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RULE 1162

Polyester Resin Operations

(a) Applicability

This rule shall apply to all polyester resin operations that fabricate, rework, repair, or touch-up products for commercial, military, or industrial use including, but not limited to, boats, tubs, pools, shower enclosures, spas, bathroom fixtures, jigs, tools, molds, air pollution control equipment, sewage treatment equipment, storage tanks, transportation parts, and other industrial and consumer products.

(b) Definitions

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

- (1) AIRLESS SPRAY is a coating application system in which the coating fluid is supplied to the gun under fluid pressure and air is not added to the gun.
- (2) AIR-ASSISTED AIRLESS SPRAY is a coating application system in which the coating fluid is supplied to the gun under fluid pressure and air is combined at the spray cap.
- (3) CORROSION-RESISTANT MATERIALS are polyester resin materials used to make products for corrosion resistant applications such as tooling, fuel or chemical tanks and boat hulls.
- (4) EXEMPT COMPOUNDS are any of the following compounds:

(A) Group I

chlorodifluoromethane (HCFC-22)
dichlorotrifluoroethane (HCFC-123)
tetrafluoroethane (HFC-134a)
dichlorofluoroethane (HCFC-141b)
chlorodifluoroethane (HCFC-142b)
trifluoromethane (HFC-23)
2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)
pentafluoroethane (HFC-125)
1,1,2,2-tetrafluoroethane (HFC-134)
1,1,1-trifluoroethane (HFC-143a)
1,1-difluoroethane (HFC-152a)
cyclic branched, or linear, completely fluorinated alkanes

cyclic branched, or linear, completely fluorinated ethers with no unsaturations
cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations
sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine

(B) Group II

methylene chloride
carbon tetrachloride
1,1,1-trichloroethane (methyl chloroform)
trichlorotrifluoroethane (CFC-113)
dichlorodifluoromethane (CFC-12)
trichlorofluoromethane (CFC-11)
dichlorotetrafluoroethane (CFC-114)
chloropentafluoroethane (CFC-115)

Use of Group II compounds may be restricted in the future because they are either toxic, potentially toxic, or upper-atmosphere ozone depleters, or cause other environmental impacts. Specifically, the District Board has established a policy to phase out chlorofluorocarbons (CFCs), methyl chloroform (1,1,1-trichloroethane or TCA), and carbon tetrachloride by December 31, 1995.

- (5) FIRE RETARDANT MATERIALS are polyester resin materials used to make products that are resistant to flame or fire.
- (6) GEL COAT is a polyester resin surface coating, either pigmented or clear, that provides a cosmetic enhancement and improves resistance to degradation from exposure to the elements.
- (7) GENERAL PURPOSE POLYESTER RESINS are materials that are not corrosion resistant, fire retardant, high strength, vapor suppressed, or gel coats.
- (8) HIGH-STRENGTH MATERIALS are polyester resins which have casting tensile strength of 10,000 psi or more and which are used for manufacturing of high performance boats and skis.
- (9) HIGH-VOLUME, LOW-PRESSURE (HVLP) SPRAY is a coating application system which is operated at air pressure of between 0.1 and 10 pounds per square inch gauge (psig) at the air cap of the spray gun.
- (10) MONOMER is a relatively low-molecular-weight organic compound such as styrene that combines with itself, or other similar compounds, by a cross-linking reaction to become a cured thermosetting resin.
- (11) POLYESTER RESIN MATERIALS are unsaturated polyester resins, such as isophthalic, orthophthalic, halogenated, bisphenol A, vinyl ester, or furan resins;

cross-linking agents; catalysts; gel coats; inhibitors; accelerators; promoters; and any other material containing VOC used in polyester resin operations.

- (12) POLYESTER RESIN OPERATIONS fabricate, rework, repair, or touch-up products for commercial, military, or industrial use by mixing, pouring, hand laying-up, impregnating, injecting, forming, winding, spraying, and/or curing by using unsaturated polyester resin materials.
- (13) PULTRUSION is a process where continuous roving strands are moved through a strand-tensioning device into a resin bath for impregnation and then passed through a heated die for curing.
- (14) REPAIR is that portion of the fabrication process that requires the addition of polyester resin materials to portions of a previously fabricated product in order to mend damage.
- (15) TOUCH-UP is that portion of the process that is necessary to cover minor imperfections.
- (16) VAPOR SUPPRESSED RESIN is a polyester resin material which contains additives to reduce VOC evaporation loss to less than sixty (60) grams per square meter of surface area as determined and certified by resin manufacturers.
- (17) VOLATILE ORGANIC COMPOUND (VOC) means any volatile chemical compound that contains the element carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonates, ammonium carbonate, and exempt compounds.

(c) Requirements

- (1) For each process, a person operating a polyester resin operation shall comply with either the material requirements or one of the applicable process requirements set forth below:

(A) Material Requirements

A person shall not use a polyester resin material in a polyester resin operation which has a monomer content in excess of the limits specified in the Table below.

<u>Polyester Resin Materials</u>	<u>Monomer Content in Polyester Resin Materials as Applied (By Weight Percent)</u>
General Purpose Polyester Resin	35
Corrosion-Resistant	48
Fire Retardant	42
High Strength	48
Clear Gel Coat	50

Polyester Resin Materials

Monomer Content in Polyester
Resin Materials as Applied (By
Weight Percent)

Pigmented Gel Coat

45

(B) Process Requirements

- (i) The weight loss of polyester materials shall be less than four (4) percent when a closed-mold system is used.
 - (ii) When a vapor suppressed resin is used, the weight loss from VOC emissions shall not exceed sixty (60) grams per square meter of exposed surface area during resin polymerization.
 - (iii) A pultrusion operation shall have covered wet-out baths. From the exit of the bath to the die all but 18 inches of the preform distance shall be enclosed to minimize air flow. The weight loss of polyester materials shall be less than three (3) percent in a pultrusion operation.
- (2) For spraying operations, in addition to complying with the requirements specified in paragraph (c)(1), a person shall use high-volume-low-pressure (HVLP), airless, air-assisted airless, or electrostatic spray equipment. For touch-up and repair, a hand-held, air-atomized spray gun which has a container for resin as part of the gun may be used.
- (3) Any person operating a polyester resin operation shall keep the resin materials in closed containers except when filling or emptying the container.
- (4) Solvent cleaning operations shall comply with Rule 1171 - Solvent Cleaning Operations.

(d) Control Equipment

In lieu of complying with the requirements of paragraph (c)(1) and (c)(2), a person may install and operate an emission control system which is designed and operated in accordance with guidelines published in the 20th Edition of the Industrial Ventilation Manual by the American Conference of Governmental Industrial Hygienists for the collection of fugitive emissions from polyester resin materials, and which system is approved by the Executive Officer's designee, and has an overall capture and control efficiency of 90 percent or more on a mass basis.

(e) Recordkeeping Requirements

- (1) A person subject to the provisions of this rule shall maintain daily records. Such records shall be made available to the Executive Officer's designee upon request and shall be kept for not less than two years. The records shall contain:

- (A) The manufacturer's name, the type and amount of each of the polyester resin materials used; and
 - (B) The weight (in percent) of monomer for all polyester resin materials, and, if adding VOC-containing materials to the polyester resin, the amount of VOC-containing materials, in grams, and the VOC content in grams per liter, of VOC-containing materials; and
 - (C) For vapor suppressed resins, a certificate from a resin manufacturer for each resin type; and
 - (D) For closed-mold and pultrusion systems, the weight loss (in percent) of polyester resin materials for each application.
- (2) Records for cleaning solvents subject to Rule 1171 - Solvent Cleaning Operations shall be maintained pursuant to Rule 109.
 - (3) Any person using an emissions control system as a means of complying with this rule shall maintain daily records of all key system parameters, including hours of operation, temperatures, pressures and flow rates, that are necessary to ensure control efficiency requirements.
 - (4) The records shall also contain the manufacturer's name, type and amount of corrosion resistant, fire retardant, high strength materials and gel coats used, which are temporarily exempt from process requirements until July 1, 1994.

(f) **Methods of Analysis**

The VOC content of each of the polyester resin materials shall be determined by using USEPA Reference Method 24 (Determination of Volatile Matter Content, Water Content, Density Volume Solids, and Weight Solids of Surface Coating, Code of Federal Regulations Title 40, Appendix A, utilizing Procedure B of ASTM Method D2369), or the SCAQMD Method 304. The monomer content shall be determined by Method 312, and weight loss of polyester resin materials shall be determined by Method 309; and the exempt compound's content shall be determined by Methods 302 and 303 in the South Coast Air Quality Management District's (SCAQMD) Laboratory Methods of Analysis for Enforcement Samples.

(g) **Test Methods**

- (1) The efficiency of the control device and the VOC content measured and calculated as carbon in the control device exhaust gases shall be determined by USEPA's Test Method 18, or Air Resources Board (ARB) Method 422 for the determination of emissions of Exempt Compounds and USEPA's Test Methods 25, 25A, or SCAQMD's Method 25.1 (Determination of Total Gaseous Non-Methane Organic Emissions as Carbon) for the determination of total organic

compound emissions. Emissions determined to exceed any limits established by this rule through the use of any of the above-referenced test methods shall constitute a violation of the rule.

- (2) The following classes of compounds: cyclic, branched, or linear, completely fluorinated alkanes; cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and sulfur-contained perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine, will be analyzed as exempt compounds for compliance with subdivision (e) at such time manufacturers specify which individual compounds are used in the coating formulations and identify the test methods, which, prior to such analysis, have been approved by the USEPA and the SCAQMD, that can be used to quantify the amounts of each exempt compound.

(h) Exemptions

- (1) Until July 1, 1994, the provisions of paragraphs (c)(1) and (c)(2) and subdivision (d) shall not apply to: corrosion resistant, fire retardant, and high strength materials.
- (2) Until July 1, 1994, The provisions of (c)(1) shall not apply to gel coats.

[SIP: See AV Full SIP Table at <https://avaqmd.ca.gov/rules-plans>]