11.49 tpy PM pre-control (i.e., pre-filter bank) PTE is calculated, which is less than 100 tpy; therefore, this regulation does not apply to the facility.

7.f. 40 CFR 68 "Chemical Accident Prevention Provisions" requires affected stationary sources to compile and submit a risk management plan, as provided in §§ 68.150 to 68.185. Applicability is determined by the type and quantity of material stored at the facility. This facility does not store any chemical listed in §68.130 greater than the applicable threshold; therefore, this regulation is not applicable.

7.g. 40 CFR 70 "State Operating Permit Programs" requires facilities with site emissions of any regulated air pollutant greater than 100 tpy, any single hazardous air pollutant greater than 10 tpy, any aggregate combination of hazardous air pollutants greater than 25 tpy, or more than 100,000 tpy of $CO_2$-e to obtain a Title V permit. The facility has the potential to emit more than 10 tpy styrene; therefore, this regulation applies to the facility.

7.h. Revised Code of Washington (RCW) 70A.15.2040 empowers any activated air pollution control authority to prepare and develop a comprehensive plan or plans for the prevention, abatement, and control of air pollution within its jurisdiction. An air pollution control authority may issue such orders as may be necessary to effectuate the purposes of the Washington Clean Air Act (RCW 70A.15) and enforce the same by all appropriate administrative and judicial proceedings subject to the rights of appeal as provided in Chapter 62, Laws of 1970 Ex. Sess. This law applies to the facility.

7.i. RCW 70A.15.2210 provides for the inclusion of conditions of operation as are reasonably necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules, and regulations when issuing an ADP for installation and establishment of an air contaminant source. This law applies to the facility.

7.j. WAC 173-401 "Operating Permit Regulation" requires all major sources and other sources as defined in WAC 173-401-300 to obtain an operating permit. This regulation is not applicable because this source is not a potential major source and does not meet the applicability criteria set forth in WAC 173-401-300. The facility will emit more than 10 tpy styrene; therefore, this regulation applies to the facility.

7.k. WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" requires BACT for toxic air pollutants (T-BACT), identification and quantification of emissions of toxic air pollutants and demonstration of protection of human health and safety. The facility emits TAPs; therefore, this regulation applies to the facility.

7.l. WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for $PM_{10}$, $PM_{2.5}$, lead, $SO_2$, $NO_x$, ozone, and CO in the ambient air, which must not be exceeded. The facility emits $PM_{10}$, $PM_{2.5}$, $SO_x$, $NO_x$, and CO; therefore, certain sections of this regulation apply. The facility does not emit lead; therefore, the lead regulation section does not apply.

7.m. SWCAA 400-040 "General Standards for Maximum Emissions" requires all new and existing sources and emission units to meet certain performance standards with respect to Reasonably Available Control Technology (RACT), visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, $SO_2$, concealment and masking, and fugitive dust. This regulation applies to the facility.

7.n. SWCAA 400-040(1) "Visible Emissions" requires that emissions of an air contaminant from any emissions unit must not exceed twenty percent opacity for more than three minutes in any one hour at the emission point, or within a reasonable distance of the emission point. This regulation applies to the facility.

7.o. SWCAA 400-040(2) "Fallout" requires that emissions of PM from any source must not be deposited beyond the property under direct control of the owner(s) or operator(s) of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited. This regulation applies to the facility.

7.p. SWCAA 400-040(3) "Fugitive Emissions" requires that reasonable precautions be taken to prevent the fugitive release of air contaminants to the atmosphere. This regulation applies to the facility.

7.q. SWCAA 400-040(4) "Odors" requires any source which generates odors that may unreasonably interfere with any other property owner's use and enjoyment of their property to use recognized good practice and procedures to reduce these odors to a reasonable minimum. This source must be managed properly to maintain compliance with this regulation. This regulation applies to the facility.

7.r. SWCAA 400-040(6) "Sulfur Dioxide" requires that no person is allowed to emit a gas containing greater than 1,000 ppmd of $SO_2$, corrected to 7% $O_2$ or 12% $CO_2$ as required by the applicable emission standard for combustion sources. The facility emits $SO_2$; therefore, this regulation applies to the facility.

7.s. SWCAA 400-040(8) "Fugitive Dust Sources" requires that reasonable precautions be taken to prevent fugitive dust from becoming airborne and minimize emissions. This regulation applies to the facility.

7.t. SWCAA 400-050 "Emission Standards for Combustion and Incineration Units" requires that all provisions of SWCAA 400-040 be met, and that no person is allowed to cause or permit the emission of PM from any combustion or incineration unit greater than 0.23 $g/Nm^3_{dry}$ (0.1 gr/dscf) of exhaust gas at standard conditions. The facility has combustion units; therefore, this regulation applies to the facility.

7.u. SWCAA 400-060 "Emission Standards for General Process Units" requires that all new and existing general process units do not emit PM greater than 0.23 $g/Nm^3_{dry}$ (0.1 gr/dscf) of exhaust gas. The facility has general process units; therefore, this regulation applies to the facility.

7.v. SWCAA 400-109 "Air Discharge Permit Applications" requires that an ADP application be submitted for all new installations, modifications, changes, or alterations to process and emission control equipment consistent with the definition of "new source". Sources wishing to modify existing permit terms may submit an ADP application to request such changes. An ADP must be issued, or written confirmation of exempt status must be received, before beginning any actual construction, or implementing any other modification, change, or alteration of existing equipment, processes, or permits. This regulation applies to the facility.

7.w. SWCAA 400-110 "New Source Review" requires that SWCAA issue an ADP in response to an ADP application prior to establishment of the new source, emission unit, or modification. The new units meet the definition of a new source; therefore, this regulation applies to the facility.

7.x. SWCAA 400-113 "Requirements for New Sources in Attainment or Non-classifiable Areas" requires that no approval to construct or alter an air contaminant source will be granted unless it is evidenced that:
(1) The equipment or technology is designed and will be installed to operate without causing a violation of the applicable emission standards;
(2) BACT will be employed for all air contaminants to be emitted by the proposed equipment;
(3) The proposed equipment will not cause any ambient air quality standard to be exceeded; and
(4) If the proposed equipment or facility will emit any toxic air pollutant regulated under WAC 173-460, the proposed equipment and control measures will meet all the requirements of that Chapter.
The facility is in an area that is in attainment for PM, $NO_x$, CO, $SO_2$, and $O_3$; therefore, this regulation applies to the facility.

7.y. SWCAA 490 "Emission Standards and Controls for Sources Emitting Volatile Organic Compounds" establishes emission standards and control requirements for sources of VOC located in the Vancouver Air Quality Maintenance Area (AQMA). SWCAA 490-204 "Graphic Arts Systems" applies to printing systems including flexographic printing systems that use more than 100 tpy of VOCs as a component of ink, for the thinning of ink, cleaning of presses, press components and equipment. FGS is not located in the Vancouver AQMA; therefore, this regulation does not apply.

## 8. RACT/BACT/BART/LAER/PSD/CAM DETERMINATIONS

The proposed equipment and control systems incorporate BACT for the types and amounts of air contaminants emitted by the processes as described below:

*New BACT Determination(s)*

8.a. BACT Determination – Greenheck Make-up Air Unit. This make-up air unit is certified to meet ANSI standard Z84.4, which guarantees outlet concentrations of 5 ppm for CO and 0.5 ppm for $NO_X$. Emissions were calculated based on these concentrations and the flow rate provided by the manufacturer. $NO_X$ emissions are similar to what is emitted by a low $NO_X$ boiler. The source is required to maintain the unit in such a way to continue meeting these emission levels.

*Previous BACT Determination(s)*

8.b. BACT Determination – Filament Winders. A BACT review included thermal oxidation (TO)/regenerative thermal oxidation (RTO), carbon adsorption, wet scrubber, and the use of vapor-suppressed resins. No technology listed was determined to be technically infeasible. TO and RTO were determined to cost from $45,537 to $113,242, depending on the initial assumptions of flow and VOC concentration. Due to the variable and often low VOC concentration, this option was not cost effective. Carbon adsorption was determined to cost $54,000 per ton of control and was not cost effective. Both options assumed up to 95% control. Water scrubber with a VOC-additive (Ecosorb 206®) was considered, both as a VOC and odor control option. Estimated control efficiency was 70–84%, based on the literature. Cost was determined to be from $149,000 to $176,000 per ton of VOC removed and was not cost effective. The use of vapor-suppressed resins was feasible for some products. However, not all resins and gel coats can be vapor-suppressed, depending upon the physical characteristics of the final product since vapor suppression may affect the strength, hardness, or other parameters of the product. For some products and application vapor-suppression meets the definition of BACT on a case-by-case basis. For others, the use of good work practices meets the definition of BACT.

8.c. BACT Determination – General FRP manufacture. A BACT review included high transfer efficiency equipment, good work practices, biofiltration, thermal oxidation, and carbon adsorption systems. Previous permitting actions have determined that the use of high transfer efficiency resin application equipment, low VOC resins/gel coats, vapor suppressed resins/gel coats, low vapor pressure solvents, PM filters with high arrestance, good work practices meet the definition of BACT for this facility.

FGS has reduced the quantity of HAP emissions, and therefore many of the TAP emissions, by changing from open mold processes (e.g., hand lay-up) to closed molding (e.g., light RTM and CCBM). Emissions are further controlled through the implementation of Subpart WWWW which requires that FGS use resins with a lower HAP content and to adopt appropriate work practices designed to reduce emissions. Emissions of TAPs that are not also classified as HAPs are limited by the respective Small Quantity Emission Rate (SQER) under WAC 173-460. As such, overall facility emissions of most HAPs and TAPs from open molding processes are expected to remain the same or decrease.

8.d. BACT Determination – Space Heating. The use of combustion equipment that fires natural gas and limits visible emissions to 0% opacity or less has been determined to meet the requirements of BACT for the types and quantities of air contaminants emitted by space heaters at this facility.

8.e. Prevention of Significant Deterioration (PSD) Applicability Determination. This permitting action will not result in a potential increase in emissions equal to or greater than the PSD thresholds. Therefore, PSD review is not applicable to this action.

8.f. With some exceptions, CAM is applicable to any emissions unit with the potential to emit (pre-controlled) 100 tons per year or more of any criteria air pollutant for which an emission standard (limit) applies, and that utilizes a control device to maintain compliance with the emission standard. None of the emission units at this facility have the potential to emit, prior to controls, 100 tpy or more of any criteria air pollutant for which an emission standard applies. Assuming a total resin and gel coat usage of 2,300,000 lb/yr (based on historical max plus 20%) and 1% loss as PM due to sanding and grinding, a total of 11.49 tpy PM pre-control (i.e., pre-filter bank) PTE is calculated, which is less than 100 tpy; therefore, the requirements of the CAM program are not applicable.

## 9. AMBIENT IMPACT ANALYSIS

9.a. Criteria Air Pollutant Review. Emissions of $NO_x$, CO, PM, VOC (as a precursor to $O_3$), and $SO_2$ are emitted at levels where no adverse ambient air quality impact is anticipated.

9.b. Toxic Air Pollutant Review. The addition of a make-up air unit, as proposed in ADP Application CL-3259 will result in a small increase in TAP emissions that are well below the applicable SQER. Previously approved BACT measures at the facility will limit emissions of Class A and B toxic air pollutants to below the applicable Small Quantity Emission Rates (SQER) or Acceptable Source Impact Level (ASILs) specified in WAC 173-460, therefore, no adverse ambient air quality impact is anticipated. Past permitting actions have demonstrated that Styrene could potentially be emitted at levels above the SQER, and that analysis is presented below.

*Styrene.* Styrene is a TAP and a HAP that is present in most resins and gel coats. The properties allow the compound to polymerize, with or without external initiators, and create "polystyrene", which can be molded into a desired product. Under the July 1998 version of WAC 173-460, styrene has an SQER of 43,748 lb/yr as an annual average and an acceptable source impact level (ASIL) of 1,000 µg/m³ as a 24-hr average. Since FGS proposed an emissions increase above the SQER during ADP 21-3494, modeling was performed to demonstrate that the ASIL is being met. Modeling was completed with Lakes Environmental AERSCREEN VIEW Version 2.7.0 using building parameters (including downwash), stack parameters, and land use evaluation. Based on the results of the model, a 24-hour maximum concentration of 699 µg/m³ was determined using a maximum hourly rate of 19.773 lb/hr, which is below the 1998 ASIL; therefore, no adverse ambient air quality impact is anticipated.

Styrene also has an odor threshold range from a low of 70 µg/m³ from the World Health Organization, to a high of 1,360 ug/m³ from several sources, including EPA. Using similar inputs to the ASIL modeling, along with additional assumption concerning atmospheric stability and distance to receptors. The lowest objectional odor threshold and for almost all potential receptors in the industrial park is below the lowest odor threshold of 170 µg/m³. There are a few sources in the industrial park that are within 400 feet of the source where the modeled results for the stability class of C and D (slightly neutral to neutral stability) resulting in receptors above 170 µg/m³ but less than 210–280 µg/m³. The conclusion is that the proposed stack design will ensure that the source will not unreasonably interfere with any other property owner’s use and enjoyment of his property. Although there may be other factor that influence the perception of odor within the area, modeled results indicate that no odor impact is anticipated.

**Conclusions**

9.c. Construction and operation of a make-up air unit, as proposed in ADP Application CL-3259, will not cause the ambient air quality requirements of 40 CFR 50 "National Primary and Secondary Ambient Air Quality Standards" to be violated.

9.d. Construction and operation of a make-up air unit, as proposed in ADP Application CL-3259 will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" or WAC 173-476 "Ambient Air Quality Standards" to be violated.

9.e. Construction and operation of the Greenheck make-up air unit, as proposed in ADP Application CL-3259, will not violate emission standards for sources as established under SWCAA General Regulations Sections 400-040 "General Standards for Maximum Emissions," 400-050 "Emission Standards for Combustion and Incineration Units," and 400-060 "Emission Standards for General Process Units."

## 10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has decided to issue ADP 24-3665 in response to ADP Application CL-3259. ADP 24-3665 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

10.a. Supersession of Previous Permits. ADP 24-3665 supersedes ADP 21-3494 in its entirety. Compliance will be determined under this ADP, not previously superseded ADPs.

10.b. Emission Limits. This permitting action will establish an emission limit for the new Greenheck air handling unit. These emission limits were calculated using the manufacturer specified exhaust flow rate, Emissions standards, and 8760 hours of operation. Emission limits established as part of previous permitting actions are summarized below.

Limits were established for FRP Manufacture, due to the addition of the filament winders. Maximum usage rates for the new products, as well as for existing products, multiplied by a factor of 120% served as a basis for establishing the emission limits. A factor of 125% was used for acetone.

Because this facility is subject to 40 CFR 63 Subpart WWWW, the maximum organic HAP emission limits serve to provide a short-term (monthly) emissions limit. However, because of the complexity of these regulations, SWCAA has provided the four options of compliance and located the actual numerical limits in Appendix A for readability and to better qualify the use and application of the limits. Note that Option 3 is unique in that it calculates a weighted average emission limit, based on limits established for the application method, so cannot be specifically listed numerically.

For examples of the calculations necessary to demonstrate compliance, please see EPA's "Example Calculations for the Reinforced Plastic Composites Production NESHAP (12/2005)", which is located at *https://www.epa.gov/stationary-sources-air-pollution/national-emission-standards-hazardous-air-pollutants-reinforced-1*.

As noted previously, this process is used for determining *compliance* with the organic HAP emission limits, and although similar equations are used, *emissions* are determined separately and differently. Also, the information presented on the SDS or TDS for specific pollutants is used differently under the two methods when the content given is a range.

The VOC limit in previous permitting actions was 98 tpy and the acetone limit was 21 tpy. However, at the time that these limits were established, the facility (as Attbar) was not using closed molding techniques to a large degree. In 2008, actual emissions drastically dropped from over 60 tpy VOC to less than 15 tpy, averaging about 10–12 tpy through to current due to the use of closed molding. As such, the original limits are no longer applicable and were lowered to 45.19 tpy for VOC. A similar drop was seen for acetone after the use of the acetone still, so the new limit was set at 11.05 tpy for acetone (a slightly higher factor of 25% above the maximum rate was used).

Separate limits were set for the space heaters and the Lynbar oven. It is recognized that there is only one gas meter, however, gas usage could be partitioned according to either use or firing rate.

10.c. Operational Limits and Requirements. A condition was added that requires the permittee to monitor the differential pressure of the air supply to the Greenheck air handling unit. Additionally, an annual inspection for the Greenheck air handling unit must be completed to ensure the unit is operating according to manufacturer specifications.

General operational requirements consistent with other spray coating operations were previously established. Spray guns that have a minimum transfer efficiency of 65% are allowed. If HVLP guns are used, then the maximum air cap pressure is limited to 10 psig, which is the maximum pressure at which the spray guns are designed to operate properly.

SWCAA must be notified prior to the use of new coating or finishing materials at the facility that contain HAPs or TAPs. This notification will allow SWCAA and the Permittee to assess the potential adverse air quality impact of a process or material change. Changes that result in significant air quality impacts will require New Source Review prior to implementation.

A condition was retained to ensure that applicability of 40 CFR 63 Subpart PPPP is not triggered by limiting the use of coating for plastic parts to less than 378 L (100 gal). If the facility intends to exceed this quantity over a 12-month period, then an ADP application will need to be filed and Subpart PPPP will become applicable.

Since the use of vapor-suppressed resins and closed molding techniques could be considered BACT under certain circumstances, a requirement to document why these options are not feasible for specific products was previously implemented.

Requirements related to a new filter bank and stack characteristics for the filament winders were retained. The minimum requirements specify flow rate, stack height and diameter, and the use of a minimum 97% arrestance filters, which is consistent with the filter requirements for the Frees system.

Because the quantity of styrene that could be potentially emitted is significant, the possibility of odor complaints is also increased. SWCAA required that FGS develop and implement an Odor Management Plan to address potential complaints.

10.d. Monitoring, Recordkeeping, and Reporting Requirements. ADP 24-3665 retains monitoring and recordkeeping requirements sufficient to document compliance with applicable emission limits, ensure proper operation of approved equipment, and provide for compliance with generally applicable requirements.

Previous monitoring and recordkeeping requirements continue to be required. The organic HAP emission limits specified require that FGS collect and keep records of resin and gel coat use, HAP content, and operational requirements when meeting the emission limits. Any time FGS implements a change to the compliance option, SWCAA is required to be notified.

10.e. Emission Monitoring and Testing Requirements. There are no emissions monitoring or testing requirements proposed in this permitting action. The type of equipment being installed and the quantity of the increase of emissions does not trigger emission tested under an applicable NSPS or NESHAP.

10.f. Reporting Requirements. ADP 24-3665 retains previously established general reporting requirements for annual air emissions, upset conditions and excess emissions. Specific reporting requirements are established for coating consumption, fuel consumption, and material throughput. Emissions reports will include criteria pollutants (including VOC), HAPs, and TAPs.

## 11. START-UP AND SHUTDOWN/ALTERNATIVE OPERATING SCENARIOS/POLLUTION PREVENTION

11.a. Start-up and Shutdown Provisions. Pursuant to SWCAA 400-081 "Start-up and Shutdown", technology-based emission standards and control technology determinations must take into consideration the physical and operational ability of a source to comply with the applicable standards during start-up or shutdown. Where it is determined that a source is not capable of achieving continuous compliance with an emission standard during start-up or shutdown, SWCAA will include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during start-up or shutdown.

To SWCAA's knowledge, this facility can comply with all applicable standards during startup and shutdown.

11.b. Alternate Operating Scenarios. SWCAA conducted a review of alternate operating scenarios applicable to equipment affected by this permitting action. The permittee did not propose or identify any applicable alternate operating scenarios. Therefore, none were included in the approval conditions.

11.c. Pollution Prevention Measures. SWCAA conducted a review of possible pollution prevention measures for the facility. The use of closed molding techniques, already in place, in lieu of manual or mechanical processes significantly reduces the quantity of pollutants emitted. This facility has implemented closed molding as part of its normal operation. In addition, the use of vapor-suppressed resins and gel coats, when appropriate, also reduce VOC emissions. The facility will be implementing these measures on a case-by-case basis.

## 12. EMISSION MONITORING AND TESTING

There are no emission monitoring or testing requirements established as part of this permitting action.

## 13. FACILITY HISTORY

13.a. General History. Attbar primary business originally was the production of "Aquapod" personal watercraft. In 1994, Attbar moved from the Vancouver, WA area to the present location and began taking on larger product lines, such as truck cabs for Kenworth. ADP 96-1915 was issued for the new location after the move. A name change occurred in 2011 to Ershigs, Inc - Attbar Division. Additional products, such as camper shells, fiberglass beams, products for water and sewer lines replaced the loss of the Kenworth product line. In 2021, Ershigs was purchased by Fiber Glass Systems, LP.

13.b. Previous Permitting Actions. The following past permitting actions have been taken by SWCAA for this facility:

| Permit | Application | Date Issued | Description |
|---|---|---|---|
| 21-3494 | CL-3154 | 12/21/2021 | Approval to install and operate Filament winding for the manufacture of poles and pipes, approval to increase the styrene limit, and the approval to install an additional exhaust fan and two new exhaust stacks. |
| 09-2880 | CL-1860 | 8/31/2009 | Installation and operation of new paint mix booth and paint spray booth and establish opt-out limits of 9.0 tpy single HAP and 24.0 tpy combined HAP. |
| 07-2745 | CL-1730 | 10/25/2007 | Approval for new spray guns, closed mold processes, and establishment of requirements under 40 CFR Subparts VVVV and WWWW. Superseded by ADP 09-2880. |
| 96-1915 | CL-1095 | 9/1/1994 | Approval for relocation of an existing fiberglass products manufacturing facility. Superseded Order of Approval 91-1346. |

| Permit | Application | Date Issued | Description |
|---|---|---|---|
| 91-1346 | CL-848 | 7/1/1991 | Approved installation and operation of a spray coating booth and a curing oven at 6205 NE 63rd St., Vancouver. Superseded by Order of Approval 96-1915. |
| 83-681 | CL-489 | 5/16/1983 | Installation of spraying, sanding, grinding, and cutting operations. |
| 80-515 | CL-414 | 6/16/1980 | Approved installation and operation of particulate matter filtration unit for the control of emissions from grinding operations. Order of Approval 80-515 became invalid when the Permittee ceased operations at the Vancouver facility. |

13.c. Compliance History. The following compliance issues have been identified for this facility over the past five (5) calendar years:

| NOV | Date | Violation |
|---|---|---|
| 10852 | 10/30/2023 | Installation of a 1.58 MMBtu/hr natural gas-fired air handling unit without a permit. |
| 10317 | 7/1/2021 | Failure to pay FY2020/21 Registration Fee. |
| 10429 | 2/9/2021 | Failure to submit ADP/MACT semiannual reports for 1st and 2nd quarters of 2019. |
| 10430 | 2/9/2021 | Failure to submit ADP/MACT semiannual report for 3rd and 4th quarters of 2019. |
| 10431 | 2/9/2021 | Failure to submit ADP/MACT semiannual reports for 1st and 2nd quarters of 2020. |
| 10432 | 2/9/2021 | Failure to submit ADP/MACT semiannual report for 3rd and 4th quarters of 2020. |
| 10305 | 7/27/2020 | Failure to pay FY2019/20 Registration Fee |

## 14. PUBLIC INVOLVEMENT OPPORTUNITY

14.a. Public Notice for ADP Application CL-32599. Public notice for ADP Application CL-3259 was published on the SWCAA website for a minimum of fifteen (15) days beginning on January 31, 2024.

14.b. Public/Applicant Comment for ADP Application CL-3259. SWCAA did not receive specific comments, a comment period request, or any other inquiry from the public or the applicant regarding ADP application CL-3259. Therefore, no public comment period was provided for this permitting action.

14.c. State Environmental Policy Act. After review of the SEPA Checklist for this project, SWCAA has determined that the project does not have a probable significant impact on the environment and has issued Determination of Non-Significance 24-037. An Environmental Impact Statement is not required under RCW 43.21C.030(2)(c).