ONE CITY. ONE JACKSONVILLE.

City of Jacksonville, Florida

Neighborhoods Department
Environmental Quality Division
Ed Ball Building
214 N. Hogan St., 5th Floor
Jacksonville, FL 32202
(904) 255-7100
www.coj.net

TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Taylor Made Fiberglass, Inc.
5901 West Beaver Street
Jacksonville, Florida 32254

Taylor Made Fiberglass, Inc.
Facility ID No. 0310629

PROJECT

Project No. 0310629-001-AC
Application for Minor Source Air Construction Permit
Construction of a Polyester Resin Products Manufacturing Facility

COUNTY

Duval County, Florida

PERMITTING AUTHORITY

Neighborhoods Department
Environmental Quality Division
214 North Hogan Street, Suite 500
Jacksonville, Florida 32202

February 12, 2020

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Chapters 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations in Rule 62-204.800, F.A.C.

Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

Facility Description and Location

This permit authorizes Taylor Made Fiberglass, Inc. to construct a new polyester resin products manufacturing operation in an existing warehouse-type building. The new facility will manufacture fiberglass products such as cabs that are used to pull semi-trailers around yards, aerators for wells, generator boxes, manways for filter systems, wiper boxes for cabs, wire chase tubes for cabs, HVAC covers for cabs, and fan shrouds for cabs, using the open-molding process. The operations consist of the application of gel coat and resin containing styrene, methyl methacrylate (MMA) and other hazardous air pollutants (HAP) through the use of nonatomizing spray guns and by hand layup, as well as grinding, cutting, patching, sanding, buffing, and cleanup with acetone.

The facility building consists of a back room, a front room, a storage room, and retail space. The back room will have a three-sided spray booth and four grinding walls (filter walls with air exhaust). All five structures exhaust through individual stacks supported on the roof. The grinding walls are arranged into areas for cutting and grinding, with a chop area (application of resin and fibers using a nonatomizing chop gun) and an area to add parts to the cabs in the open floor adjacent to the grinding walls. Emissions from the chop and parts areas are exhausted through the grinding walls and spray booth. The front room has a hood that exhausts through the roof, a patching area, and a cutting area. Particulate emissions are captured in this area through the use of two portable Grizzly down-draft tables.

The typical process flow for cab fabrication is as follows. Cab molds are sprayed with gel coat in the spray booth, one at a time, and moved to the chop area to get them out of the way until all molds are sprayed. After all molds are gel coated, they are placed back in the spray booth to dry. Once dry, the gel coated molds (cabs) are moved to the chop area where resin and glass fiber is applied with a chop gun, potentially along with wood and metal pieces. The cabs may then be rolled out to remove air bubbles, then moved back to the spray booth to dry. The application of resin and glass (chop) occurs three times for each cab. Dried cabs may undergo a quick grinding to remove burrs and air bubbles between each chop. Once the third chop has dried, the cabs are moved to the pulling area until morning. The next morning the cabs are pulled from their molds, fiberglass parts are added, then undergo cutting and grinding, and then the application of gel coat to the interior of the cab. Once dried, the cabs are finished (buff, small spray patches) in the patching area in the front room. Completed cabs are stored outside to await shipping.

Hand layup of small parts occur in the front room under the hood. Small part molds are first sprayed with gel coat in the spray booth then moved to the hooded area of the front room to dry. Once dried, resin is added to fiberglass mat using a brush or roller and gallon cans of resin. The parts remain under the hood until dry, then are removed from the molds. Any cutting or grinding necessary is done on top of two Grizzly down-draft tables to collect particulate.

Taylor Made Fiberglass, Inc. will be a major source of HAP and subject to 40 CFR 63 Subpart WWWW, National Emission Standards for Hazardous Air Pollutants (NESHAP): Reinforced Plastic Composites Production. The subpart has different compliance options and the permittee may switch between compliance options, provided the proper procedures are followed as specified in the NESHAP.

Volatile organic compounds (VOC) and HAP emissions (predominately styrene) are controlled through material HAP content limitations and work practice standards stipulated in subpart WWWW. This facility will emit less than 100 tons HAP per year and therefore is not required to reduce HAP emissions using a control device.

Taylor Made Fiberglass, Inc. will be a new polyester resin products manufacturing operation, which is categorized under Standard Industrial Classification Code No. 3089. The new Taylor Made Fiberglass, Inc. facility will be located in Duval County at 5901 West Beaver Street in Jacksonville, Florida 32254. The UTM coordinates of the new facility are Zone 17, 427.879 km East, and 3355.061 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to Ambient Air Quality Standards (AAQS).

Facility Regulatory Categories

- The facility is a major source of hazardous air pollutants (HAP).
- The facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The facility is not a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.
- The facility does operate a unit subject to 40 CFR Part 63, Subpart WWWW, Nation Emission Standards for Hazardous Air Pollutants (NESHAP): Reinforced Plastic Composites Production.

Project Description

The project authorized by this permit is the construction of a new polyester resin products manufacturing facility, as described in the Facility Description and Location section.

The following new emissions units will be added by this project.

EU No.	Description
001	Polyester Resin Products Manufacturing Facility (with multiple emission points)
	EP001 Spray Booth: 3 sided; PM controlled by panel filters; 42-inch dia. stack, height 36 feet, flow 19,316 acfm.
	EP002 Grinding Wall #1: fabric wall filter; 30-inch dia. stack, height 36 feet, flow 12,753 acfm.
	EP003 Grinding Wall #2: fabric wall filter; 30-inch dia. stack, height 36 feet, flow 12,753 acfm.
	EP004 Grinding Wall #3: fabric wall filter; 30-inch dia. stack, height 36 feet, flow 12,753 acfm.
	EP005 Grinding Wall #4: fabric wall filter; 30-inch dia. stack, height 36 feet, flow 12,753 acfm.
	EP006 Hand Lay-Up Stack: 12-inch dia. stack, height 36 feet, flow 5,000 acfm.

Processing Schedule

September 27, 2019 Received the application for a minor source air pollution construction permit.

October 8, 2019 Requested additional information.

December 6, 2019 Received additional information.

December 18, 2019 Requested clarification on additional information.

January 15, 2020 Received additional information; application complete.

2. DIVISION REVIEW

This permit authorizes the construction of a polyester resin products manufacturing operation in an existing building, as described in more detail in other sections of this document. HAP, and subsequently VOC will be controlled by the emission limits and HAP content limits of 40 CFR 63 Subpart WWWW. This permit limits production to 305.0 tons/year resin and 75.0 tons/year of gel coat. The limits mentioned above will ensure that the facility remains a minor PSD source and remains below the 100 ton/year HAP emission threshold that would trigger 40 CFR 63.5805(a)(1) F.A.C., requiring a reduction in total organic HAP emissions by at least 95 percent.

Particulate matter is controlled by panel filters in the spray booth, fabric wall filters in the grinding wall and chop areas, and Grizzly down draft tables in the hand layup area. The only particulate matter regulations applicable to this facility is 62-296.320(4), General Particulate Emission Limiting Standards.

Brief Discussion of Emissions

Emission Unit (EU)	Pollutant	Actual Emissions (tons/yr)	Potential Emissions (tons/yr)	Emissions Increase (tons/yr)	Allowable Emissions (tons/yr, u.n.o.)
Facility-wide	VOC	0	46.4	46.4	N/A
	HAP	0	46.4	46.4	N/A
	PM	0	32.4	32.4	20% Opacity

- HAP includes 21.9 tpy styrene, 5.6 tpy MMA, and 18.9 tpy “other HAPs” to account for the maximum anticipated amount of unknown HAP of ≤ 5%. Emissions were calculated using the emission factors in Table 1 to 40 CFR 63 Subpart WWWW.
- VOC was calculated as 21.6 tpy in the permit application, but as all of the anticipated HAP are VOC, the PTE for VOC is equal to the PTE for HAP.

Local Requirements

This facility is subject to Chapter 360 [Environmental Regulation], Chapter 362 [Air and Water Pollution], Chapter 365 [Hazardous Regulated Substance Program], Chapter 376 [Odor Control] of the Ordinance Code of the City of Jacksonville, Title X; and Rule 1 [Final Rules with Respect to Organization, Procedure, and Practice], and Rule 2, [Air Pollution Control], JEPB.

State Requirements

This project is subject to the applicable sections of Chapter 403, F.S. and Rules 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 F.A.C.

This project is subject to the requirements of Rule 62-296.320, General Pollutant Emission Limiting Standards, F.A.C., since the project is a source of particulate matter, volatile organic compounds, and a potential source of odors.

This project is not subject to the requirements of Rule 62-296.401 through 62-296.480, Specific Emission Limiting and Performance Standards, F.A.C., since there is not an applicable source specific category in these rules.

This project is not subject to the requirements of Rule 62-296.500, Reasonably Available Control Technology (RACT) - Requirements for Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx) Emitting Facilities, F.A.C., since there is not an applicable source specific category in this rule.

This project is not subject to the requirements of Rule 62-296.700, F.A.C., Reasonably Available Control Technology (RACT) Particulate Matter, since this facility is being constructed after the applicability date.

Federal NSPS Provisions

None applicable.

Federal NESHAP Provisions

Taylor Made Fiberglass, Inc., is a major source of the HAP emissions and is therefore subject to 40 CFR 63, Subpart WWWW – National Emission Standards for Hazardous Air Pollutants: Reinforced Plastic Composites Production.

Other Draft Permit Requirements

Odor Control Provisions

Taylor Made Fiberglass, Inc. currently operates a polyester products manufacturing facility, located at 41 Spring Street in Jacksonville, Florida, permitted by 0310625-002-AF (FESOP). On July 15, 2019, the Permitting Authority amended Citation AP-19-05 (for failure to maintain records required by their permit) to include violation of Special Condition 6 of their permit, "General Pollutant Emission Limiting Standards, Objectionable Odor Prohibited" based on nine verified odor complaints. A Consent Order and Compliance Plan was agreed to which required Taylor Made Fiberglass, Inc. to come up with a solution for odor control at the existing location or relocate (they were pursuing relocation at the time due to business needs). As of January 2020, the Spring Street facility has had 31 verified odor complaints resulting from their fiberglass operations due to emissions of styrene, which has a low odor threshold. The complainant in each case has been the same adjacent business.

Rule 62-4.070(1) F.A.C. states: "A permit shall be issued to the applicant upon such conditions as the Department may direct, only if the applicant affirmatively provides the Department with reasonable assurance based on plans, test results, installation of pollution control equipment, or other information, that the construction, expansion, modification, operation, or activity of the installation will not discharge, emit, or cause pollution in contravention of Department standards or rules…". Also, Rule 62-4.070(2) F.A.C. states: "If, after review of the application and all the information, the Department determines that the applicant has not provided reasonable assurance that the construction, modification, expansion, or operation of the installation will be in accord with applicable laws or rules, including rules of approved local programs, the Department shall deny the permit.". There are two rules prohibiting objectionable odors applicable to this new facility, Rule 62-296.320(2) F.A.C. "Objectionable Odor Prohibited", and local rules in municipal code Chapter 376 "Odor Control" and JEPB Rule 1 Part VII "Procedure for Verifying Citizen Odor Complaints". With the location of the proposed new facility in close proximity to other businesses, the fact that the initial construction permit application included no discussion on controls, work practice standards, or any other odor mitigation strategy, and the history of non-compliance with the odor rules at the existing facility, the Permitting Authority (Department) did not have reasonable assurance that the facility would be able to comply the state and local rules as proposed. The Permitting Authority requested additional information, including a discussion of odor mitigation and a prediction of off-site ground-level styrene concentrations.

Taylor Made Fiberglass, Inc. employed Terracon Consultants, Inc. to model styrene emissions for the new facility (see the "Air Dispersion Modeling Report", dated January 2, 2020). Terracon modeled styrene emissions using the most recent version of AERMOD, with the following considerations:

- Hourly emissions were estimated based on the facility's anticipated daily operating schedule for each phase of the operation provided by the applicant and a report [1] discussing open molding emissions provided by the Permitting Authority.

- The Permitting Authority requested a modeling prediction of off-site concentrations greater than or equal to four times the styrene odor threshold. An odor threshold (50% detection) of 25 ppb (110 µg/m^3) was selected as the lowest of the range of the more recent tests, which ranged from 25 to 49 ppb [2]. Four times the odor threshold (4 OU or odor units, also expressed as 4 D/T or 4 dilutions to threshold) was selected because this odor level is usually considered a moderate odor and is considered an "odor level common in a city", whereas 7 OU is an "odor level sometimes considered a nuisance" [3, p. 4 Table 1].
- Terracon was asked to consider low wind conditions because odors are more prevalent in stable conditions. The AERMET adjU parameter at was set at 0.5 to account for low wind conditions.
- The air dispersion model assumed a stack height of 16 feet above the building roof, which is about as high as can reasonably be expected to be supported from the roof, according to Terracon.

AERMOD, even with the use of the adjU parameter during processing of meteorological data, tends to overpredict ground-level concentrations during stable, low wind conditions [4]. The Permitting Authority re-ran the model with the modeling files supplied by Terracon, leaving the input parameters as is, except for the addition of the alpha option LOW_WIND, with the following parameter settings as recommended in [5]: sigma-v = 0.5, minwind = 0.5, FRAN = 0.95. These changes resulted in lower maximum off-site styrene concentrations. The modeling results were then analyzed for potential off-site impact using a spreadsheet and a proprietary analysis software. A summary of an analysis of the results is presented in the following tables.

	adjU Only	**adjU+LOW_WIND**						
	All [% oper hrs]	All [% oper hrs]	Occupied [% oper hrs]	After 8am [% oper hrs]		Odor Days [% of oper days with at least 1 hour at level specified]		
				All	Occupied	All	Occupied	Occupied After 8
Max Conc [µg/m^3]	3379	2587	2144	1347	1347	2587	2144	1347
< 4 OU	53.4%	56.9%	66.8%	71.4%	77.7%	2.2%	5.2%	17.4%
< 7 OU	85.0%	88.3%	91.8%	96.7%	97.8%	30.0%	41.4%	70.2%
< 10 OU	92.6%	93.9%	96.1%	99.6%	99.8%	55.3%	66.6%	96.9%
< 15 OU	97.4%	97.9%	99.2%	100%	100%	81.3%	91.1%	100%
< 20 OU	99.6%	100%	100%			98.7%	100%	

- Occupied means property, currently occupied (business and residential), including roadways.
- Percentages in this table are based on percent of operating hours (15 hours per day, 365 days per week).

	adjU				**adjU+LOW_WIND**			
Percentile	99		98		99		98	
Level [µg/m^3]	Count	Percent	Count	Percent	Count	Percent	Count	Percent
≥ 110 (1 OU)	299	17.50	120	7.02	375	21.94	152	8.89
≥ 220 (2 OU)	129	7.55	33	1.93	135	7.9	32	1.87
≥ 440 (4 OU)	21	1.23	28	1.64	19	1.11	28	1.64
≥ 770 (7 OU)	17	0.99	1	0.06	16	0.94	1	0.06
≥ 1100 (10 OU)	3	0.18	0	0.00	2	0.12	0	0.00
≥ 1650 (15 OU)	0	0.00	0	0.00	0	0.00	0	0.00

- Count is count of all 1709 receptors over the entire modeling period of 2014-2018.
- Percentiles in this table were calculated by Breeze 3D Analyst software using all hours, including nonoperating hours.

The modeling report indicated that the spray application of gel coat in the spray booth resulted in the highest worst-case hourly emission rate at 28.3 lb/hour styrene. Gel coat operations were modeled as occurring prior to 8 am (hours 6-8 or 5 am - 8 am) and resulted in the majority of the predicted off-site ground-level concentrations above 7 OU. There were some high off-site concentrations in hour 9 (8-9 am) which appear to be due to the addition of styrene emissions from gel coated cabs drying in the chop area to the styrene emissions from the spray application of resin in this area. This is an indicator that a potential odor mitigation strategy, should off-site odor become an issue as production increases, might be to perform gel coat operations, including the drying of gel coated parts, only during hours when the neighboring businesses are not operating.

Further analysis of potential off-site odor impact could include the use of a Lagrangian air dispersion model, which may be better suited for odor modeling than a Gaussian model (i.e. AERMOD) [6] and potentially with the use of shorter averaging periods (peak to mean ratio) [7]. The Permitting Authority does not currently have the resources to perform this additional analysis.

After consideration of the odor related compliance history at the existing facility, an analysis of the results of the air dispersion modeling, the mitigation factors to be undertaken by applicant (hoods and spray booth, roof mounted stacks, performing gel coating prior to 8 am), and the remaining uncertainty of the ability of AERMOD to accurately predict potential odor impact, the Permitting Authority is including the following odor control measures in the draft construction permit.

The permittee shall implement and maintain the following odor control measures:

a. *Spray Gel Coat Application.* The application of spray gel coat is prohibited during periods when resin or gel coat is being applied by hand lay-up and/or resin is being applied by spray.

b. *Vent Fan Operation Required.* The vent fan for EP001 (Spray Booth) must be run at all times when gel coat is being spray applied and when objects are placed in the booth for drying. The vent fans for EP002 through EP005 (Grinding Walls) must be run at all times that resin is being applied in the chop area and when objects are placed in the chop area for drying. The vent fan for EP006 (Hand Lay-Up Stack) must be run at all times when resin is being applied or parts are drying in the front warehouse.

c. *Inward Air Flow Through Building Openings*. The permittee shall maintain an inward air flow through all building openings at all times when any vent fans within that portion of the building (front warehouse or back warehouse) are required to be running, at a velocity sufficient to prevent styrene odors and particulate matter from exiting the buildings.

d. *Odor Mitigation Plan*. The permittee **may** submit an Odor Mitigation Plan to the Permitting Authority for review at any time in order to modify the requirements of this special condition. The permittee **must** submit an Odor Mitigation Plan to the Permitting Authority within 15 days of being notified by the Permitting Authority that such a plan is required to mitigate off-site odors. An Odor Mitigation Plan may be required by the Permitting Authority for the following reasons:

   (1) When, in response to an odor complaint, the Permitting Authority confirms the facility as the source of off-site odors and odorous contaminants from the facility are detected off property when one (1) volume of odorous air has been diluted with seven (7) or more volumes of odor-free air, as measured by any instrument, device, or method designated by the Permitting Authority, or

   (2) When the Permitting Authority confirms the facility as the source of objectionable odor resulting from 1) complaints received from at least three (3) different businesses and/or residences within a 60-day period, or 2) at least five (5) complaints received from a single business and/or residence on five (5) separate days within a 30-day period.

At a minimum, the Odor Mitigation Plan will identify all known odor sources at the facility and all odor mitigation measures currently in use at the facility, along with additional and/or modified mitigation measures proposed by the permittee and a schedule for implementation. The approved Odor Mitigation Plan shall become a part of this permit. Submission of an Odor Mitigation Plan does not relieve the permittee from enforcement action by the Permitting Authority, including assessment of penalties.

References

[1] P. Q. R. A. Haberlein, "Technical Discussion of the Unified Emission Factors for Open Molding of Composites," Environmental Engineering Consulting Services, 1999.

[2] P. J.-S. Lee, "Styrene," Texas Commission on Environmental Quality, 2008.

[3] P. C. M. McGinley, "An Odor Index Scale for Policy and Decision Making Using Ambient and Source Odor Concentrations,"
St. Croix Sensory, Inc., 2006.

[4] UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, "Scanned Document - US EPA," 19 September 2017.
[Online]. Available:
https://www3.epa.gov/ttn/scram/models/aermod/20170919_AERMOD_Development_White_Papers.pdf.
[Accessed 22 January 2020].

[5] B. A. Paine, "Clean Air Info blog," 2 October 2019. [Online]. Available:
http://www.cleanairinfo.com/regionalstatelocalmodelingworkshop/archive/2019/12th%20Modeling%20Conference/Presentations/Panels/1-6_Low_Wind/1-6-3_12thMC-AERMOD%20Low%20Wind%20Speed%20Panel_Paine_01oct19.pdf. [Accessed 25 January 2020].

[6] D. B. Reeves, "Trinity Consultants," 4 October 2006. [Online]. Available:
https://www.trinityconsultants.com/media/technical-papers/pdf/-calpuff-in-odor-modeling--state-of-the-practice,-recent-developments-and-future-improvements,--presented-at-the-a-wma-emerging-issues-in-air-quality-modeling-canada-conference. [Accessed 22 October 2019].

[7] G. &. P. M. &. P. E. Shauberger, "Diurnal and annual variation of the sensation distance emitted by livestock buildings calculated by the Austrian odour dispersion model (AODM)," *Atmospheric Environment*, vol. 34, no. 10.1016/S1352-2310(00)00240-5, pp. 4839-4851, 2000.

3. PRELIMINARY DETERMINATION

The Permitting Authority makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. Michael C. Williams, P.E. is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at Neighborhoods Department, Environmental Quality Division, 214 North Hogan Street, Suite 500, Jacksonville, Florida 32202 or by email at mcwilliams@coj.net.