

**Title 26 DEPARTMENT OF THE ENVIRONMENT**

**Subtitle 11 AIR QUALITY**

**Chapter 35 Volatile Organic Compounds from Adhesives and Sealants**

**.01 Applicability and Exemptions.**

A. This chapter applies to a person who, on or after January 1, 2009:

(1) Sells, supplies, offers for sale, or manufactures for sale in the State an adhesive, sealant, adhesive primer, or sealant primer for use in the State; or

(2) Uses or applies, for compensation or facilities maintenance, an adhesive, sealant, adhesive primer, or sealant primer within the State.

B. The requirements of this chapter do not apply to the use or sale of the following compounds:

(1) Adhesives, sealants, adhesive primers, or sealant primers being tested or evaluated in a research and development, quality assurance, or analytical laboratory, if records are maintained as required in Regulation .05A of this chapter;

(2) Adhesives, sealants, adhesive primers, or sealant primers that are subject to COMAR 26.11.19.15C(1)—(3), COMAR 26.11.19.30 in accordance with the conditions in the regulation, or COMAR 26.11.32;

(3) Adhesives and sealants that contain less than 20 grams of VOC per liter of adhesive or sealant, less water and less exempt compounds, as applied;

(4) Cyanoacrylate adhesives;

(5) Adhesives, sealants, adhesive primers, or sealant primers, except plastic cement welding, ABS, CPVC, and PVC adhesives, and contact bond adhesives that are sold or supplied by the manufacturer or supplier in containers with:

(a) A net volume of 16 fluid ounces or less; or

(b) A net weight of 1 pound or less; or

(6) Contact bond adhesives that are sold or supplied by the manufacturer or supplier in containers with a net volume of 1 gallon or less.

C. The requirements of this chapter do not apply to the use of adhesives, sealants, adhesive primers, sealant primers, surface preparation solvents, or cleanup solvents in the following operations:

(1) Tire repair operations, if the label of the adhesive states, "For Tire Repair Only";

(2) Research and development, testing, manufacture, assembly, and repair of:

(a) Aerospace components;

(b) Undersea-based ship and weapons systems components; and

(c) Specialty electronic systems and subsystems for defense and homeland security;

(3) The manufacture of medical equipment, including medical devices subject to COMAR 26.11.19.31; and

(4) Plaque laminating operations in which adhesives are used to bond clear, polyester acetate laminate to wood with lamination equipment installed before July 1, 1992.

D. The provisions of this chapter do not apply if:

(1) The total VOC emissions from all noncomplying adhesives, sealants, adhesive primers, and sealant primers used at the source are less than 200 pounds per calendar year, or an equivalent volume; and

(2) The person claiming the usage exemption under §D(1) of this regulation maintains monthly operational records sufficient to demonstrate compliance as required by Regulation .05B of this chapter.

E. The provisions of Regulation .04A and D of this chapter do not apply to the use of adhesives, sealants, adhesive primers, sealant primers, cleanup solvents, and surface preparation solvents if:

(1) The total volume of noncomplying adhesives, sealants, primers, cleanup solvents, and surface preparation solvents applied facility-wide does not exceed 55 gallons per calendar year; and

(2) The person claiming the usage exemption under §E(1) of this regulation maintains monthly operational records sufficient to demonstrate compliance as required by Regulation .05A of this chapter.

F. This chapter does not apply to a manufacturer or distributor who sells, supplies, or offers for sale in the State an adhesive, sealant, adhesive primer, or sealant primer that does not comply with Regulation .04A of this chapter, if the manufacturer or distributor makes and keeps records demonstrating that:

(1) The adhesive, sealant, adhesive primer, or sealant primer is intended for shipment and use outside the State; and

(2) The manufacturer or distributor has taken reasonable precautions to assure that the adhesive, sealant, adhesive primer, or sealant primer is not distributed to or within the State.

G. Notwithstanding §F of this regulation, this chapter does apply to an adhesive, sealant, adhesive primer, or sealant primer that is sold, supplied, or offered for sale by a person to a retail outlet in the State.

H. Regulation .04A of this chapter does not apply to the sale of an adhesive, sealant, adhesive primer, or sealant primer to a person using State permitted add-on air pollution control equipment, pursuant to Regulation .04E of this chapter, to comply with the requirements of this chapter.

I. The VOC limitations in Regulation .04 of this chapter shall be applicable to single-ply roof membrane installation and repair adhesives, single-ply roof membrane sealants, and single-ply roof membrane adhesive primers according to the following schedule:

- (1) For the year 2009, from May 15 through September 15;
- (2) For the years 2010 and 2011, from May 1 through September 30; and
- (3) On and after January 1, 2012.

## **02 Incorporation by Reference.**

A. In this chapter, the following documents are incorporated by reference.

B. Documents Incorporated.

(1) SCAQMD Method 304-91 Determination of Volatile Organic Compounds in Various Materials (Revised February 1996).

(2) ASTM Designation: ASTM D 4457-85 (Reapproved 1996) Standard Test Method for Determination of Dichloromethane and 1,1,1-Trichloroethane in Paints and Coatings by Direct Injection into a Gas Chromatograph.

(3) ASTM Designation: ASTM E 260-91 Standard Practice for Gas Column Chromatography.

(4) ASTM Designation: ASTM E 260-96 (Reapproved 2006) Standard Practice for Gas Column Chromatography.

(5) ASTM Designation: ASTM D 3792-79 Standard Test Method for Water Content of Coatings by Direct Injection Into a Gas Chromatograph.

(6) ASTM Designation: ASTM D 3792-86 Standard Test Method for Water Content of Coatings by Direct Injection Into a Gas Chromatograph.

(7) ASTM Designation: ASTM D 2879-86 Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope.

(8) EPA Technical Document "Guidelines for Determining Capture Efficiency", issued January 9, 1995 (40 CFR Part 51 Appendix M).

(9) CARB Method 100 Procedures for Continuous Gaseous Emission Stack Sampling (Amended July 28, 1997).

(10) SCAQMD "General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems", dated October 3, 1989.

(11) SCAQMD Method 316A-92 Determination of Volatile Organic Compounds in Materials Used for Pipes and Fittings (Revised October 1996).

### **.03 Definitions.**

A. In this chapter, the following terms have the meanings indicated.

B. Terms Defined.

(1) "ABS welding adhesive" means acrylonitrile-butadiene-styrene adhesive.

(2) "Acrylonitrile-butadiene-styrene adhesive" means an adhesive intended by the manufacturer to weld acrylonitrile-butadiene-styrene pipe, which is made by reacting monomers of acrylonitrile, butadiene, and styrene.

(3) "Adhesive" means a chemical substance that is applied for the purpose of bonding two surfaces together other than by mechanical means.

(4) "Adhesive primer" means a product intended by the manufacturer for application to a substrate, before the application of an adhesive, to provide a bonding surface.

(5) "Aerosol adhesive" means an adhesive packaged as an aerosol product in which the spray mechanism is permanently housed in a nonrefillable can designed for handheld application without the need for ancillary hoses or spray equipment.

(6) "Aerospace component" means the fabricated part, assembly of parts, or completed unit of an aircraft, helicopter, missile, or space vehicle, including passenger safety equipment.

(7) "Architectural sealant or primer" means a sealant or sealant primer intended by the manufacturer to be applied to stationary structures, including mobile homes, and their appurtenances such as hand railings, cabinets, bathroom and kitchen fixtures, fences, rain gutters and downspouts, and windows.

(8) "Automotive glass adhesive primer" means an adhesive primer:

(a) Labeled by the manufacturer to be applied to automotive glass before installation of the glass using an adhesive/sealant; and

(b) That improves adhesion to pinch weld and blocks ultraviolet light.

(9) "CARB" means the California Air Resources Board.

(10) "Ceramic tile installation adhesive" means an adhesive intended by the manufacturer for use in the installation of ceramic tiles.

(11) "Chlorinated polyvinyl chloride plastic" means a polymer of the vinyl chloride monomer that contains 67 percent chlorine and is normally marked with the identifier "CPVC".

(12) "Chlorinated polyvinyl chloride welding adhesive" means an adhesive labeled for welding of chlorinated polyvinyl chloride plastic.

(13) "Computer diskette jacket manufacturing adhesive" means an adhesive intended by the manufacturer to glue the fold-over flaps to the body of a vinyl computer diskette jacket.

(14) Contact Bond Adhesive.

(a) "Contact bond adhesive" means an adhesive that:

(i) Is designed for application to both surfaces to be bonded together;

(ii) Is allowed to dry before the two surfaces are placed in contact with each other;

(iii) Forms an immediate bond that is impossible, or difficult, to reposition after both adhesive-coated surfaces are placed in contact with each other; and

(iv) Does not need sustained pressure or clamping of surfaces after the adhesive-coated surfaces have been brought together using sufficient momentary pressure to establish full contact between both surfaces.

(b) "Contact bond adhesive" does not include rubber cements that are primarily intended for use on paper substrates or vulcanizing fluids that are designed and labeled for tire repair only.

(15) "Cove base" means a flooring trim unit, generally made of vinyl or rubber, having a concave radius on one edge and a convex radius on the opposite edge, that is used in forming a junction between the bottom wall course and the floor or to form an inside corner.

(16) "Cove base installation adhesive" means an adhesive intended by the manufacturer to be used for the installation of cove base or wall base on a wall or vertical surface at floor level.

(17) "CPVC welding adhesive" means chlorinated polyvinyl chloride welding adhesive.

(18) "Cyanoacrylate adhesive" means an adhesive with a cyanoacrylate content of at least 95 percent by weight.

(19) "Dry wall installation" means the installation of gypsum dry wall to studs or solid surfaces using an adhesive formulated for that purpose.

(20) "Exempt compound" means a compound that does not contain VOCs.

(21) "Fiberglass" means a material consisting of extremely fine glass fibers.

(22) "Flexible vinyl" means nonrigid polyvinyl chloride plastic with at least 5 percent by weight plasticizer content.

(23) Indoor Floor Covering Installation Adhesive.

(a) "Indoor floor covering installation adhesive" means an adhesive intended by the manufacturer for use in the installation of wood flooring, carpet, resilient tile, vinyl tile, vinyl backed carpet, resilient sheet and roll, or artificial grass.

(b) "Indoor floor covering installation adhesive" does not include adhesives used to install ceramic tile and perimeter bonded sheet flooring with vinyl backing onto a nonporous substrate, such as flexible vinyl.

(24) "Laminate" means a product made by bonding together two or more layers of material.

(25) "Low-solids adhesive, sealant, or primer" means a product that contains 120 grams or less of solids per liter of material.

(26) "Marine deck sealant" or "marine deck sealant primer" means a sealant or sealant primer labeled for application to wooden marine decks.

(27) "Medical equipment manufacturing" means the manufacture of medical devices, including catheters, heart valves, blood cardioplegia machines, tracheostomy tubes, blood oxygenators, and cardiatory reservoirs.

(28) "Metal to urethane/rubber molding or casting adhesive" means an adhesive intended by the manufacturer to bond metal to high density or elastomeric urethane or molded rubber materials, in heated molding or casting processes, to fabricate products such as rollers for computer printers or other paper handling equipment.

(29) "Multipurpose construction adhesive" means an adhesive intended by the manufacturer for use in the installation or repair of various construction materials, including but

not limited to drywall, subfloor, panel, fiberglass reinforced plastic (FRP), ceiling tile, and acoustical tile.

(30) "Nonmembrane roof installation/repair adhesive" means an adhesive intended by the manufacturer for use in the installation or repair of nonmembrane roofs but is not intended for the installation of prefabricated single-ply flexible roofing membrane, such as plastic or asphalt roof cement, asphalt roof coating, and cold application cement.

(31) "Operator" means the person or persons that are legally responsible for the operation of a source of air pollution.

(32) "Outdoor floor covering installation adhesive" means an adhesive intended by the manufacturer for use in the installation of floor covering that is not in an enclosure but is exposed to ambient weather conditions during normal use.

(33) "Panel installation" means the installation of plywood, predecorated hardboard or tileboard, fiberglass-reinforced plastic, and similar predecorated or nondecorated panels to studs or solid surfaces using an adhesive formulated for that purpose.

(34) "Perimeter bonded sheet flooring installation" means 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 4 inches wide around the perimeter of the sheet flooring.

(35) "Plastic cement welding adhesive" means an adhesive intended by the manufacturer for use to dissolve the surface of plastic, except ABS, CPVC, and PVC plastic, to form a bond between mating surfaces.

(36) "Plastic cement welding adhesive primer" means a primer intended by the manufacturer for use to prepare plastic substrates before bonding or welding.

(37) "Plastic foam" means foam constructed of plastics.

(38) "Plasticizer" means a material, such as a high boiling point organic solvent, that is incorporated into a vinyl to increase its flexibility, workability, or distensibility, as determined by ASTM Method E-260-96.

(39) "Plastics" means synthetic materials chemically formed by the polymerization of organic (carbon-based) substances that are usually compounded with modifiers, extenders, or reinforcers and are capable of being molded, extruded, cast into various shapes, or films, or drawn into filaments.

(40) "Polyvinyl chloride plastic" means a polymer of the chlorinated vinyl monomer that contains 57 percent chlorine.

(41) "Polyvinyl chloride (PVC) welding adhesive" means an adhesive intended by the manufacturer for use in the welding of polyvinyl chloride plastic pipe.

(42) "Porous material" means a substance that has tiny openings, often microscopic, in which fluids may be absorbed or discharged, including, but not limited to, wood, paper, and corrugated paperboard.

(43) "Propellant" means a fluid under pressure that expels the contents of a container when a valve is opened.

(44) "PVC welding adhesive" means polyvinyl chloride welding adhesive.

(45) Radar System.

(a) "Radar system" means a system that uses electromagnetic waves to identify the range, altitude, direction, or speed of both moving and fixed objects such as aircraft, ships, motor vehicles, weather formations, and terrain.

(b) "Radar system" includes a transmitter that emits radio waves, which are reflected by the target and detected by a receiver, typically in the same location as the transmitter.

(46) "Reactive diluent" means a liquid that is a reactive organic compound during application and through chemical and physical reactions, such as polymerization, 20 percent or more of the reactive organic compound becomes an integral part of a finished material.

(47) "Roadway sealant" means a sealant intended by the manufacturer for application to public streets, highways, and other surfaces, including curbs, berms, driveways, and parking lots.

(48) "Rubber" means a natural or manmade rubber substrate, including, but not limited to, styrene-butadiene rubber, polychloroprene (neoprene), butyl rubber, nitrile rubber, chlorosulfonated polyethylene, and ethylene propylene diene terpolymer.

(49) "SCAQMD" means the South Coast Air Quality Management District, a part of the California Air Resources Board, which is responsible for the regulation of air quality in the State of California.

(50) Sealant.

(a) "Sealant" means a material with adhesive properties that is formulated primarily to fill, seal, waterproof, or weatherproof gaps or joints between two surfaces.

(b) "Sealant" includes sealant primers and caulks.

(51) "Sealant primer" means a product intended by the manufacturer for application to a substrate, before the application of a sealant, to enhance the bonding surface.

(52) Sheet-Applied Rubber Installation.



(a) "Sheet-applied rubber installation" means the process of applying sheet rubber liners by hand to metal or plastic substrates to protect the underlying substrate from corrosion or abrasion.

(b) "Sheet-applied rubber installation" includes laminating sheet rubber to fabric by hand.

(53) "Single-ply roof membrane" means a prefabricated single sheet of rubber, normally ethylene-propylenediene terpolymer, that is field applied to a building roof using one layer of membrane material.

(54) "Single-ply roof membrane adhesive primer" means a primer labeled for use to clean and promote adhesion of the single-ply roof membrane seams or splices before bonding.

(55) "Single-ply roof membrane installation and repair adhesive" means an adhesive labeled for use in:

(a) Single-ply roof membrane installation, which includes, as a minimum, attaching the edge of the membrane to the edge of the roof and applying flashings to vents, pipes, and ducts that protrude through the membrane; or

(b) Single-ply roof membrane repair, which includes gluing the edges of torn membrane together, attaching a patch over a hole, and reapplying flashings to vents, pipes, or ducts installed through the membrane.

(56) "Single-ply roof membrane sealant" means a sealant labeled for application to single-ply roof membrane.

(57) "Solvent" means an organic compound that is used as a diluent, thinner, dissolver, viscosity reducer, cleaning agent, or other related use.

(58) "Specialty electronic systems and subsystems for defense and homeland security" means electronic systems and subsystems used in defense and homeland security applications for:

(a) Air traffic control;

(b) Ground-based, sea-based, and air-based command and control;

(c) Radar systems;

(d) Space;

(e) Detection of chemical, biological, or explosive materials; or

(f) Sensing, jamming, deciphering, scrambling, unscrambling, intercepting, and modifying electronic signals and functions.

(59) "Structural glazing adhesive" means an adhesive intended by the manufacturer to apply glass, ceramic, metal, stone, or composite panels to exterior building frames.

(60) Subflooring Installation.

(a) "Subflooring installation" means the installation of subflooring material over floor joists, including the construction of any load bearing joists.

(b) "Subflooring" includes being covered by a finish surface material.

(61) "Surface preparation solvent" means a solvent used to remove dirt, oil, and other contaminants from a substrate before the application of a primer, adhesive, or sealant.

(62) "Thin metal laminating adhesive" means an adhesive intended by the manufacturer for use in bonding multiple layers of metal to metal or metal to plastic, in the production of electronic or magnetic components in which the thickness of the bond line or lines is less than 0.25 mils.

(63) Tire Retread Adhesive.

(a) "Tire retread adhesive" means an adhesive intended by the manufacturer for application to the back of precure tread rubber and to the casing and cushion rubber.

(b) "Tire retread adhesive" includes sealing buffed tire casings to prevent oxidation while the tire is being prepared for a new tread.

(64) "Tire repair" means a process that includes expanding a hole, tear, fissure, or blemish in a tire casing by grinding or gouging, applying adhesive, and filling the hole or crevice with rubber.

(65) "Traffic marking tape" means preformed reflective film intended by the manufacturer for application to public streets, highways, and other surfaces, including curbs, berms, driveways, and parking lots.

(66) "Traffic marking tape adhesive primer" means a primer intended by the manufacturer for application to surfaces before installation of traffic marking tape.

(67) "Undersea-based ship and weapons systems components" means parts, an assembly of parts, or completed units of defense-related manned or unmanned submersible vehicles, and missile launching systems used on undersea ships.

(68) "Waterproof resorcinol glue" means 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.

#### **.04 Standards.**

A. Except as provided in §E of this regulation and Regulation .01 of this chapter, on and after January 1, 2009, a person may not:

(1) Supply or offer for sale in the State an adhesive, sealant, adhesive primer, or sealant primer manufactured on or after January 1, 2009;

(2) Manufacture for sale in the State an adhesive, sealant, adhesive primer, or sealant primer in excess of the applicable VOC content limits specified in Table 1; or

(3) Use or apply an adhesive, sealant, adhesive primer, or sealant primer within the State that exceeds the applicable VOC content limits specified in Table 1.

B. The VOC content limits in Table 1 for adhesives applied to the listed substrates are as follows:

(1) If an operator uses an adhesive or sealant subject to a specific VOC content limit in Table 1, the specific limit, rather than an adhesive-to-substrate limit, is applicable; and

(2) If an adhesive is used to bond dissimilar substrates together, the applicable substrate category with the highest VOC content applies.

C. Surface Preparation or Cleanup Solvent.

(1) This section applies to a person subject to this chapter using a surface preparation or cleanup solvent.

(2) Except as provided in §C(3) of this regulation for single-ply roofing, a person may not use materials for surface preparation containing VOCs unless the VOC content of the surface preparation solvent is less than 70 grams per liter.

(3) If a surface preparation solvent is used in applying single-ply roofing, a person may not use materials for surface preparation containing VOCs unless the composite vapor pressure, excluding water and exempt compounds, of the surface preparation solvent does not exceed 45 millimeters of mercury at 20° C.

(4) Except as provided in §C(5) of this regulation, a person may not use materials containing VOCs for the removal of adhesives, sealants, or adhesive or sealant primers from surfaces, other than spray application equipment, unless the composite vapor pressure of the solvent used is less than 45 m.

## **.05 Administrative Requirements.**

A. A person who uses compliant products for compensation or facilities maintenance, or is subject to record-keeping requirements under Regulation .01B(1) or E(1) of this chapter, shall maintain records of purchase information that includes product name, product volume, and VOC content of each adhesive, sealant, adhesive primer, sealant primer, cleanup solvent, and surface preparation solvent.

B. Each person subject to Regulation .01D(1) of this chapter shall maintain records demonstrating compliance with this chapter, including the following information:

(1) A list of each adhesive, sealant, adhesive primer, sealant primer, cleanup solvent, and surface preparation solvent in use and in storage;

(2) A data sheet or material list which provides the material name, manufacturer identification, and material application;

(3) Catalysts, reducers, or other components used and the mix ratio;

(4) The VOC content of each product as supplied;

(5) The final VOC content or vapor pressure, as applied; and

(6) The monthly volume of each adhesive, sealant, adhesive primer, sealant primer, cleanup solvent, or surface preparation solvent used.

C. A person who complies with Regulation .04B of this chapter through the use of add-on air pollution control equipment shall record the key operating parameters for the control equipment, including the following information:

(1) The volume used per day of each adhesive, sealant, adhesive primer, sealant primer, or solvent that is subject to a VOC content limit in Table 1 and that exceeds the limit;

(2) On a daily basis, the combustion temperature, inlet and exhaust gas temperatures, and control device efficiency, as appropriate, pursuant to Regulation .04E of this chapter;

(3) Daily hours of operation; and

(4) All maintenance performed, including the date and type of maintenance.

D. All records made to determine compliance with this chapter shall be maintained for 5 years from the date the record is created and shall be made available to the Department within 90 days of a request.

## .06 Compliance Procedures and Test Methods.

A. Except as provided in §§C, D, and E of this regulation, the VOC and solids content of all nonaerosol adhesives, adhesive primers, and cleanup solvents shall be determined using U.S. EPA Reference Method 24, as identified in 40 CFR 60, Appendix A, or SCAQMD Method 304.

B. The organic content of exempt organic compounds shall be determined using ASTM D4457-85, as applicable.

C. The VOC content of a plastic welding cement adhesive or primer shall be determined using SCAQMD Method 316A.

D. To determine if a diluent is a reactive diluent, the percent of the reactive organic compound that becomes an integral part of the finished materials shall be determined using SCAQMD Method 316A.

E. The composite vapor pressure of organic compounds in cleaning materials shall be determined by quantifying the amount of each compound in the blend using gas chromatographic analysis (ASTM E 260-91) for organics and ASTM D3792-79 for water content, as applicable, and the following equation:

$$Pp_c = \frac{\sum_{i=1}^n (W_i)(VP_i)/Mw_i}{W_w/Mw_w + \sum_{i=1}^n W_e/Mw_e + \sum_{i=1}^n W_i/Mw_i}$$

Where:

$Pp_c$  = VOC composite partial pressure at 20° C, in millimeters of mercury;

$W_i$  = Weight of the "i"th VOC compound, in grams, as determined by ASTM E 260-91;

$W_w$  = Weight of water, in grams as determined by ASTM D 3792-86;

$W_e$  = Weight of the "i"th exempt compound, in grams, as determined by ASTM E 260-91;

$M_{wi}$  = Molecular weight of the "i"th VOC compound, in grams per mole, as given in chemical reference literature;

$M_{ww}$  = Molecular weight of water, 18 grams per mole;

$M_{we}$  = Molecular weight of the "i"th exempt compound, in grams per mole, as given in chemical reference literature;

$V_{pi}$  = Vapor pressure of the "i"th VOC compound at 20° C, in millimeters of mercury, as determined by §F of this regulation.

F. The vapor pressure of each single component compound may be determined from ASTM D2879-86 or may be obtained from a source approved by SCAQMD, other California air districts, or the Department.

G. If air pollution control equipment is used to meet the requirements of this chapter, the owner or operator shall make the following determinations:

(1) The measurement of capture efficiency shall be conducted and reported in accordance with the EPA Technical Document "Guidelines for Determining Capture Efficiency," issued January 9, 1995; and

(2) The control efficiency shall be determined in accordance with U.S. EPA Methods 25, 25A, or 25B or CARB Method 100.

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

I. For adhesives that do not contain reactive diluents, grams of VOC per liter of adhesive, less water and exempt compounds, shall be calculated according to the following equation:

$$\text{Grams of VOC per liter of adhesive} = (W_s - W_w - W_e) / (V_m - V_w - V_e)$$

Where:

$W_s$  = weight of volatile compounds, in grams;

$W_w$  = weight of water, in grams;

$W_e$  = weight of exempt compounds, in grams;

$V_m$  = volume of material, in liters;

$V_w$  = volume of water, in liters;

$V_e$  = volume of exempt compounds, in liters.

J. For adhesives that contain reactive diluents, the VOC content of the adhesive is determined after curing. The grams of VOC per liter of adhesive, less water and exempt compounds, shall be calculated according to the following equation:

$$\text{Grams of VOC per liter of adhesive} = (W_{rs} - W_{rw} - W_{re}) / (V_{rm} - V_{rw} - V_{re})$$

Where:

$W_{rs}$  = weight of volatile compounds not consumed during curing, in grams;

$W_{rw}$  = weight of water not consumed during curing, in grams;

$W_{re}$  = weight of exempt compounds not consumed during curing, in grams;

$V_{rm}$  = volume of material not consumed during curing, in liters;

$V_{rw}$  = volume of water not consumed during curing, in liters;

$V_{re}$  = volume of exempt compounds not consumed during curing, in liters.

K. Grams of VOC per liter of material shall be calculated according to the following equation:

$$\text{Grams of VOC per liter of materials} = (W_s - W_w - W_e) / V_m$$

Where:

$W_s$  = weight of volatile compounds, in grams;

$W_w$  = weight of water, in grams;

$W_e$  = weight of exempt compounds, in grams;

$V_m$  = volume of material, in liters.

L. Percent of VOC by weight shall be calculated according to the following equation:

$$\text{Percent of VOC by weight} = [(W_v / W)] \div 100$$

Where:

$W_v$  = weight of VOCs in grams;

$W$  = weight of material in grams.

### **.07 Container Labeling.**

Each manufacturer of an adhesive, sealant, adhesive primer, or sealant primer subject to this chapter shall display the following information on the product container or label:

A. A statement of the manufacturer's recommendation regarding thinning, reducing, or mixing of the product, except that:

(1) This requirement does not apply to the thinning of a product with water; and

(2) If thinning of the product before use is not necessary, the recommendation must specify that the product is to be applied without thinning;

B. The maximum or the actual VOC content of the product in accordance with Regulation .06 of this chapter as supplied, displayed in grams of VOC per liter of product; and

C. The maximum or the actual VOC content of the product in accordance with Regulation .06 of this chapter, which includes the manufacturer's maximum recommendation for thinning, as applied, displayed in grams of VOC per liter of product.