Florida Department of Environmental Protection

Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

FINAL PERMIT

PERMITTEE

AOC, L.L.C.
4620 North Galloway Road
Lakeland, FL 33810

Authorized Representative:
Mr. Michael Diehl, Plant Manager

Air Permit No. 1050099-014-AC
Permit Expires: 11/20/2013
Site Name : Lakeland Plant
Minor Air Construction Permit
Project Name: Construct a Vinyl Ester Resin Manufacturing Process

This is the final air construction permit for a vinyl ester resin manufacturing process at the existing Lakeland Plant (Standard Industrial Classification No. 2821) located in Polk County at 4620 North Galloway Road in Lakeland, Florida. The UTM coordinates are Zone 17, 400.99 km East, and 3108.85 km North. As noted in the Final Determination provided with this final permit, no changes or only minor changes and clarifications were made to the draft permit.

This final permit is organized by the following sections:

Section 1. General Information

Section 2. Administrative Requirements and Facility-wide Specific Conditions

Section 3. Emissions Unit Specific Conditions

Section 4. Appendices

Due to the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section 4 of this permit.

This air pollution permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Hillsborough County, Florida

_____ _____

Robert C. Wong Effective Date
District Air Program Administrator
Southwest District

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination, the Final Permit and the Appendices) was sent by electronic mail (or a link to these documents made available electronically on a publicly accessible server) with received receipt requested before the close of business on the date indicated below to the persons listed below.

Mr. Mike Diehl, Plant Manager
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Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

_____ _____

(Clerk) (Date)

FACILITY AND PROJECT DESCRIPTION

Existing Facility

The synthetic non-Title V resin manufacturing facility consists of the following emissions units.

ID No.	Emission Unit Description
001	28 non-NSPS Storage Tanks
002	4 Reactors, 4 Thin Tanks, 1 Mix Tank, 2 non-NSPS Finished Product Storage Tanks, Product Filter Processing Area, and Thermal Oxidizer
005	7 Mixing Tanks
006	Phthalic Anhydride Storage Tank & Maleic Anhydride Storage Tank
008	8 Miscellaneous Fugitive VOC/HAP Sources
009	3 Miscellaneous Fugitive Particulate Matter Sources

Project Description and Affected Emission Units

The project is to construct a vinyl ester resin manufacturing process. The process will include constructing a new vinyl ester reactor and two (2) new storage tanks. This project will modify the following emissions units.

ID No.	Emission Unit Description
001	30 non-NSPS Storage Tanks
002	5 Reactors, 4 Thin Tanks, 1 Mix Tank, 2 non-NSPS Finished Product Storage Tanks, Product Filter Processing Area, and Thermal Oxidizer
008	8 Miscellaneous Fugitive VOC/HAP Sources
009	3 Miscellaneous Fugitive Particulate Matter Sources

NOTE: *Please reference the Permit No., Facility ID, and Emission Unit ID in all correspondence, test report submittals, applications, etc.*

Exempt Emission Units/Activities

- Two Caterpillar Type 3512 engine-generator units with integral fuel tanks, each fired with diesel fuel oil.
  [Rule 62-210.300(a)35., F.A.C.; Since the generators were manufactured in December of 2000, they are not subject to 40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Combustion Engines. The generators are considered "existing" engines subject to 40 CFR 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Although this federal regulation is adopted by reference in Rule 62-204.800(8), F.A.C., the adopted rule does not as of the effective date of these permit address "existing" engines. The federal rule was revised to address "existing" engines on March 3, 2010, and has an effective date of May 3, 2010. The revised federal rule, as of the effective date of these permits, has not been adopted by the State of Florida.]

- Two fire pumps each fired with diesel fuel.
  [Rule 62-210.300(3)(a)15., F.A.C.; Since the fire pumps were manufactured in 1989, they are not subject to 40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Combustion Engines; The fire pumps are considered "existing" engines subject to 40 CFR 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Although this federal regulation is adopted by reference in Rule 62-204.800(8), F.A.C., the adopted rule does not as of the effective date of these permit address "existing" engines. The federal rule was revised to address "existing" engines on March 3, 2010, and has an effective date of May 3, 2010. The revised federal rule, as of the effective date of these permits, has not been adopted by the State of Florida.]

- A standby boiler fired with only natural gas at a maximum heat input rate of 5.3 MMBTU/hr.
  [Rule 62-210.300(3)(a)33., F.A.C.]

- Three fixed roof storage tanks used to store No. 2 fuel oil for the diesel powered fire pumps, yard equipment, and utility vehicles. Two of the tanks have a capacity of 550 gallons and the third tank has a 500 gallon capacity. The annual throughput of the 500 gallon tank is expected to be approximately 3,500 gals./yr. and each of the 550 gallon tanks is expected to be approximately 7,000 gal./yr. [Rule 62-210.300(3)(b)1., F.A.C.]

- Heater/Burner No. 1, which provides heat for Reactor No. 1, is fired with only natural gas at a maximum heat input rate of 3.15 MMBTU/hr. Emissions from this heater are exhausted through a common stack shared with Heater/Burner No. 2.
  [Rule 62-210.300(3)(a)34., F.A.C.]

- Heater/Burner No. 2, which provides heat for Reactor No. 2, is fired with only natural gas at a maximum heat input rate of 4.0 MMBTU/hr. Emissions from this heater are exhausted through a common stack shared with Heater/Burner No. 1.
  [Rule 62-210.300(3)(a)34., F.A.C.]

FACILITY REGULATORY CLASSIFICATION

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility has no units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is not a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is not a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.
- This facility is a synthetic non-Title V source for the pollutants volatile organic compounds (VOC) and hazardous air pollutants (HAPS). The restrictions on amount and types of resin produced, work practice requirements, and the limitations on the type and amount of material stored and processed in this permit will ensure that the facility's VOC and HAPS will be below the threshold for a Title V source.

PERMIT HISTORY/AFFECTED PERMITS
Modifies Construction Permit No. 1050099-012-AC
Cross reference with Operation Permit No. 1050099-013-AO

SECTION 2. ADMINISTRATIVE REQUIREMENTS AND FACILITY-WIDE SPECIFIC CONDITIONS (FINAL)

1. Permitting Authority: The permitting authority for this project is the Florida Department of Environmental Protection (Department), Southwest District's Air Resource Management Section. The Southwest District's mailing address and phone number is:

   Florida Department of Environmental Protection
   Southwest District Office
   Air Resource Management Section
   13051 North Telecom Parkway
   Temple Terrace, Florida 33637-0926
   Telephone: 813-632-7600

   All documents related to applications for permits shall be submitted to the above address.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Southwest District Office's Air Resource Management Section (see above mailing address and phone number).

3. Appendices: The following Appendices are attached as part of this permit:

   a. Appendix A. Citation Formats and Glossary of Common Terms;
   b. Appendix B. General Conditions;
   c. Appendix C. Common Conditions; and
   d. Appendix D. Common Testing Requirements.
   e. Appendix E. Tank Throughput Limitations;
   f. Appendix F. Material Throughput Limitations; and
   g. Appendix G. Annual Operating Report Emission Calculation Information, Grove Scientific & Engineering Company letter dated April 18, 2000

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time.
   [Rule 62-4.080, F.A.C.]

6. Modifications: Unless otherwise exempt by rule, the permittee shall not initiate any construction, reconstruction, or modification at the facility and shall not install/modify any pollution control device at the facility without obtaining prior authorization from the Department. Modification is defined as: Any physical change or changes in the method of operations or addition to a facility that would result in an increase in the actual emissions of any air pollutant subject to air regulations, including any not previously emitted, from any emission unit or facility.
   [Rules 62-210.200 - Definition of "Modification" and 62-210.300(1)(a), F.A.C.]

7. Permitted Capacity: The maximum production rate of this facility is 250,000,000 lbs of styrene and non-styrene based resin per any consecutive 12-month period of which up to 40,000,000 lbs may be non-styrene based resin.

   {Permitting Note: The above production rate limitations limit the facility's potential emissions. For emission calculation purposes, it is assumed that non-styrene based resin is 100% methylmethacrylate (MMA). So long as any other non-styrene resin monomer does not have physical parameters which make the material less dense than MMA, require more material to be processed or more volatile than MMA, i.e. a higher vapor pressure at the average liquid surface temperature (more volatile), the facility should be able to be substitute for MMA without requiring additional permitting action.}

   [Rule 62-210.200(PTE), F.A.C.; Construction Permit No. 1050099-012-AC]

8. Hours of Operation: The hours of operation for the facility are not limited (8,760 hours per year). [Construction Permit No. 1050099-012-AC]

9. Work Practice Requirement: In order to control fugitive emissions of volatile organic compounds (VOC) and organic solvents (OSs), all equipment, pipes, hoses, lids, fittings, etc. shall be operated and maintained in such a manner as to minimize leaks, fugitive emissions, and spills of solvents. [Rule 62-296.320(1), F.A.C.; Construction Permit No. 1050099-012-AC]

10. Monthly Log: A monthly log shall be kept to document compliance with the limitations of Specific Condition No. 7. The monthly log shall contain at a minimum the following:

    a. The total amount of styrene based resin produced for the month, in MMlbs.

    b. The cumulative total amount of styrene based resin produced for the most recent consecutive 12-month period, in MMlbs.

    c. The total amount of non-styrene based resin produced for the month, in MMlbs.

    d. The cumulative total amount of non-styrene based resin produced for the most recent consecutive 12-month period, in MMlbs.

    e. The combined cumulative total amount of styrene and non-styrene based resin produced for the most recent consecutive 12-month period, in MMlbs.

    The log shall be kept at the facility for at least 3 years and made available to the Department upon request. The monthly logs shall be completed by the end of the following month. Supporting documentation, such as logs, records, MSD sheets, purchase orders, etc., shall be kept which includes sufficient information to determine the styrene and non-styrene based resin production rates.

    {PERMITTING NOTE: The facility's potential emissions were calculated with the worst case operating scenarios. The facility's potential to emit is further limited by establishing facility resin

production rate limitations, tank throughput limitations as shown in Section 4. Appendix E and Appendix F., and having a minimum operating time limitation for the thermal oxidizer associated with Emission Unit No. 002.}

[Rule 62-4.070(3), F.A.C.; Construction Permit No. 1050099-012-AC]

11. Annual Operating Report: On or before **April 1** of each year, the permittee shall submit a completed DEP Form 62-210.900(5), "Annual Operating Report for Air Pollutant Emitting Facility" (AOR) for the preceding calendar year. The report may be submitted electronically in accordance with the instructions received with the AOR package sent by the Department, or a hardcopy may be sent to the Compliance Authority.
[Rule 62-210.370(3), F.A.C.]

12. Application for Non-Title V Air Operation Permit: This permit authorizes construction and initial operation of a vinyl ester resin process to determine compliance with Department rules. A Non-Title V air operation permit is required for continued operation of the process. The permittee shall apply for a Non-Title V air operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation or commencing operation of the new Vinyl Ester Reactor No. 1 (VER1) associated with the new vinyl ester manufacturing process. Commencing operation means setting into operation of any emissions unit for any purpose. To apply for a Non-Title V air operation permit, the applicant shall submit the following:

    a. the appropriate permit application form *(see current version of Rule 62-210.900, F.A.C. (Forms and Instructions), and/or FDEP Division of Air Resource Management website at: http://www.dep.state.fl.us/air/)*;

    b. the appropriate operation permit application fee from Rule 62-4.050(4)(a), F.A.C.; and

    c. copies of the most recent month of records/logs specified in Specific Condition No(s). 10., A.4., B.13., C.3., and D.4.

    The application shall be submitted to the Permitting Authority.

    [Rules 62-4.030, 62-4.050, and 62-4.220, F.A.C.]

A. EU No. 001 – 30 non-NSPS Storage Tanks; EU No. 005: 7 Mix Tanks; and EU No. 006 – Phthalic Anhydride Storage Tank & Maleic Anhydride Storage Tank

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
001	This permit authorizes the construction of Raw Material Storage Tank (RMST) Nos. 14 and 15 for the storage of Glacial Methacrylic Acid (GMAA) and Epoxy Resin, respectively. The two (2) new tanks transfer their contents to the new Vinyl Ester Reactor No. 1 (VER1), which is part of Emission Unit No. 002, and increases the number of storage tanks of this emissions unit from 28 to 30 non-NSPS Storage Tanks as listed in Section 4. Appendix E. There are a total of 20 Finished Product Storage Tanks (FPSTs), which are interconnected by the facility's piping systems through a series of transfer bullpens, three Styrene Storage Tanks, four single tanks for storing the various Glycols and one tank for storing refined Dicyclopentadiene (DCPD) which are also interconnected by piping systems. All of the FPSTs are interconnected between themselves via a series of piping bullpens in the facility's piping system. The three styrene storage tanks are interconnected directly together via the filling and emptying piping system as well as by a tank leveling piping system. Any finished product may be stored in any FPST. Note, FPST Tank Nos. 21 and 22 are part of Emission Unit No. 002, since their emissions are controlled by a thermal oxidizer at least 3,744 hours in any consecutive 12-month period. The three (3) inter-connected styrene storage tanks have a 100% nitrogen blanket. All the storage tanks receive product by railcar or truck and are not subject to 40 CFR 60, Subpart Kb – Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels), since the tanks were either constructed on or before the applicability date of July 23, 1984 or meet the exemption criteria of 40 CFR 60.110b(b).
005	This emissions unit consists of 7 Mix Tank Nos. 1, 2, 3, 4, 6, 7, and 8 as listed in Section 4. Appendix E. Note, Mix Tank No. 5 is part of Emission Unit No. 002. The mix tanks are used to mix the base resin produced in the thin tanks and stored in the FPSTs with other formulation-specific additives which may include styrene, glycols, methanol, dibasic ester, methylmethacrylate (MMA), vinyl toluene, and numerous other micro-additive ingredients, which act as promoters and inhibitors to make formulated resin prior to shipping. The tanks are used interchangeably to produce formulated resin from the base resin manufactured in the thin tanks permitted under Emission Unit No. 002 and which may be processed through the FPSTs permitted under Emission Unit Nos. 001 and 002, although typically 18% of the base resin produced in the thin tanks is transferred directly to a mix tank for final processing. Mix Tank Nos. 1, 2, 3, and 4 vent to the inside of the building and produce fugitive emissions. Mixing Tank Nos. 6, 7, and 8 vent through the roof. Fumed silica powder and/or powdered talc are added to the tanks, causing fugitive PM emissions, which are further described in Emission Unit No. 009. An inert gas blanket is maintained on all the tanks. There is no difference in the use or function between these mix tanks and the tanks are used interchangeably.

	Mix Tank No. 8 may also be used with the non-styrene based resin production process.
006	The Phthalic Anhydride Storage Tank stores molten phthalic anhydride. The tank is insulated and heated by steam to maintain a temperature of approximately 270 ^{0}F. The tank receives phthalic anhydride by truck or railcar and an inert gas blanket is maintained on the tank. Phthalic anhydride is defined as a HAP and is a solid at ambient temperature. Emissions from the storage tank are vented through a ColdBox, which is maintained at ambient temperature, before being exhausted to the atmosphere through a vent stack with a cone-style vent cap. Thus, the emissions are particulate matter. Maleic Anhydride Storage Tank, which holds molten maleic anhydride. The tank is insulated and heated by steam to maintain a temperature of approximately 160 ^{0}F. The tank receives maleic anhydride by truck or railcar. Maleic anhydride is defined as a hazardous air pollutant (HAP) and is a solid at ambient temperature, and thus the emissions are particulate matter.

PERFORMANCE RESTRICTIONS

A.1. Permitted Capacity: The emission units shall comply with the associated maximum allowable throughput rate, in gallons or pounds, for each group of tanks shown in Section 4. Appendix E.
[Rule 62-210.200(PTE), F.A.C.]

A.2. Permitted Capacity: Emission Unit No. 001 is limited to a maximum MMA throughput of 40,000,000 pounds per any consecutive 12-month period as shown in Section 4. Appendix F.
[Rule 62-210.200(PTE), F.A.C.]

A.3. Work Practice Requirement: Regarding only Emission Unit No. 006, the Phthalic Anhydride Storage Tank shall be vented to a ColdBox to control emissions of unconfined particulate matter.
[Rule 62-296.320(4)(c), F.A.C.]

{Permitting Note: Regarding only Emission Unit No. 001, the emissions from RMST No. 14 storing GMAA may be vented through an activated carbon filter before exhausting to the atmosphere and the permittee is not taking any credit for any emission reduction.}

RECORDS

A.4. Monthly Log: A monthly log shall be kept to document compliance with the limitations of Specific Condition Nos. A.1. and A.2. The monthly log shall contain at a minimum the following:

a. Facility ID No. 1050099 and the Emission Unit No. 001.

b. Month and Year.

c. The calculated total throughput in gallons or pounds (as appropriate) for each group of tanks listed in Section 4. Appendix E. for the month.

d. The calculated most recent consecutive 12-month period throughput rate, in gallons or pounds (as appropriate) for each group of tanks listed in Section 4. Appendix E.

e. The calculated throughput in pounds of MMA for Emission Unit No. 001

f. The calculated most recent consecutive 12-month period throughput rate of MMA, in pounds.

The log shall be kept at the facility for at least 3 years and made available to the Department upon request. The monthly logs shall be completed by the end of the following month. Supporting documentation, such as logs, records, MSD sheets, purchase orders, etc., shall be kept which includes sufficient information to determine the applicable throughput rates. [Rule 62-4.070(3), F.A.C.]

B. EU No. 002: 5 Reactors, 4 Thin Tanks, 1 Mix Tank, 2 non-NSPS Finished Product Storage Tanks, Product Filter Processing Area, and Thermal Oxidizer

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
002	This permit authorizes the construction of Vinyl Ester Reactor No. 1 (VER1) as part of a new vinyl ester resin manufacturing process. This emission unit consists of the following: - Batch Reactor Nos. 1, 2, 301, 401 and the new VER1 (Vinyl Reactor No. 1), are vented to a thermal oxidizer whenever any one of the reactors are operating. - Thin Tank Nos. TT-1, TT-3, TT-301, and TT-401, as shown in Section 4. Appendix E, may be vented to a thermal oxidizer. - Mix Tank No. 5, as shown in Section 4. Appendix E, may be vented to the thermal oxidizer. - Two (2) finished product storage tanks each having a design capacity of 45,000 gallons. Both tanks hold resin that may contain approximately 25% to 45% styrene and may be vented to the thermal oxidizer. The tanks are designated as FPST 21 and FPST 22 as shown in Section 4. Appendix E. An inert gas blanket flow of approximately 10 SCFH is applied to each tank. - A Product Filter Processing Area (PFPA) within the product tanker truck loading area where product filter bags are processed and packaged prior to storage and off-site disposal. The purpose of the area is to control fugitive styrene emissions. - The product filter is a synthetic fiber bag used as a replaceable filter element. The filters remove particles from resin during the product loading operations. Used filters are stored in covered, temporary containers near the product loading areas. Fugitive HAP and VOC emissions generated during filter accumulation are permitted per Emission Unit No. 008. After a sufficient number of filters are accumulated, the containers are moved to the PFPA, processed, and packaged in drums for storage and then shipment off-site. Styrene evaporates from the used filters as they are removed from the temporary containers, processed, and packaged. The semi-enclosed booth (area) provides a means to capture at least 85% of the styrene vapors from the filters. Styrene and other HAPs and VOCs generated in the PFPA may be vented to the thermal oxidizer. - The John Zink thermal oxidizer is a custom design unit and is fired with natural gas at a maximum heat input rate of 60.0 MMBTU/hr. The reactor(s) and thin tanks served by the thermal oxidizer are equipped with critical interlocks that monitor the thermal oxidizer's temperature and run state. If either condition is not met (e.g., low temperature or thermal oxidizer not running) reactors are immediately "sealed". The

reactors are placed on hold, heating is removed from the reactor vessel(s) to prevent pressure accumulation, and waste gas valves are closed. The reactors cannot effectively function until the operating temperature is achieved and the interlock satisfied. Once it is, the batch can be restarted within the control system.

The thermal oxidizer is required to operate when any of the reactors are operating and at a minimum of 3,744 hours per any consecutive 12-month period regardless of reactor operation. The minimum hydrocarbon destruction efficiency of the thermal oxidizer is 99.95%. The thermal oxidizer's minimum operating temperature is 1400^0 F, as required below, and is continuously recorded with adequate instrumentation. Exhaust gases from the thermal oxidizer, which are considered to have negligible styrene emissions, are discharged either to a primary stack (to be used for testing) or are routed to one or both heat recovery units. One heat recovery unit is for a hot oil heater and the other is a non-fired steam boiler. Both heat recovery units, exhaust through an induced draft common stack. When the thermal oxidizer is not operating, emissions are vented uncontrolled to the atmosphere from the thin tank vent piping and the vent piping system serving Mix Tank No. 5, FPST 21, FPST 22, and the PFPA.

Reactor Nos. 1 and 2 are heated by their own exempt natural gas fired burners.

Reactor Nos. 301 and 401 are heated by the hot oil heater.

Reactor Nos. 1, 2, 301 and 401 typically operate at 200-250° C.

Vinyl Ester Reactor No. 1 (VER1) is heated by its own tempered glycol heating system, where the heat is from an exempt standby boiler. VER1 typically operates at 30-170° C.

Vinyl Ester resin is the product of epoxy polymer or oligomer reaction with methacrylic acid dissolved in a polymerizable monomer. Raw materials could include DGEBPA epoxy resin as the major epoxy polymer, methacrylic acid as the main acid, Styrene, MMA and/or vinyl toluene or other non-styrene monomers, inert gas as a non-reactant, and glycol for process cooling. VER1 is used to heat, mix, and react reagents to produce alkyd, which is then "thinned" in the monomer. The monomer is introduced into the vessel when the reaction is complete.

The raw materials that can enter VER1 when manufacturing vinyl ester resin are DGEBPA epoxy resin, Novolac epoxy resin, Brominated DGEBPA epoxy resin, bisphenol A, brominated bisphenol A, and methacrylic acid. The raw materials are heated in VER1 to produce the alkyd base for vinyl ester resin. The monomer (styrene or otherwise) is transferred into VER1 to form base resin. The finished base resin is then formulated in one of the mix tanks to make the final product, which is loaded into totes, drums, or tankers for shipment or shipped out as base resin.

All of the reactors are blanketed by an inert gas.

	Polyester resin is the product of organic dibasic acids and organic dihydric alcohols dissolved in a polymerizable monomber. Maleic Andydride and Phthalic Anhydride serve as the major dibasic acids, Glycols as dihydric alcohols, Styrene, MMA and/or vinyl toluene or other non-styrene monomers, inert gas as a non-reactant, and water for process cooling. The reactors are used to heat, mix, and react reagents to produce alkyd, which "blown-over" to a dedicated thin tank. The raw materials that can enter Reactor Nos. 1, 2, 301, and 401 when manufacturing polyester resin are phthalic anhydride, maleic anhydride, dicyclopentadiene (DCPD), ethylene glycol, diethylene glycol, adipic acid, isophthalic acid, terephthalic acid, polyethylene teraphthalate (PET), and propylene glycol. The raw materials are heated in the reactors to produce the alkyd base for polyester resin. Alkyd is transferred from the reactors to the thin tanks containing styrene or other non-styrene monomer (such as MMA or vinyl toluene) to form base resin.

PERFORMANCE RESTRICTIONS

B.1. Permitted Capacity: The thermal oxidizer is limited as follows:

a. Shall operate whenever any of the reactors are operating.

b. Shall operate a minimum of 3,744 hours per any consecutive 12-month period regardless of reactor operation.

c. When operating, the minimum volatile organic compounds (VOC) destruction efficiency is 99.95%.

d. The maximum total VOC and HAP loading rate to the thermal oxidizer is considered equivalent to a maximum heat input rate of 60.0 MMBTU/hr. When purging the reactors, which generates the highest emissions, the thermal oxidizer's computer system controls the flow of reactor gases. The operator does not manually control this purging rate and the computer regulates the purge for each reactor simultaneously.

e. Only natural gas, as an auxiliary fuel, is used to fire the thermal oxidizer.

f. When any reactor is being operated it shall be vented (purged) to the thermal oxidizer at the thermal oxidizer's minimum operating temperature of 1400 °F.

[Rule 62-210.200(PTE), F.A.C.]

B.2. Permitted Capacity: This emission shall comply with the following:

a. Storage tanks FPST 21 and FPST 22 shall comply with the associated maximum allowable throughput rate of 208,111,977 pounds per any consecutive 12-month period

for the affected group of tanks shown in Section 4. Appendix E. Demonstration of compliance for the throughput rate is documented as part of Emission Unit No. 001.

b. Thin Tank Nos. 1, 3, 301, and 401 shall comply with the associated maximum allowable group throughput rate of 206,219,446 pounds per any consecutive 12-month period as shown in Section 4. Appendix E.

[Rule 62-210.200(PTE), F.A.C.]

EMISSIONS STANDARDS

B.3. Visible Emission Limitation: Visible emissions from the thermal oxidizer shall not be equal to or exceed 20% opacity.
[Rule 62-296.320(4)(b), F.A.C.]

B.4. Circumvention Limitation: No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. As an indicator the thermal oxidizer is operating properly, the Department has determined there should be no visible emissions (5% opacity). Visible emissions in excess of 5% is not considered a violation in and of itself, but an indicator of improper operation and may indicate a violation of Rule 62-210.650, F.A.C.
[Rule 62-210.650, F.A.C.]

TESTING REQUIREMENTS

B.5. Emission Testing Requirements: The thermal oxidizer shall be tested at least 105 days prior to and no more than 365 days prior to the July 8, 2015, expiration date of the Operation Permit No. 1050099-013-AO for the following parameters:

a. Hydrocarbon (inlet and primary stack) emissions in lbs./hr.

b. Visible emissions

c. Airflow (actual cubic feet per minute)

d. Airflow (ft./sec.)

e. Residence Time

f. VOC destruction efficiency (%)

[Rules 62-297.310(7) and 62-297.310(8), F.A.C.]

B.6. Test Requirements: Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit.
[Rule 62-297.310, F.A.C.]

B.7. Test Method(s): Required tests shall be performed in accordance with the following reference method(s).

Method(s)	Description of Method and Comments
1, (1A, 2A, and 2D, as appropriate), 3, and 4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content *{per ASP File No. 12-C-AP regarding Methods 1A, 2A, and 2D, as appropriate}*
9	Visual Determination of the Opacity of Emissions from Stationary Sources
25 (25A)	Determination of Total Gaseous Nonmethane Organic Emissions As Carbon. (If the outlet concentration is less than 50 ppmv as carbon, use 25A – Determination of Total Gaseous Organic Concentration Using A Flame Ionization Analyzer)

The above method(s) are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. No other method(s) may be used unless prior written approval is received from the Department.
[Rule 62-204.800, F.A.C.; Appendix A of 40 CFR 60]

B.8. Additional Operating Requirements During Testing: Testing of the thermal oxidizer shall be conducted in accordance with the following testing protocol:

a. Testing of emissions shall be conducted during normal and typical operational conditions that represent recent production activities.

b. If the Department deems the operating conditions during the test period did not represent normal and typical operational conditions a new compliance test(s) may be required.

[Rule 62-297.310(2), F.A.C.]

MONITORING REQUIREMENTS

B.9. The thermal oxidizer shall be equipped with automatic controls, such that if the thermal oxidizer should be unable to maintain a minimum operating temperature of 1400 °F, due to mechanical, electrical, or other failure when the reactor gases are being purged, all gaseous flow from the reactors shall be blocked and the reactor gases shall be contained within the reactor systems. The minimum operating temperature of 1400 °F shall be continuously recorded with adequate instrumentation.
[Rule 62-4.070(3), F.A.C.]

NOTIFICATION REQUIREMENTS

B.10. Test Notification: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. The notification must include the following information: the date, time, and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company, and the telephone number of the person conducting the test.
{*Permitting Note: The notification should also include the relevant emission unit ID No(s)., test method(s) to be used, and pollutants to be tested.*}
[Rules 62-4.070(3) and 62-297.310(7)(a)9., F.A.C.]

B.11. VERI Commencing Operation Notification: The permittee shall notify the Compliance Authority in writing at least 15 days after the date of commencing operation of the new Vinyl Ester Reactor No. 1 (VER1) associated with the vinyl ester manufacturing process.
[Rule 62-4.070(3), F.A.C.]

REPORTS AND RECORDS

B.12. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix D (Common Testing Requirements) of this permit. The test reports shall be submitted to the Compliance Authority within 45 days of testing. Failure to submit the following with the test reports may invalidate the tests and fail to provide reasonable assurance of compliance:

a. An explanation of how the operating conditions during the test met the requirements of Specific Condition No. B.8.a.

b. A statement indicating the number of reactors in operation during the test period.

c. The type of each reactor batch during the test period.

d. A copy of the thermal oxidizer's recorded operating temperature during the test period.

e. The inlet VOC load to the thermal oxidizer and outlet VOC of the thermal oxidizer during the test period.

f. The destruction efficiency of the thermal oxidizer during the test period.

g. A copy of the logs for the month the tests were conducted as required by Specific Condition Nos. 10 and A.4.

Failure to submit the above requested information with the test reports may invalidate the tests and fail to provide reasonable assurance of compliance.
[Rules 62-4.070(3) and 62-297.310(8), F.A.C.]

B.13. Recordkeeping Requirements: The permittee shall keep the following records/logs:

DAILY

a. The permittee shall utilize the reactor(s) and resin manufacturing monitoring equipment (e.g., PLC controllers, sensors, and data acquisition/data logging) and monitoring systems as may be necessary, to record the specific operation dates and times of each reactor.

b. Reactor(s)/Thermal Oxidizer process data logging shall be conducted on a daily basis in such a manner that records the dates and specific times the thermal oxidizer is started and shutdown.

The permittee shall develop and maintain the capability to generate "ad hoc" operational reports that report the information in items a. and b. above. Ad hoc reports generated at the request of the Department shall be submitted to the Compliance Authority no later than 10 days after such request is made in writing.

MONTHLY

The permittee shall generate and maintain monthly production and operation reports that clearly identify:

c. The most recent consecutive 12-month period operating hours of the thermal oxidizer.

d. For Thin Tank Nos. 1, 3, 301, and 401 record the group throughput in pounds.

e. For the Thin Tank Nos. 1, 3, 301, and 401 record the most recent consecutive 12-month period total group throughput rate in pounds.

Monthly logs/records shall be completed by the end of the following month. Records shall be kept at the facility for at least 3 years and shall be available for inspection by the Department. [Rule 62-4.070(3), F.A.C.]

C. EU No. 008: 8 Miscellaneous Fugitive VOC/HAPs Sources

This section of the permit addresses the following emission unit.

ID No.	Emission Unit Description
008	This construction permit authorizes the fugitive emissions associated with RMST Nos. 14 and 15 from raw material receiving and piping activities. These activities are described in No. 2 and 3 below. Eight (8) miscellaneous fugitive volatile organic compound (VOC)/HAP emission sources in this emission unit are as follows: 1. Fugitive emissions generated from general maintenance and cleaning solutions. These emissions do not contain styrene, but may be cleaning materials containing VOC and possibly HAPs. These emissions are not expected to change with production rate. 2. Fugitive emissions generated from the receipt of raw materials such as styrene, MMA, DCPD, GMAA, epoxy resin, and various glycols during tanker/railcar unloading and the associated piping and equipment through which the material is transferred to the receiving storage tanks. 3. Fugitive emissions from all facility process equipment piping (valves, flanges, fittings, seals, open lines) that are part of the facility's systems. 4. Fugitive emissions from the Micro-Additives Mixing Area. Additives, which are added to the resin in small amounts, vary from batch to batch and control manufacturing and structural properties of the resin. Many additives are non-volatile compounds thinned with mineral spirits by the manufacturer/supplier, while others are very volatile. The additives, or solvents used in them, may evaporate as they are mixed with styrene before addition to the resin. Some of the additives are solids and are weighed manually. 5. Fugitive emissions from the finished product loading operations, which include: A. Drum and Tote Loading Areas - 2 stations. B. Tanker-truck Loading Areas - 1 station with 4 bays. C. Railcar Loading Areas - 2 pumping stations and ancillary piping. D. Twelve (12) On-site Product Storage Tanker Trucks – Tank wagons used for the storage of either base or formulated resin. The product loading lines in these areas are periodically purged with inert gas, which causes emissions that include styrene. 6. Filter bags are used during product loading to filter resin. The filter bags are replaceable units and are saturated with resin and emit some styrene during the

	handling and removal from the filter holder. The filter bags are placed in a sealed container usually within 5 minutes. The sealed container, when filled with used filters, is then moved to the product filter processing area (see Emission Unit ID No. 002).
	7. Fugitive emissions from the Tanker Truck Clean-out Activities. Resin in the product transfer lines of the tanker trucks is removed by rinsing or flushing with styrene. The styrene/resin mixture is drained into a pan, from which styrene evaporates prior to containerization. The styrene/resin mixture is typically 10 gallons. The mixture is recycled into the product resin.
	8. Fugitive emissions generated from the temporary storage of the styrene/resin mixture generated by cleaning mix tanks and tanker trucks on-site. The mixture is stored temporarily and then recycled into the product resin.

PERFORMANCE & EMISSION RESTRICTIONS

C.1. Permitted Capacity: This emission unit shall comply with the following:

a. The throughput rate of Powdered Micro-Additives shall not exceed 1,250,000 pounds per any consecutive 12-month period as shown in Section 4. Appendix F.

b. The throughput rate of Methanol shall not exceed 12,500,000 pounds per any consecutive 12-month period as shown in Section 4. Appendix F.

[Rule 62-210.200(PTE), F.A.C.]

C.2. Permitted Capacity and Emission Restrictions: The operational and potential emissions from the activities associated with this emission unit are controlled and documented by the facility's resin production limitations, other emissions unit operational requirements, operational requirements, throughput limitations for tanks listed in Section 4. Appendix E, material throughput limitations as shown in Section 4. Appendix F, and associated recordkeeping requirements.
[Rule 62-210.200(PTE), F.A.C.]

RECORDS

C.3. Recordkeeping Requirements: The permittee shall keep the following monthly records/logs:

a. Record the amount of Powered Micro-Additives used in pounds.

b. Record the most recent consecutive 12-month period usage of Powered Micro-Additives in pounds.

c. Record the amount of Methanol used in pounds.

d. Record the most recent consecutive 12-month period usage of Methanol in pounds.

Monthly logs/records shall be completed by the end of the following month. These records shall be kept at the facility for at least 3 years and shall be available for inspection by the Department.
[Rule 62-4.070(3), F.A.C.]

D. EU No. 009: 3 Miscellaneous Fugitive Particulate Matter Sources

This section of the permit addresses the following emission unit.

ID No.	Emission Unit Description
009	This construction permit authorizes the Vinyl Ester Reactor No. 1 (VER1) to also receive Bisphenol A. This emission unit consists of the following 3 miscellaneous fugitive particulate matter sources: 1.* Fugitive emissions from the Powder Additive Handling operations in which fumed silica powder is added to and blended with resin in the mix tanks. The powder particle size is sub-micron, so all emissions are PM_{10}. 2.* Fugitive emissions from the addition of powdered talc to blend with resin in the mixing tanks. The powder particle size is sub-micron, so all emissions are considered PM_{10}. 3.* Fugitive emissions from the addition of powder additives in the reactors. Powdered raw materials are introduced into the reactors at various points during the alkyd batch process. Sealed super sacks or other containers are manually transported to the reactor head deck where the material is manually loaded into the top of the reactor by gravity flow. Vinyl Ester Reactor No. 1 (VER1) may also receive Bisphenol A (flake, 2,000 lb super sacks). Fugitive PM and PM_{10} emissions are generated from these processes. * Permitting Note: When completing the Annual Operating Report (AOR) emissions shall be calculated in accordance with the letter dated April 18, 2000, from the permittee's consultant, Grove Scientific & Engineering designated as Appendix G.

Performance & Emission Restrictions

D.1. Permitted Capacity: Powdered additives in the reactors shall not exceed the throughput rate of 23,280,000 pounds per any consecutive 12-month period as shown in Section 4. Appendix F.

D.2. Permitted Capacity and Emission Restrictions: The operational and potential emissions from the activities associated with this emission unit are controlled and documented by the facility's resin production limitations, other emissions unit operational requirements, throughput limitations for tanks listed in Section 4. Appendix E, material throughput limitations as shown in Section 4. Appendix F, and associated recordkeeping requirements. [Rule 62-210.200(PTE), F.A.C.]

D.3. Work Practice Requirement: The addition of all powder additives used in the manufacturing process shall be conducted indoors.
[Rule 62-296.320(4)(c), F.A.C.]

RECORDS

D.4. Recordkeeping Requirements: The permittee shall keep the following monthly records/logs:

a. Record the amount of powered additives used in the reactors in pounds.

b. Record the most recent consecutive 12-month period usage of powered additives used in the reactors in pounds.

Monthly logs/records shall be completed by the end of the following month. These records shall be kept at the facility for at least 3 years and shall be available for inspection by the Department.
[Rule 62-4.070(3), F.A.C.]