

**RULE 1141 -- CONTROL OF VOLATILE ORGANIC COMPOUND EMISSIONS  
FROM RESIN MANUFACTURING**

*(Adopted: 07/08/93; Amended: 11/02/84; Amended: 12/07/90; Amended: 04/03/92)*

(a) Definitions

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

- (1) BLENDING TANK is a vessel in which resin and/or solvent and/or other materials are added, normally to produce a final product blend.
- (2) COMPLETED RESIN is resin solids, solvents, and additives as delivered for sale or use.
- (3) CONDENSER is a jacketed tube which has a cooling fluid, often water, flowing through the jacket and which cools and liquefies gases entering the inside of the tube.
- (4) CONTINUOUS POLYSTYRENE PROCESS is the reaction of styrene and other ingredients and the purification of the reaction products, to produce a normally uninterrupted flow of resin.
- (5) DILUENT RECOVERY SECTION consists of equipment used to separate process diluent from reaction by-products.
- (6) EXEMPT COMPOUNDS are any of the following compounds:
  - (A) Group I
    - chlorodifluoromethane (HCFC-22)
    - trifluoromethane (HFC-23)
    - dichlorotrifluoroethane (HCFC-123)
    - 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)
    - pentafluoroethane (HCFC-125)
    - 1,1,1,2-tetrafluoroethane (HCFC-134)
    - tetrafluoroethane (HFC-134a)
    - dichlorofluoroethane (HCFC-141b)
    - chlorodifluoroethane (HCFC-142b)
    - 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  
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 or carbon tetrachloride may be restricted in the future because they are either toxic, potentially toxic, or upper atmospheric ozone depleters, or cause other environmental impacts. The District Board has established a policy to phase out chlorofluorocarbons (CFC) on or before 1997.

- (7) HIGH-DENSITY POLYETHYLENE RESIN is a linear thermoplastic polymer of ethylene with a density of greater than 0.94 grams per cubic centimeter.
- (8) LIQUID-PHASE HIGH-DENSITY POLYETHYLENE SLURRY PROCESS is the reaction of ethylene and other ingredients, and the purification of the reaction products, to produce a normally uninterrupted flow of high-density polyethylene resin.
- (9) LIQUID-PHASE POLYPROPYLENE PROCESS is the reaction of propylene and other ingredients, and the purification of the reaction products, to produce a normally uninterrupted flow of resin.
- (10) ORGANIC RESIN REACTOR is any piece of equipment in which organic and/or other materials are reacted to produce an organic resin. A reactor may include a stripping column, condensers, and a water separator, whose purpose is to return the evaporated solvent to the reaction vessel.
- (11) PRODUCT FINISHING SECTION consists of equipment used to dry, extrude, pelletize, or otherwise prepare completed resin prior to packaging or storage.
- (12) RECYCLE TREATERS consist of equipment which removes water and other impurities in the recycle ethylene stream.
- (13) RESIN, as defined by the American Society for Testing Materials (ASTM), is a solid or semi-solid, water-insoluble, organic material with little or no tendency to crystallize and is used as the basic components of plastics and/or as a component of surface-coating formulations.

- (14) RESIN MANUFACTURER is a person who reacts organic compounds to produce a resin and is classified as 2821 in the Standard Industrial Classification Manual (Office of Management and Budget, Executive Office of the President).
- (15) SLURRY VACUUM FILTER SYSTEM consists of equipment used to separate atactic and isotactic polymer.
- (16) STYRENE RECOVERY SYSTEM consists of equipment that separates styrene monomer from reaction by-products.
- (17) THINNING TANK is a vessel which receives resin and/or other reaction products from an organic resin reactor and to which solvents may be added.
- (18) VACUUM DEVOLATILIZER SYSTEM consists of equipment used in the vacuum separation of polystyrene from styrene monomer and reaction by-products.
- (19) VENT is a port or opening that allows gases to discharge to the atmosphere when leaving a reactor or other equipment. Where a product recovery condenser is used, the vent is the point of discharge from the condenser to the atmosphere.
- (20) VOLATILE ORGANIC COMPOUND (VOC) is any volatile compound containing the element carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbonates and carbides, ammonium carbonate, and exempt compounds.

(b) Requirements

- (1) A resin manufacturer shall not manufacture organic resin unless the total emissions of volatile organic compounds (VOC), from the organic resin reactor, thinning tank and blending tank vents, before being vented to the atmosphere, are reduced:
  - (A) to 0.5 pound per 1000 pounds of completed resin produced, or
  - (B) by 95 percent or more.
- (2) A resin manufacturer shall not manufacture organic resin by a continuous polystyrene process unless the total emissions of VOC from vacuum devolatilizer system and styrene recovery system, before being vented into the atmosphere, are reduced to 0.12 pound per 1000 pounds of completed resin produced.
- (3) A resin manufacturer shall not manufacture organic resin by a liquid-phase high-density polyethylene slurry process unless the total emissions of VOC from the organic resin reactor, recycle treaters, thinning tank, blending tank and product finishing section, before being vented to the atmosphere are reduced by 98 percent or more.

- (4) A resin manufacturer shall not manufacture organic resin by a liquid-phase polypropylene process unless the total emissions of VOC from the organic resin reactor, slurry vacuum filter system, diluent recovery section, and product finishing section vents, before being vented to the atmosphere, are reduced by 98 percent or more.

(c) **Recordkeeping Requirements**

A resin manufacturer shall maintain daily records. Such records shall be kept at the facility for at least two years, and shall be made available to the District upon request. The records shall include the following:

- (1) the amount and type of each resin produced;
- (2) daily VOC emissions.

(d) **Compliance Test Methods**

For the purpose of this rule, the following test methods shall be used:

- (1) The capture efficiency of the emissions collection system shall be determined by the USEPA method cited in 55 FR (Federal Register) 26865, June 29, 1990.
- (2) 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:
  - (A) For total organics: USEPA Test Methods 25, 25A, or SCAQMD Method 25.1;
  - (B) For exempt compounds: USEPA Method 18, or ARB Method 422.

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

- (3) The following classes of compounds will be considered for compliance with subdivision (b), only if the manufacturer specifies which individual compounds are present in the coating formulations or process and identifies the test methods approved by the USEPA and SCAQMD that can be used to quantify the amounts of each exempt compound: 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-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

(e) Exemptions

The provisions of subdivision (b) shall not apply to any facility that emits less than a total of ten pounds of volatile organic compounds per day to the atmosphere from all of the equipment subject to this rule.

[SIP: Approved 12/20/93, 58 FR 66286, 40 CFR 52.220(c)(189)(i)(A)(3); Approved \_\_\_\_\_, \_\_\_\_\_, 40 CFR 52.220(c)(159)(v)(B); Approved 10/3/84, 49 FR 39057, 40 CFR 52.220(c)(148)(vi)(B)]

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