

RULE 4653 – ADHESIVES

(Adopted March 17, 1994; Amended April 13, 1995; Amended March 19, 1998; Amended December 14, 2000; Amended December 20, 2001)

1.0 Purpose

The purpose of this rule is to reduce emissions of volatile organic compounds (VOCs) from the application of adhesive products, the organic solvent cleaning, and the storage and disposal of solvents and waste solvent materials associated with such applications.

2.0 Applicability

This rule is applicable to any person who supplies, sells, offers for sale, or applies any adhesive product used within the District. This rule is also applicable to any person who supplies, sells, offers for sale, or applies any solvent associated with the use of adhesive product within the District.

3.0 Definitions

The following definitions apply for the purpose of this rule.

- 3.1 ABS Welding Adhesive: any adhesive that is intended by the manufacturer to weld acrylonitrile butadiene styrene (ABS) plastic. ABS is made by reacting monomers of acrylonitrile, butadiene, and styrene and is normally identified with ABS marking.
- 3.2 Adhesive: any material used to bond two surfaces together by attachment.
- 3.3 Adhesive Primers: any material applied to a substrate prior to the application of an adhesive to provide a bonding surface.
- 3.4 Adhesive Products: adhesives and adhesive primers.
- 3.5 Aerosol Spray Adhesive: a mixture of rubber, resin, liquids and gaseous solvents and propellants packaged in a disposable nonrefillable container for hand-held application.
- 3.6 Application Equipment: a device, including, but not limited to, a spray gun, brush, and roller, used to apply adhesives, coatings, or inks.
- 3.7 Architectural: pertaining to stationary structures including buildings, houses, and mobile homes, and their appurtenances.
- 3.8 Ceramic Tile Installation Adhesive: any adhesive that is intended by the manufacturer to be used for installation of ceramic tiles.

- 3.9 Coating: a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealers, and stains.
- 3.10 Composite Vapor Pressure: the sum of the partial pressure of the compounds defined as VOC. VOC composite partial pressure is calculated as follows:

$$PP_c = \frac{\sum_{i=1}^n (W_i)(VP_i) / MW_i}{\frac{W_w}{MW_w} + \sum_{e=1}^n \frac{W_e}{MW_e} + \sum_{i=1}^n \frac{W_i}{MW_i}}$$

Where:

- W_i = Weight of the “i”th VOC compound, in grams
 W_w = Weight of water, in grams
 W_e = Weight of the “e”th exempt compound, in grams
 MW_e = Molecular weight of the “e”th exempt VOC compound, in grams per gram-mole
 MW_i = Molecular weight of the “i”th VOC compound, in grams per gram-mole
 MW_w = Molecular weight of water, in grams per gram-mole
 PP_c = VOC composite vapor pressure at 68°F, in mm Hg
 VP_i = Vapor pressure of the “i”th VOC compound at 68°F, in mm Hg

- 3.11 Contact Adhesive: any adhesive that is intended by the manufacturer to adhere to itself instantaneously upon contact. This adhesive is applied to both adherends and allowed to become dry, which develops a bond when the adherends are brought together without sustained pressure.
- 3.12 Contact Adhesive - Specialty: contact adhesives that are intended by the manufacturer to be used for the bonding of nonporous substrates to each other, the bonding of decorative laminate in postforming applications, the bonding of decorative laminate to metal, melamine-covered board, or curved surfaces, or the bonding of any substrate to metal, rubber, rigid plastic, or wood veneer not exceeding 1/16 inch in thickness.
- 3.13 Control System: a control device and a collection system.
- 3.14 CPVC Welding Adhesive: any adhesive intended by the manufacturer for the welding of CPVC (chlorinated polyvinyl chloride) plastic. CPVC is a polymer of the monomer that contains 67 percent chlorine and is normally identified with a CPVC marking.
- 3.15 Cured Adhesive, Cured Coating, or Cured Ink: an adhesive, coating, or ink that is dry to the touch.
- 3.16 Exempt Compounds: compounds identified as exempt under the definition of VOC, in Rule 1020 (Definitions).

- 3.17 Flexible Vinyl: a nonrigid polyvinyl chloride plastic with at least five percent, by weight of plasticizer content. A plasticizer is a material, such as a high boiling point organic solvent, that is incorporated into an adhesive to increase its flexibility, workability, or distensibility, and may be determined using the latest version of ASTM Method E260 or from product formulation data.
- 3.18 Floor Covering Installation: installation of wood flooring, carpet, floor tile, or artificial grass. Floor covering installation does not include ceramic tile installation or perimeter bonded sheet flooring installation.
- 3.19 Grams of VOC per Liter of Adhesive Product, Excluding Water and Exempt Compounds: the weight of VOC per combined volume of VOC and coating solids, calculated using the following equation:

$$\begin{array}{l} \text{Grams of VOC per Liter of} \\ \text{Adhesive Product, Excluding} \\ \text{Water and Exempt Compounds} \end{array} = \frac{W_s - W_w - W_{ec}}{V_m - V_w - V_{ec}}$$

Where:

- W_s = weight of volatile compounds, in grams
 W_w = weight of water, in grams
 W_{ec} = weight of exempt compounds, in grams
 V_m = volume of material, in liters
 V_w = volume of water, in liters
 V_{ec} = volume of exempt compounds, in liters

- 3.20 Grams of VOC per Liter of Material: the weight of VOC per volume of material, calculated using the following equation:

$$\text{Grams of VOC per Liter of Material} = (W_s - W_w - W_{ec}) / V_m$$

Where:

- W_s = weight of all volatile compounds, in grams
 W_w = weight of water, in grams
 W_{ec} = weight of exempt compounds, in grams
 V_m = volume of the material, in liters

- 3.21 High Precision Optics: optical elements used in electro-optical devices which are designed to sense, detect, or transmit light energy, including specific wavelengths of light energy and changes in light energy levels.
- 3.22 High-Volume, Low-Pressure (HVLP) Spray Equipment: equipment used to apply materials by means of a spray gun which is designed and intended to be operated, and which is operated, between 0.1 and 10.0 psig of air atomizing pressure.
- 3.23 Low-Solids Adhesive Product: any adhesive or adhesive primer that contains less than 120 grams of solids per liter of material.

- 3.24 Maintenance Cleaning: the cleaning of tools, forms, molds, jigs, machinery, and equipment, and the cleaning of work areas where maintenance or manufacturing occurs.
- 3.25 Manufacturing Process: the process of making goods or articles by hand or by machine.
- 3.26 Multipurpose Construction: the installation or repair of construction materials including, but not limited to, drywall, subfloor, panelling, baseboards, fiberglass, ceiling tiles, and ceiling panels.
- 3.27 Non-Absorbent Container: a container made of non-porous material that does not allow the migration of solvents through it.
- 3.28 Non-Atomized Solvent Flow: solvents in the form of a liquid stream without the introduction of any propellant.
- 3.29 Non-Leaking Container: a container without liquid leak.
- 3.30 Organic Solvent: the same as “Solvent.”
- 3.31 Organic Solvent Cleaning: an activity, or operation, or process, (including surface preparation, cleanup, or wipe cleaning), performed outside of a degreaser, that uses organic solvent to remove uncured adhesives, uncured coatings, uncured inks or other contaminants, including, but not limited to, dirt, soil, oil, lubricants, coolants, moisture, fingerprints, and grease, from parts, products, tools, machinery, application equipment and general work areas. Cleaning spray equipment used for the application of coatings, adhesives, or ink, is also considered to be organic solvent cleaning.
- 3.32 Percent VOC by Weight: is the ratio of the weight of the VOC to the weight of the material, expressed as a percentage.
- 3.33 Perimeter Bonded Sheet Flooring Installation: the installation of sheet flooring with vinyl backing onto a nonporous substrate using an adhesive designed to be applied only to a strip of up to four inches wide around the perimeter of the sheet flooring.
- 3.34 Plastic Cement Welding Adhesive: adhesives composed of resins and solvents that are used to dissolve plastic surfaces to form a bond between mating surfaces.
- 3.35 Plastic Cement Welding Primer: any primer intended by the manufacturer to prepare plastic substrates prior to welding.
- 3.36 Plastic Foam: a foam constructed of plastic material.
- 3.37 Porous Materials: materials with surfaces permeable to liquids. Examples of porous materials include paper, and cardboard.

- 3.38 Pre-formed Rubber Products: any rubber product which has undergone a vulcanization process and is in its final state for further use and is not intended to be vulcanized any further.
- 3.39 Propellant: any gas, including air, in a pressure container for expelling the contents when the pressure is released.
- 3.40 PVC Welding Adhesive: any adhesive intended by the manufacturer to weld polyvinyl chloride (PVC) plastic. PVC plastic is a polymer of the chlorinated vinyl monomer that contains 57 percent chlorine and which is normally identified with a PVC marking.
- 3.41 Repair Cleaning: a solvent cleaning operation or activity carried out during a repair process.
- 3.42 Rubber: any natural or manmade rubber substrate, including but not limited to styrene-butadiene rubber (SBR), polychloroprene (neoprene), butyl rubber, nitrile rubber, chlorosulfonated polyethylene (CSM), and ethylene propylene diene terpolymer (EPDM).
- 3.43 Rubber Stock Sheets: any cured, uncured or partially cured rubber sheets which are not in their final state of intended use.
- 3.44 Rubber Vulcanization Adhesive/Primer: any adhesive product designed to bond rubber to metal, rubber, or polyester or nylon fabrics during the following vulcanization processes:
- 3.44.1 Molded vulcanization: the application of heat and pressure to uncured rubber in a mold;
- 3.44.2 Sheet-applied Vulcanization: the application of heat after rubber stock sheets have been adhered to the walls of tanks, tankers, elbow joints, protective earthquake building pads, or rail cars; or the application of heat after one or more layers of rubber stock sheets have been built-up to form a rubber product;
- 3.44.3 Cold vulcanization: the chemical reaction of an adhesive with rubber stock sheets that are adhered to earthmoving equipment, other high impact/abrasion devices, or industrial belting devices, without the application of heat or pressure.
- 3.45 Scientific Instruments: instruments (including the components, assemblies, and subassemblies used in their manufacture) and associated accessories and reagents which are used for the detection, measurement, analysis, separation, synthesis, or sequencing of various compounds.
- 3.46 Single-ply Roof Material Installation: the use of adhesive products to apply one layer of roofing membrane.

- 3.47 Solvent: any liquid containing a volatile organic compound or combination of volatile organic compounds, which is used as a diluent, thinner, dissolver, viscosity reducer, cleaning agent, or for other similar uses. These liquids are principally derived from petroleum and include petroleum distillates, chlorinated hydrocarbons, chlorofluorocarbons, ketones, and alcohols. Solutions, emulsions, and dispersions of water and soap, or water and detergent, that contain 50 grams of VOCs per liter or less, as used, are not considered to be organic solvents.
- 3.48 Solvent Flushing: the use of a solvent to remove uncured adhesives, uncured inks, uncured coatings, or contaminants from the internal surfaces and passages of equipment by flushing solvent, by a non-atomized solvent flow, through the equipment.
- 3.49 Solvent Welding: is the softening of the surfaces of two substrates by wetting them with solvents and/or adhesives, and joining them together with a chemical and/or physical reaction(s) to form a fused union.
- 3.50 Staple and Nail Manufacturing Adhesive: any adhesive that is intended by the manufacturer to bond industrial staples into a clip or to be applied to industrial nails to produce collated nails.
- 3.51 Stationary Source: as defined in Rule 2201 (New and Modified Stationary Source Review Rule).
- 3.52 Stripping: the use of solvent to remove material such as cured adhesives, cured inks, cured or dried paint, cured or dried paint residue or temporary protective coating.
- 3.53 Structural Glazing: the use of adhesives to bond glass, ceramic, metal, stone, or composite panels to the exterior of a building.
- 3.54 Surface Preparation: the removal of contaminants from a surface prior to the application of coatings, inks, or adhesives or before proceeding to the next step of a manufacturing process.
- 3.55 Surface Preparation Solvent: any VOC containing material used to remove dirt, oil, and other contaminants. This surface cleaning is typically done prior to the application of an adhesive product.
- 3.56 Thinner: a solvent that is added to an adhesive, coating, or ink to make it more fluid.
- 3.57 Tire Repair: the repair of a hole, tear, fissure, or blemish in a tire casing by grinding or gouging, applying adhesive or sealant product and filling the hole or crevice with rubber.
- 3.58 Ultraviolet Ink: as defined in Rule 4607 (Graphic Arts).
- 3.59 Volatile Organic Compound (VOC): as defined in Rule 1020 (Definitions).

- 3.60 Waste Solvent Material: any solvent which may contain dirt, oil, metal particles, sludge, and/or waste products, or wiping material containing VOCs including, but not limited to, paper, cloth, sponge, rag, or cotton swab used in organic solvent cleaning.
- 3.61 Waterproof Resorcinol Glue: a two-part, resorcinol-resin-based adhesive designed for applications where the bond line must be resistant to conditions of continuous immersion in fresh or salt water.
- 3.62 Wipe Cleaning: a solvent cleaning activity performed by hand rubbing an absorbent material such as a rag, paper, sponge, brush, or cotton swab containing solvent.

4.0 Exemptions

4.1 The provisions of this rule shall not apply to:

- 4.1.1 A stationary source that uses 20 gallons or less of adhesives products in a calendar year. Commercial and industrial operations exempted by this section shall maintain monthly records documenting the type and quantity of adhesive products and solvents used and provide the records to the District upon request.
- 4.1.2 The use of adhesive products containing less than 20 grams VOC per liter.
- 4.1.3 The testing and evaluation of adhesives in research laboratories, analytical laboratories, or quality assurance laboratories. Laboratory operators shall maintain monthly records documenting the type and quantity of adhesive products used and provide the records to the District upon request.
- 4.1.4 The use of adhesives in tire repair provided the label states “for tire repair use only.”
- 4.1.5 The use of adhesives that are sold or supplied with 8 fluid oz. or less of adhesive in nonreusable containers.
- 4.1.6 The use of aerosol spray adhesive products.
- 4.1.7 Household adhesive products subject to Article 2, Consumer Products, Sections 94507 - 94517, Title 17, California Code of Regulations.
- 4.1.8 Adhesive products which are subject to the VOC limit requirements of Rule 4605 (Aerospace Assembly and Component Coating Operations), Rule 4607 (Graphic Arts), and Rule 4681 (Rubber Tire Manufacturing).
- 4.1.9 Contact adhesives that are subject to the Consumer Product Safety Commission regulations in 16 CFR, Part 1302, that have a flash point

greater than 20°F as determined pursuant to those regulations, and that are sold in packages that contain 128 fluid ounces or less.

4.1.10 Stripping of cured adhesives, except the stripping of such materials from spray application equipment.

4.2 The prohibition of sale in Section 5.4 shall not apply to the following:

4.2.1 Adhesive products shipped, supplied, or sold exclusively to persons outside the District for use outside the District.

4.2.2 Adhesive products sold to any person who complies with the requirements of Section 5.1.5.

5.0 Requirements

5.1 Process and Control Requirements

5.1.1 The VOC content of adhesive products used for specific applications shall not exceed the following limits, expressed as grams of VOC per liter of adhesive product, excluding water and exempt compounds, or grams of VOC per liter of material for low-solids adhesive products, as applied:

Table 1 - VOC Content Limits for Adhesive Products

Applications	VOC Limits [Grams Per Liter]	
	Effective 12/14/2000	Effective 7/1/2001
Multipurpose Construction	200	200
Floor Covering Installation	150	150
Ceramic Tile Installation	130	130
Perimeter Bonded Sheet Flooring Installation	660	660
Single-Ply Roof Material Installation	250	250
Structural Glazing	100	100
ABS Welding Adhesive	400	400
CPVC Welding Adhesive	490	490
PVC Welding Adhesive	510	510
Other Plastic Cement Welding Adhesive	450	450
Plastic Cement Welding Adhesive Primer	650	650
Adhesive Primers	250	250
Staple and Nail Manufacturing	640	640
Contact Adhesive	250	250
Contact Adhesive – Specialty	400	250
Rubber Vulcanization Adhesive/Primer	850	850
Waterproof Resorcinol Glue	170	170

- 5.1.2 Effective March 17, 1995, the VOC content of adhesive products, except as provided in Section 5.1.1, shall not exceed the following limits, expressed as grams of VOC per liter of adhesive product, excluding water and exempt compounds, or grams of VOC per liter of material for low-solids adhesive products, as applied:

Table 2 - VOC Content Limits for Adhesive Products

Material Bonded	VOC Limit [Grams Per Liter]
	Effective 12/14/2000
Metal to Metal	30
Porous Materials	120
Plastic Foam	120
Wood	30
Pre-formed Rubber Products	250
All Other Substrates	250

The higher of the two limits from the table above applies to the bonding of two dissimilar substrates.

- 5.1.3 Spray application of adhesives products shall only be performed using airless; air-assisted airless; High-Volume, Low Pressure (HVLP) spray equipment; disposable aerosol containers; or electrostatic spray equipment. Air-atomized spray may only be used for the application of contact adhesives or specialty contact adhesives.
- 5.1.3.1 High-Volume, Low-Pressure (HVLP) spray equipment shall be operated in accordance with the manufacturer's recommendations.
- 5.1.3.2 For HVLP spray guns manufactured prior to January 1, 1996, the end user shall demonstrate that the gun meets HVLP spray equipment standards. Satisfactory proof will be either in the form of manufacturer's published technical material or by a demonstration using a certified air pressure tip gauge, measuring the air atomizing pressure dynamically at the center of the air cap and at the air horns.
- 5.1.3.3 A person shall not sell or offer for sale for use within the District any HVLP spray gun without a permanent marking denoting the maximum inlet air pressure in psig at which the gun will operate within the parameters specified in section 3.0.
- 5.1.3.4 Sections 5.1.3.1, 5.1.3.2, and 5.1.3.3 shall be effective on and after November 15, 2002.
- 5.1.4 In lieu of complying with the requirements in Sections 5.1.1, 5.1.2, and 5.1.3, an owner or operator may operate a VOC emission collection and

control system that controls the emissions from the source operation and that meets the requirements of Section 5.1.5.

5.1.5 Control System Requirements

The air pollution control equipment shall be operated with an overall capture and control efficiency of at least 85 percent on a mass basis as determined in accordance with Section 6.3. The control equipment shall be under District permit. In no case shall compliance through the use of this section result in VOC emissions in excess of the VOC emissions which would result from compliance with Sections 5.1.1, 5.1.2, and 5.1.3.

5.1.5.1 The minimum required control efficiency of an emission control system at which an equivalent or greater level of VOC reduction will be achieved shall be calculated by using the following equation:

$$CE = \left[1 - \left(\frac{VOC_{LWc}}{VOC_{LWn,Max}} \times \frac{1 - (VOC_{LWn,Max} / D_{n,Max})}{1 - (VOC_{LWc} / D_c)} \right) \right] \times 100$$

Where:

- CE = Control Efficiency, percent
- VOC_{LWc} = VOC Limit, less water and less exempt compounds
- VOC_{LWn,Max} = Maximum VOC content of noncompliant adhesive product used in conjunction with a control device, less water and less exempt compounds
- D_{n,Max} = Density of solvent, reducer, or thinner contained in the noncompliant adhesive product, containing the maximum VOC content
- D_c = Density of corresponding solvent, reducer, or thinner used in the compliant adhesive products

5.2 Evaporative Loss Minimization

- 5.2.1 Solvents used for surface preparation in adhesive operations shall not contain more than 250 grams of VOC per liter of material, except for solvents used for surface preparation prior to rubber vulcanization processes, which shall not contain more than 850 grams of VOC per liter of material.
- 5.2.2 Except in enclosed equipment cleaners, no person shall use materials containing VOC for cleanup in adhesive operations unless the composite vapor pressure of the solvent is less than 45 mm of Hg at 68°F (20°C).
- 5.2.3 Use closed containers to store all adhesive products, solvents, or other VOC containing materials except when accessed for use.

5.2.4 Use self-closing containers for the disposal of all adhesive materials, solvents, or any unused VOC containing materials in such a manner as to effectively control VOC emissions.

5.2.5 Section 5.2 shall remain in effect until November 14, 2002.

5.3 Organic Solvent Cleaning, Storage and Disposal Requirements

5.3.1 Section 5.3 shall be effective on and after November 15, 2002, unless otherwise indicated.

5.3.2 From November 15, 2002, through November 14, 2003, an owner or operator shall not use organic solvents for cleaning operations that exceed the VOC content limits and composite partial pressure limits specified as being “Effective November 15, 2002 through November 14, 2003” in Table 3.

5.3.3 On and after November 15, 2003, an owner or operator shall not use organic solvents for cleaning operations that exceed the VOC content limits specified as being “Effective November 15, 2003” in Table 3. On and after November 15, 2003, the composite partial pressure of solvents used for cleaning operations will not be regulated.

Table 3 – VOC Limits for Organic Solvents Used in Cleaning Operations

Type of Solvent Cleaning Operation	Effective November 15, 2002 through November 14, 2003		Effective November 15, 2003
	VOC Content Limit Grams of VOC/liter of material (lb/gal)	VOC Composite Partial Pressure Limit, mm Hg at 20°C (68°F)	VOC Content Limit Grams of VOC/liter of material (lb/gal)
A. Product Cleaning During Manufacturing Process or Surface Preparation for Adhesive Application			
1. General	70 (0.58)	no limit	50 (0.42)
2. Surface Preparation Prior to Rubber Vulcanization Process	850 (7.1)	no limit	850 (7.1)
B. Repair and Maintenance Cleaning	50 (0.42)	no limit	50 (0.42)
C. Cleaning of Adhesive Application Equipment	950 (7.9)	35	550 (4.6)

- 5.3.4 The provisions of Table 3 shall not apply to the following applications:
 - 5.3.4.1 Cleaning of solar cells, laser hardware, scientific instruments, or high precision optics.
 - 5.3.4.2 Cleaning in laboratory tests and analyses, or bench scale or research and development projects.
 - 5.3.4.3 Cleaning of paper-based gaskets, and clutch assemblies where rubber is bonded to metal by means of an adhesive.
 - 5.3.4.4 Until June 30, 2005, the cleaning of ultraviolet lamps used for the curing of ultraviolet ink or coatings.
- 5.3.5 The provisions of Sections 5.3.6 through 5.3.8 of this rule shall only apply to an owner or operator that uses any solvent containing more than 50 grams of VOC per liter of material for organic solvent cleaning.
- 5.3.6 Cleaning activities that use solvents shall be performed by one or more of the following methods:
 - 5.3.6.1 Wipe cleaning; or
 - 5.3.6.2 Application of solvent from hand-held spray containers from which solvents are dispensed without a propellant-induced force; or
 - 5.3.6.3 Non-atomized solvent flow method in which the cleaning solvent is collected in a container or a collection system which is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up inside the container; or
 - 5.3.6.4 Solvent flushing method in which the cleaning solvent is discharged into a container that is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up inside the container. The discharged solvent from the equipment must be collected into containers without atomizing into the open air. The solvent may be flushed through the system by air or hydraulic pressure, or by pumping.
- 5.3.7 Solvent shall not be atomized into the open air unless it is vented to a VOC emission control system that complies with Section 5.1.5. This provision shall not apply to the cleaning of nozzle tips of automated spray equipment systems, except for robotic systems, and cleaning with spray bottles or containers described in Section 5.3.6.2.

- 5.3.8 An owner or operator shall not use VOC-containing materials to clean spray equipment used for the application of coatings, adhesives, or ink, unless an enclosed system or equipment that is proven to be equally effective at controlling emissions is used for cleaning. If an enclosed system is used, it must totally enclose spray guns, cups, nozzles, bowls, and other parts during washing, rinsing and draining procedures, and it must be used according to the manufacturer's recommendations and must be closed when not in use.
- 5.3.9 An owner or operator shall store or dispose of fresh or spent solvents, waste solvent materials such as cloth, paper, etc., coatings, adhesives, catalysts, and thinners in closed, non-absorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty. The containers used for disposal of adhesive materials, solvents, or any unused VOC containing materials shall be self-closing.

5.4 Prohibition of Sale

Except as provided in Section 4.2, no person shall supply, sell, or offer for sale any adhesive product that does not meet the limits as specified in Section 5.1.1, effective January 1, 1996.

6.0 Administrative Requirements

6.1 Recordkeeping

- 6.1.1 Any person subject to Sections 5.1 or 5.2 shall maintain the following records:
- 6.1.1.1 Daily records of the type and quantity of all adhesives, primers, and solvents used in each operation.
 - 6.1.1.2 Records of the VOC content, in grams VOC per liter, of all adhesive materials used or stored at the stationary source.
 - 6.1.1.3 Records of the VOC content or composite vapor pressure of all solvents used and stored at the stationary source.
 - 6.1.1.4 Recordkeeping for Emission Control Systems: Any person using an emission control system as a means of complying with the provisions in Section 5.1.5 shall maintain daily records of key system operating parameters which will demonstrate continuous operation and compliance of the emission control system during periods of emission producing activities. Key system operating parameters are those necessary to ensure compliance with VOC limits. The parameters may include, but are not limited to, temperatures, pressures, and flow rates.

- 6.1.2 Any person who claims exemption from the prohibition of sale in Section 5.4 shall maintain records for all adhesive products sold that do not meet the limits as specified in Section 5.1.1 which include the following:
 - 6.1.2.1 Records of the type, quantity, and VOC content, in grams per liter, of the adhesive products sold.
 - 6.1.2.2 Records of the name, address, and telephone number of the persons to whom the adhesive products are sold.
- 6.1.3 Effective and beginning on or after December 14, 2000, records required by Section 6.1.1 and Section 6.1.2 shall be retained at the stationary source for a period of at least five years and be made available to the District upon request.
- 6.1.4 Effective on and after November 15, 2002, an owner or operator subject to Section 5.3 shall also comply with the following recordkeeping requirements:
 - 6.1.4.1 Keep a copy of the manufacturer's product data sheet or material safety data sheet of the solvents used for organic solvent cleaning activities.
 - 6.1.4.2 Maintain a current list of solvents that are being used for organic solvent cleaning activities. The list shall include the following information:
 - 6.1.4.2.1 The name of the solvent and its manufacturer's name.
 - 6.1.4.2.2 The VOC content of the solvent expressed in grams/liter or lb/gallon.
 - 6.1.4.2.3 When the solvent is a mixture of different materials that are blended by the operator, the mix ratio of the batch would be recorded in order to determine compliance with the specified limits of VOC content and/or VOC composite partial pressure, as applied.
 - 6.1.4.2.4 Through November 14, 2003, the composite partial pressure of the solvent expressed in mm Hg at 20°C (68°F).
 - 6.1.4.2.5 The type of cleaning activity for each solvent that is being used in accordance with the applicable cleaning category specified in Table 3 of this rule.
 - 6.1.4.3 Maintain the records required by Section 6.1.4 for a period of five years. The records shall be made available to the APCO upon request.

6.2 Labeling Requirements

- 6.2.1 VOC Content: Each container of adhesive product subject to this rule and manufactured after January 1, 1996, shall display the maximum VOC content of the adhesive product as applied. VOC content shall be displayed as grams of VOC per liter of adhesive product, excluding water and exempt compounds, or grams of VOC per liter of material for low-solids adhesive products. Each container of solvent subject to this rule shall display the maximum VOC content (in grams of VOC per liter of material) and composite vapor pressure of the solvent as supplied.
- 6.2.2 Thinning Recommendations: Each container of adhesive product subject to this rule and manufactured after January 1, 1996, shall display a statement of the manufacturer's recommendations regarding thinning, reducing, or mixing of the adhesive product with any other VOC containing material. Mixing recommendations shall specify a ratio which results in a compliant, as applied, adhesive product.
- 6.2.3 Effective on and after November 15, 2002, manufacturers of any solvents subject to this rule shall indicate on the solvent container, or on a separate product data sheet or material safety data sheet, the name of the solvent, manufacturer's name, the VOC content, density, and VOC composite partial vapor pressure, as defined in the rule, of the solvent, as supplied. The VOC content and VOC composite vapor pressure shall be expressed in units of gm/liter or lb/gallon and mm Hg at 20°C (68°F), respectively.

6.3 Test Methods

The analysis of solvents, adhesive products, and control efficiency shall be determined by the following methods:

- 6.3.1 The VOC and solids content of adhesive products and solvents shall be determined using EPA Method 24 or other test method approved by ARB and EPA.
- 6.3.2 The capture efficiency for add-on control devices shall be determined according to EPA's technical document, "Guidelines for Determining Capture Efficiency," January 9, 1995.
- 6.3.3 The control efficiency of add-on control devices is to be determined using EPA Method 25A (Determination of Total Gaseous Organic Concentration using a Flame Ionization Analyzer) or EPA Method 25 (Determination of Total Gaseous Non Methane Organic Emissions as Carbon).
- 6.3.4 The overall capture and control efficiency shall be calculated by using the following equation:

$$CE_{\text{CAPTURE AND CONTROL}} = [CE_{\text{CAPTURE}} \times CE_{\text{CONTROL}}] / 100 \%$$

Where:

$CE_{\text{CAPTURE AND CONTROL}}$ = Overall Capture and Control Efficiency, in percent

CE_{CAPTURE} = Capture Efficiency of the collection device, in percent, as determined in Section 6.3.2

CE_{CONTROL} = Control Efficiency of the control device, in percent, as determined in Section 6.3.3

6.3.5 The composite vapor pressure of organic compounds in solvents shall be determined by quantifying the amount of each compound in the blend using gas chromatographic analysis (the latest version of ASTM E260) for organics and the latest version of ASTM D3792 for water content, if applicable, or by using product formulation data, and by summing the partial pressures of each compound at 68°F (20°C). For the purpose of this calculation, Raoult's Law applies to the blend. The vapor pressure of each single component compound may be determined using the latest version of ASTM D2879 or may be obtained from the most current edition of a published source, including, but not limited to:

6.3.5.1 "The Vapor Pressure of Pure Substances", Boublik, Fried, and Hala; Elsevier Scientific Publishing Company.

6.3.5.2 "Perry's Chemical Engineer's Handbook," McGraw-Hill Book Company.

6.3.5.3 "CRC Handbook of Chemistry and Physics," Chemical Rubber Publishing Company.

6.3.5.4 "Lange's Handbook of Chemistry," John A. Dean, editor; McGraw-Hill Book Company.

6.3.6 Determination of Solvent Losses from Spray Gun Cleaning Systems

The passive and active solvent losses from spray gun cleaning systems shall be determined by using SCAQMD "General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems" dated October 3, 1989. The test solvent for this determination shall be lacquer thinner with a minimum vapor pressure of 105 mm Hg at 20°C. The minimum temperature shall be 15°C.

6.4 Multiple Test Methods

When more than one test method or set of test methods is specified for any testing, 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 this rule.

6.5 Version of Test Methods

All ASTM test methods referenced in Section 6.0 are the most recently EPA-approved version that appears in the Code of Federal Regulations as Materials Approved for Incorporation by Reference.

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