

RULE 67.12.1 POLYESTER RESIN OPERATIONS *(Adopted (date of adoption))*

(a) **APPLICABILITY**

(1) Except as otherwise provided in Section (b), this rule is applicable to all polyester resin operations, including any associated surface preparation, solvent cleaning and cleaning of application equipment.

(2) Polyester resin operations subject to or exempt from this rule shall not be subject to Rule 66.1.

(b) **EXEMPTIONS**

(1) This rule shall not apply to the following:

(i) Polyester resin operations that emit less than an average of 5 pounds of volatile organic compounds (VOC) per operating day for each calendar month. All records necessary to calculate average daily VOC emissions, such as emission factors, VOC content of each material used, number of operating days per calendar month, and daily or monthly records of material usage, shall be maintained on-site for three years and be made available to the District upon request.

(ii) Coatings subject to Rule 67.0.

(2) Subsection (d)(1) and (d)(2) shall not apply to closed mold polyester resin operations.

(3) Subsection (d)(2) shall not apply to touch-up and repair operations using a hand held air atomized spray gun that has a container for the polyester resin material as part of the gun.

(4) Subsection (d)(5) shall not apply to the following:

(i) Equipment used for buffing, polishing, carving, cutting, deburring, drilling, machining, routing, shearing, sanding, sawing, or surface grinding of fiber reinforced plastic parts that is exclusively vented through a control device that exhausts inside an enclosed building where such equipment is located.

(ii) Dry sanding, grinding or cutting of fiber reinforced plastic parts associated with operations exempt by (b)(1)(i) above.

(c) **DEFINITIONS**

For the purpose of this rule, the following definitions shall apply:

- (1) "**Catalyst**" means a substance added to the resin to accelerate the rate of curing.
- (2) "**Cleaning Materials**" means materials containing VOC used for surface preparation or the cleaning of hands, tools, molds or application equipment associated with polyester resin operations.
- (3) "**Closed Mold Operation**" means a method of forming objects from polyester resins by placing the material in a confining mold cavity and applying pressure and/or heat.
- (4) "**Controlled Enclosure**" means a structure having at least three sides and a roof, and which is designed to capture process emissions to meet the requirements of all District prohibitory standards (e.g., Rules 50, 51, 52, 71, etc.).
- (5) "**Controlled Process**" means a modification to a dry sanding, grinding or cutting operation which uses water sprays, vacuum devices or other techniques to control the emission of particulates to the atmosphere to meet the requirements of all District prohibitory standards (e.g., Rules 50, 51, 52, 71, etc.).
- (6) "**Corrosion Resistant Resin**" means a halogenated, furan, bisphenol A, vinyl ester, or isophthalic resin which is used to make products for exposure to corrosive, caustic and/or acidic agents.
- (7) "**Cross-Linking**" means the process of joining two or more polymer chains together.
- (8) "**Cure**" means polymerization, i.e., the transformation from a liquid to a solid state, to achieve desired product physical properties, including hardness.
- (9) "**Electrostatic Spray**" means an application method accomplished by charging atomized particles for deposition by electrostatic attraction.
- (10) "**Exempt Compound**" means the same as defined in Rule 2.
- (11) "**Fiberglass**" means a fiber similar in appearance to wool or cotton fiber but made from glass.
- (12) "**Fire Retardant Resin**" means a resin designed for the purpose of delaying the spread of combustion.
- (13) "**Gel Coat**" means a polyester resin surface coat, either pigmented or clear, providing a cosmetic enhancement and improved resistance to exposure.
- (14) "**High Strength Resin**" means a resin with a casting tensile strength of 10,000 psi or more, used to manufacture high performance products.

(15) "**High-Volume Low-Pressure (HVLP) Spray**" means an application method using a spray applicator and pressurized air which is designed to be operated and which is operated at an atomizing pressure between 0.1 and 10.0 psig, measured dynamically at the center of the applicator's air cap and the applicator's air horns.

(16) "**Inhibitor**" means a substance designed to slow down or prevent a chemical reaction.

(17) "**Monomer**" means an organic compound, such as styrene, that combines with itself or other similar compounds by a cross-linking reaction to become a part of a cured thermosetting resin.

(18) "**Polyester**" means a complex polymeric ester, derived from di-functional acids and alcohols, which is dissolved in a monomer.

(19) "**Polyester Resin Materials**" means unsaturated polyester cross-linking agents, catalysts, gel coats, inhibitors, and any other material containing VOC used in a polyester resin operation.

(20) "**Polyester Resin Operation**" means the fabrication, rework, repair, or touch-up of composite products using any of the following methods: mixing, pouring, hand lay-up, impregnation, injection, forming, winding, spraying, and curing of polyester resin materials.

(21) "**Polymer**" means a large chemical chain composed of identical cross-linked groups, such as polystyrene.

(22) "**Primer Gel Coat**" means a gel coat used to coat the surface of composite parts prior to top-coat painting.

(23) "**Repair**" means the addition of polyester resin materials to portions of a previously fabricated product in order to mend mechanical damage which occurs after the normal fabrication process.

(24) "**Resin**" means any of a class of organic polymers of natural or synthetic origin used in reinforced products to surround and hold fibers and/or fillers, and which is solid or semi-solid in the cured state.

(25) "**Specialty Gel Coat**" means a gel coat used for tooling or in conjunction with fire retardant, corrosion-resistant, or high strength materials.

(26) "**Surface Preparation**" means the cleaning of surfaces by utilizing cleaning materials prior to further treatment, sale or intended use.

(27) "**Touch-up**" means that portion of the polyester resin operation that is necessary to cover minor imperfections.

(28) **"Vapor Suppressed Resin"** means a resin which has been modified to minimize the weight loss from VOC emissions during polymerization.

(29) **"Volatile Organic Compound (VOC)"** means the same as defined in Rule 2.

(30) **"VOC Content Per Volume of Material"** means the weight of VOC per volume of cleaning material, and is calculated by the equation provided in Rule 2.

(d) **STANDARDS**

(1) Polyester Resin Materials

(i) Except as provided in Subsections (b)(1) and (b)(2), a person shall not apply any polyester resin material with monomer content in excess of the following percentages, by weight, as applied:

<u>CATEGORY</u>	<u>MONOMER WEIGHT %</u>
Clear Gel Coat	
Marble Gel Coat	40
Other Clear Gel Coats	44
Pigmented Gel Coat	
White and Off-White Gel Coats	30
Other Non-White Gel Coats	37
Primer Gel Coats	28
Specialty Gel Coats	48
Resins	
Marble Resins	32
Other Resins	35
Fire Retardant Resins	38
Corrosion Resistant Resins	48
High Strength Resins	40

(ii) Except as provided in Subsections (b)(1) and (b)(2), a person shall not apply any vapor suppressed resin material unless the weight loss from the VOC emissions is 50 grams per square meter or less of exposed surface area during polymerization.

(2) Application Equipment for Polyester Resin Operations

Except as provided in Subsection (b)(3), no polyester resin material shall be applied unless one of the following application methods is used:

(i) Manual application or other non-atomizing techniques; or

(ii) Electrostatic spray; or

(iii) Air-Assisted Airless Spray; or

(iv) Airless Spray; or

(v) High-Volume, Low-Pressure (HVLP) spray: facilities using an HVLP spray gun shall have available on site pressure gauges in proper operating condition to measure the air cap pressure or have available manufacturer's technical information regarding the correlation between the handle air inlet pressure and the air cap pressure. If the correlation option is used to demonstrate compliance, a handle air inlet pressure gauge will be required on site in proper operating condition to measure the handle air inlet pressure.

(3) Surface Preparation and Solvent Cleaning Materials

A person shall not conduct surface preparation or solvent cleaning unless:

(i) The VOC content of the cleaning material is 25 grams per liter (0.21 lbs/gal) of material, or less as used; or

(ii) The cleaning material used for aerospace components has a VOC content of 200 grams per liter (1.7 lbs/gal) of material, or less as used, or has a total VOC vapor pressure of 45 mm Hg or less at 20°C (68°F).

(4) Cleaning of Application Equipment

A person shall not use VOC containing materials for the cleaning of application equipment used in operations subject to this rule unless:

(i) The VOC content of the cleaning material is 25 grams per liter (0.21 lbs/gal) of material, or less as used; or

(ii) The cleaning material is flushed or rinsed through the application equipment in a contained manner that will minimize evaporation into the atmosphere; or

(iii) The application equipment or equipment parts are cleaned in a container which is open only when being accessed for adding, cleaning, or removing application equipment or when cleaning material is being added, provided the cleaned equipment or equipment parts are drained to the container until dripping ceases; or

(iv) A system is used that totally encloses the component parts being cleaned during washing, rinsing and draining.

(5) Except as provided in Subsection (b)(4), conduct all dry sanding, grinding and cutting operations of polyester resin products either inside a controlled enclosure or using a controlled process. For marine vessel repair operations, this requirement shall apply only for sanding, grinding or cutting operations conducted on the exterior of a vessel hull. This requirement shall not apply to any portable drilling operations.

(e) CONTROL EQUIPMENT

(1) In lieu of complying with the provisions of Section (d) of this rule, an owner/operator may use an air pollution control system which:

(i) Has been installed in accordance with an Authority to Construct; and

(ii) Includes an emission collection system which captures and transports emissions generated by polyester resin operations to an air pollution control device; and

(iii) Has a combined emissions capture and control device efficiency of at least 85% by weight.

(2) A person electing to use control equipment pursuant to Subsection (e)(1) shall submit to the Air Pollution Control Officer for approval an Operation and Maintenance plan for the proposed emission control device and emission collection system and receive approval prior to operation of the control equipment. Thereafter, the plan may be modified, with Air Pollution Control Officer approval, as necessary to ensure compliance. Such plan shall:

(i) Identify all key system operating parameters. Key system operating parameters are those necessary to ensure compliance with Subsection (e)(1)(iii), such as temperature, pressure, and/or flow rate; and

(ii) Include proposed inspection schedules, anticipated ongoing maintenance, and proposed record keeping practices regarding the key system operating parameters.

(3) Upon approval of the Air Pollution Control Officer, a person subject to the requirements of Section (e) shall implement the Operation and Maintenance plan and shall comply with the provisions of the approved plan thereafter.

(f) RECORD KEEPING

(1) Any person subject to the provisions of this rule shall maintain records of VOC-containing materials in accordance with the following:

(i) Maintain a current list of each polyester resin material, surface preparation and cleaning material in use, which provides all of the data necessary to evaluate compliance, including, but not limited to:

(A) Manufacturer's name, identification, and material specifications for each polyester resin material, surface preparation and cleaning material used.

(B) For polyester resin materials, the monomer content percent, by weight, as applied; the content of any catalysts, fillers, and/or diluents, including thinners; the application method; and the applicable category of each resin or gel coat as specified in Subsection (d)(1).

(C) For vapor suppressed resins, manufacturer's information on the weight loss during resin polymerization.

(D) For surface preparation and cleaning materials, the VOC content expressed in grams per liter (lbs/gal) of material, as used.

(ii) Maintain daily or monthly records of the amount of each polyester resin material used.

(iii) Maintain monthly inventory, purchasing or dispensing records of the amount of each VOC-containing surface preparation and cleaning material used.

(2) Any person using control equipment pursuant to Section (e) of this rule shall:

(i) Maintain records in accordance with Subsection (f)(1); and

(ii) For all polyester resin materials, surface preparation and cleaning materials not in compliance with Subsections (d)(1) or (d)(3), maintain daily records of the amount of each polyester resin material, surface preparation and cleaning material used; and

(iii) Maintain daily records of key system operating parameters as approved in the Operation and Maintenance plan. Such records shall be sufficient to document continuous compliance with Subsection (e)(1)(iii) during periods of emission producing activities.

(3) All records shall be retained on site for at least three years, and be made available to the District upon request.

(g) **TEST METHODS**

When more than one test method or set of test methods are specified in this Section, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of the rule.

(1) The monomer content of resins subject to Subsection (d)(1)(i) of this rule shall be determined in accordance with South Coast Air Quality Management District (SCAQMD) Method 312-91 (Determination of Percent Monomer in Polyester Resin), April 1996.

(2) The polyester resin material weight loss per square meter subject to Subsection (d)(1)(ii) of this rule shall be determined in accordance with SCAQMD Method 309-91 (Determination of Static Volatile Emissions), February 1993.

(3) The VOC content of surface preparation or cleaning materials containing 50 grams of VOC per liter or less, subject to the requirements of Subsections (d)(3) and (d)(4), shall be determined by SCAQMD Method 313-91 (Determination of Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry), February 1997, or by SCAQMD Method 308-91 (Quantification of Compounds by Gas Chromatography), February 1993.

(4) The content of methyl acetate, acetone and parachlorobenzotrifluoride shall be determined in accordance with the ASTM Test Method D6133-02(2014) (Standard Test Method for Acetone, p-Chlorobenzotrifluoride, Methyl Acetate or t-Butyl Acetate Content of Solventborne and Waterborne Paints, Coatings, Resins, and Raw Materials by Direct Injection Into a Gas Chromatograph), or its most current version.

(5) Measurements of exempt compound content, except for those determined in accordance with Subsection (g)(4), shall be conducted in accordance with SCAQMD Test Method 303-91 (Determination of Exempt Compounds), August 1996.

(6) The overall control efficiency of air pollution control equipment operated pursuant to Subsection (e)(1)(iii) shall be determined by multiplying the capture efficiency of the emission collection system by the control efficiency of the air pollution control device. The control efficiency of the air pollution control device shall be determined using Environmental Protection Agency (EPA) Test Methods 25A and/or 18 (40 CFR Part 60, Appendix A), both dated September 1996, and in accordance with a protocol approved by the Air Pollution Control Officer.

(7) Capture efficiency of an emission collection system pursuant to Subsection (e)(1)(iii) shall be determined according to EPA Test Method 204 and 204A through 204F (40 CFR Part 51, Appendix M), as applicable, dated June 1997, and technical document "Guidelines for Determining Capture Efficiency," dated January 1995. Subsequent to the initial compliance demonstration period, appropriate key system operating parameters as approved by the Air Pollution Control Officer may be used as indicators of the performance of the emission control system.

(8) Other test methods which are determined to be equivalent to the test methods specified in this rule and approved, in writing, by the Air Pollution Control Officer, California Air Resources Board, and EPA may be used in place of the test methods specified in this rule.

(h) COMPLIANCE SCHEDULE

(1) All new operations or processes subject to this rule shall comply with all applicable requirements upon initial startup.

(2) All existing operations or processes subject to this rule shall comply with all applicable requirements no later than *(one year from date of adoption)*.

(3) The owner or operator of an existing operation that chooses to comply with the rule by installing air pollution control equipment pursuant to Section (e) of this rule shall:

(i) By *(6 months from date of adoption)*, submit to the Air Pollution Control Officer an application for an Authority to Construct and a Permit to Operate an air pollution control system as specified in Section (e).

(ii) By *(18 months from date of adoption)*, comply with all applicable rule requirements.