RULE 235 ADHESIVES

Adopted 06-08-95
(Amended 04-10-97, 04-08-04, 10-11-12)

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100 GENERAL

101 PURPOSE: To limit emissions of volatile organic compounds (VOCs) from the application of commercial and industrial adhesive or sealant products, and from related solvents and strippers.

102 APPLICABILITY: The provisions of this rule apply to any person who uses, applies or solicits the use or application of any adhesive or sealant product or associated solvent; or any person who supplies, sells, offers for sale, manufacturers or distributes for use or application within the District, any adhesive or sealant product or associated solvent.

103 SEVERABILITY: If any section, subsection, sentence, clause, phrase, or portion of this rule is, for any reason, held invalid, unconstitutional, or unenforceable by any court of competent jurisdiction, that portion shall be deemed as a separate, distinct, and independent provision, and the holding shall not affect the validity of the remaining portions of the rule.

104 EXEMPTIONS

104.1 Aerosol Cleaning Solvents: The requirements of Section 303 shall not apply to the use of aerosol cleaning solvents at the stationary source provided that the total usage of the aerosol cleaning solvents does not exceed 160 fluid ounces per day, averaged over a calendar month.

104.2 Consumer Products Contact Adhesives: The requirements of Section 302 shall not apply to contact adhesives subject to the Consumer Product Safety Commission regulations in 16 Code of Federal Regulations, Part 1302, provided that adhesives are sold in packages of 128 fluid ounces or less and have a flash point greater than 20°F as determined pursuant to those regulations, and that are used at a home, a construction site, or at any location other than a stationary source.

104.3 Cyanoacrylate Adhesives: The requirements of this rule shall not apply to cyanoacrylate adhesives.

104.4 Equipment Cleanup: The VOC requirements in Section 304 shall not apply to ethyl acetate used to clean adhesive application equipment when:

104.4.1 The equipment is used in the manufacturing of transdermal drug delivery products, and

104.4.2 Fewer than 3 gallons per day of ethyl acetate, averaged over a calendar month, are used.

104.5 Household Adhesives: The requirements of this rule shall not apply to household adhesives that are regulated by the State of California and that are defined in Section 232.

104.6 Low Usage: The requirements of Sections 302, 303 and 304.1 shall not apply to the materials used by the stationary source, if the total combined volume of these materials used at the stationary source does not exceed 55 gallons during any calendar year. Commercial and industrial operations that use such materials and that are exempted pursuant to this section shall comply with Section 501.

104.7 Low VOC Materials: The requirements of this rule shall not apply to materials containing 20 grams/liter or less (0.17 pounds/gallon) of VOC actual content.

104.8 Materials Regulated Under Other District Rules: The requirements of this rule shall not apply to any material specifically regulated under any of the other District's Rules.

104.9 Medical Equipment Manufacturing: The requirements of this rule shall not apply to solvent welding operations used in the manufacturing of medical devices, including, but not limited to, catheters, heart valves, blood cardioplegia machines, tracheotomy tubes, blood oxygenators, and cardiatory reservoirs.

104.10 Research and Development Operations: Except for the work practices required pursuant to Section 305, Sections 302, 303 and 304.1 shall not apply to the testing and evaluation of materials in research and development laboratories, quality assurance laboratories, or analytical laboratories, provided that these sources maintain records that comply with Section 501.

104.11 Small Container: The requirements of this rule shall not apply to materials sold or supplied in non-reusable containers that are designed to hold no more than 8 fluid ounces of materials.

104.12 Tire Repair: The requirements of this rule shall not apply to materials used for tire repair if such products are labeled by the manufacturer: "For Tire Repair Only."

104.13 Undersea Weapons: The requirements of this rule shall not apply to the manufacture, maintenance, or repair of undersea-based weapon systems.

104.14 Ultraviolet Light-Cured Adhesives: The requirements of this rule shall not apply to reactive adhesives that are cured through the application of ultraviolet light, electron beam, visible light, radio frequency, or microwaves.

200 DEFINITIONS

201 ACRYLONITRILE-BUTADIENE-STYRENE (ABS) WELDING ADHESIVE: Any adhesive intended by the manufacturer to weld ABS pipe. ABS pipe is made by reacting monomers of acrylonitrile, butadiene, and styrene and is normally identified with an "ABS" marking.

202 ADHESIVE: Any substance that is applied for the purpose of bonding two surfaces together other than by mechanical means.

203 ADHESIVE OR SEALANT PRODUCT: Any adhesive, adhesive primer, aerosol adhesive, aerosol adhesive primer, sealant, or sealant primer, as sold by the manufacturer or as applied.

204 ADHESIVE PRIMER: A coating applied to a substrate, prior to the application of an adhesive, to provide a bonding surface.

205 AEROSOL ADHESIVE or ADHESIVE PRIMER: An adhesive or adhesive primer packaged as an aerosol product in which the spray mechanism is permanently housed in a non-refillable can designed for handheld application without the need for ancillary hoses or spray equipment. Aerosol adhesives include special purpose spray adhesives, mist spray adhesives, and web spray adhesives, as defined in the California Air Resources Board consumer products regulation found in Title 17 of the California Code of Regulations, beginning at Section 94507.

206 AEROSOL CLEANING SOLVENT: A material used as a surface preparation solvent, a cleanup solvent, or as a stripper and packaged as an aerosol product in which the spray mechanism is permanently housed in a non-refillable can designed for handheld application without the need for ancillary hoses or spray equipment.

207 AIRLESS SPRAY: A spray method in which a pump forces the adhesive through an atomizing nozzle at high pressure (1,000 to 6,000 pounds per square inch, gauge, (psig)).

208 APPLICATION EQUIPMENT: A device such as a spray gun, pot, hose, brush, roller, electrostatic sprayer, non-propellant spray bottle, or squeegee, used to apply an adhesive or sealant product, a surface preparation solvent, a cleanup solvent, or a stripper.

209 ARCHITECTURAL: Pertaining to stationary structures, including mobile homes, and their appurtenances. Appurtenances to an architectural structure include, but are not limited to: hand railings, cabinets, bathroom and kitchen fixtures, fences, rain gutters and downspouts, and windows.

210 AUTOMOTIVE GLASS ADHESIVE PRIMER: An adhesive primer labeled by the manufacturer to be applied to automotive glass prior to installation of the glass using an adhesive/sealant. This primer improves the adhesion to pinch weld and blocks ultraviolet light.

211 CERAMIC TILE ADHESIVE: Any adhesive intended by the manufacturer for the installation of ceramic tiles.

212 CHLORINATED POLYVINYL CHLORIDE (CPVC) WELDING ADHESIVE: Any adhesive intended by the manufacturer to weld CPVC plastic pipe.

213 CHLORINATED POLYVINYL CHLORIDE (CPVC) PLASTIC: CPVC plastic is a polymer of the monomer that contains 67 percent chlorine and is normally identified with a CPVC marking.

214 CLEANUP SOLVENT: A VOC-containing material used to:

214.1 Remove a loosely held uncured (i.e., not dry to the touch) adhesive or sealant from a substrate, or

214.2 Clean equipment that was used to apply an adhesive or sealant product.

215 CLOSED CONTAINER: A covered receptacle, which has no visible gaps where the cover and the main body of the receptacle meet.

216 COMPUTER DISKETTE JACKET MANUFACTURING ADHESIVE: Any adhesive intended by the manufacturer to bond the fold-over flaps to the body of a vinyl computer diskette jacket.

217 CONTACT ADHESIVE: An adhesive, also known as Contact Bond Adhesive, that is intended by the manufacturer for application to both surfaces to be bonded together, is allowed to dry before the two surfaces are placed in contact with each other, forms an immediate bond that is impossible, or difficult, to reposition after both adhesive-coated surfaces are placed in contact with each other, and 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. Contact adhesive does not include rubber cements that are primarily intended for use on paper substrates. Contact adhesive also does not include vulcanizing fluids that are designed and labeled for tire repair only.

218 CONTROL DEVICE: Equipment that is utilized as part of an emission control system, and which destroys, absorbs or otherwise eliminates or reduces the emission of Volatile Organic Compounds from adhesive/sealant operations.

219 COVE BASE INSTALLATION ADHESIVE: Any adhesive intended by the manufacturer for the installation of cove base (or wall base), which is generally made of vinyl or rubber, onto a wall or vertical surface at floor level.

220 CURED: Dry to the touch.

221 CYANOACRYLATE ADHESIVE: An adhesive with a cyanoacrylate content of at least 95% by weight.

222 DRYWALL: The installation of gypsum drywall to studs or solid surfaces.

223 ENCLOSED GUN CLEANER:

223.1 A device that is used for the cleaning of spray guns, pots, cups, and hoses, that has a closed solvent container, is not open to the ambient air when in use, and has a mechanism to force the cleanup material through the gun while the cleaner is in operation; or

223.2 A device that is used for the cleaning of spray guns, pots, cups, and hoses, that has a closed solvent container, uses non-atomized solvent flow to flush the spray equipment, and collects and returns the discharged solvent to the closed container.

224 ETHYLENE PROPYLENE DIENE MONOMER (EPDM) ROOF MEMBRANE: A prefabricated sheet of elastomeric material composed of ethylene propylene diene monomer and that is field applied to a building roof using one layer of membrane material.

225 EXEMPT COMPOUNDS: For the purposes of this rule, "Exempt Compounds" are as defined in Rule 102, Definitions.

226 FIBERGLASS: A fiber made of fine filaments of glass that is similar in appearance to wool or cotton fiber.

227 FLEXIBLE VINYL: A nonrigid polyvinyl chloride plastic with at least five percent, by weight, of plasticizer content, as determined per Section 502.8.

228 FLEXIBLE VINYL ADHESIVE: An aerosol adhesive designed to bond flexible vinyl to substrates.

229 HAND APPLICATION METHODS: The application of an adhesive or sealant product by manually held equipment. Such equipment includes: paint brushes, hand rollers, trowels, spatulas, daubers, rags, sponges, and mechanically or pneumatically driven syringes that do not atomize the applied products.

230 HIGH PRESSURE LAMINATE: Sheets of materials, consisting of paper, fabric, or other core material that have been laminated at temperatures exceeding 265 degrees F, and at pressures between 1,000 and 1,400 pounds per square inch.

231 HIGH-VOLUME LOW-PRESSURE (HVLP) APPLICATION EQUIPMENT: Spray equipment, permanently labeled as such, used to apply coating by means of a spray gun which is designed to be operated and which is operated between 0.1 and 10.0 psig air atomized pressure, measured dynamically at the center of the air cap and at the air horns.

232 HOUSEHOLD ADHESIVE: An adhesive subject to, the Air Resources Board consumer products regulation, Sections 94507-94517, Title 17, California Code of Regulations. Household adhesives do not include units of product, less packaging, that weigh more than one pound or contain more than 16 fluid ounces.

233 INDOOR CARPET ADHESIVE: An adhesive intended by the manufacturer to be used during the installation of a carpet that is in an enclosure and is not exposed to ambient weather conditions during normal use.

234 INDOOR FLOOR COVERING ADHESIVE: Any adhesive intended by the manufacturer for the installation of wood flooring, carpet, resilient tile, vinyl tile, vinyl backed carpet, resilient sheet and roll, or artificial grass. Such installed materials are in an enclosure and are not exposed to ambient weather conditions during normal use. Adhesives used to install ceramic tile and perimeter bonded sheet flooring with vinyl backing onto a non-porous substrate, such as flexible vinyl, are excluded from this category.

235 KEY SYSTEM OPERATING PARAMETER: A variable that is critical to the operation of an emission control system and that ensures both operation of the system within the system manufacturer's specifications, and compliance with the control equipment efficiency and emission collection system efficiency standard required by Section 306. Such variables may include, but are not limited to, hours of operation, temperature, flow rate, and pressure.

236 LEAK: A visible liquid solvent loss or a solvent vapor (mist) loss from unintended openings in a container.

237 LOW-SOLIDS MATERIAL: A material containing no more than 120 grams of solids per liter (1.0 pound of solids per gallon) of product.

238 MARINE DECK SEALANT/SEALANT PRIMER: Any sealant or sealant primer intended by the manufacturer to seal gaps on wooden marine decks.

239 MATERIAL: Any material containing VOC including but not limited to, an adhesive, adhesive primer, aerosol adhesive, aerosol adhesive primer, sealant, sealant primer, catalyst, colorant, stripper, or solvents used in cleaning.

240 METAL TO URETHANE/RUBBER MOLDING OR CASTING ADHESIVE: Any adhesive intended by the manufacturer to bond metal to high-density or elastomeric urethane or molded rubber materials, in heater molding or casting processes, to fabricate products such as rollers for computer printers or other paper handling equipment.

241 MOTOR VEHICLE: Any self-propelled vehicle, including, but not limited to cars, trucks, buses, golf carts, vans, motorcycles, tanks, and armored personnel carriers.

242 MOTOR VEHICLE ADHESIVE: An adhesive, including glass bonding adhesive, used at a facility that is not an automobile or light-duty truck assembly coating facility, applied for the purpose of bonding two vehicle surfaces together without regard to the substrates involved.

243 MOTOR VEHICLE WEATHERSTRIP ADHESIVE: An adhesive, used at a facility that is not an automobile or light-duty truck assembly coating facility, applied to weather stripping materials for the purpose of bonding the weather strip material to the surface of the vehicle.

244 MULTIPURPOSE CONSTRUCTION ADHESIVE: Any adhesive intended by the manufacturer for the installation or repair of various construction materials, including, but not limited to, drywall, subfloor, panel, fiberglass reinforced plastic, ceiling tile, and acoustical tile.

245 NONCOMPLIANT MATERIAL: A material that:

245.1 Exceeds the VOC content limits specified in Sections 302, 303, and 304.1, and is not exempt pursuant to Section 104 and which is not used with emission control equipment pursuant to Section 306; or

245.2 Exceeds the VOC content limit and/or composite vapor pressure limit, as applicable, in Section 304.1 and which is not used with emission control equipment pursuant to Section 306.

246 NON-MEMBRANE ROOF ADHESIVE/SEALANT: Any adhesive or sealant intended by the manufacturer for the installation or repair of non-membrane roofs, but is not intended for the installation of prefabricated single-ply roof membrane. With regard to non-membrane roof installation/repair adhesives, this category includes plastic or asphalt roof cement, asphalt roof coatings, and cold application cement.

247 NON-POROUS MATERIAL: A material which does not have tiny openings, often microscopic, to allow the absorption or discharge of fluids.

248 OUTDOOR FLOOR COVERING ADHESIVE: Any adhesive intended by the manufacturer for the installation of floor covering that is not in an enclosure and is exposed to ambient weather conditions during normal use. Outdoor floor covering installation does not include ceramic tile installation or subfloor installation.

249 PANEL: The installation of plywood, pre-decorated hardboard, tile board, fiberglass reinforced plastic, and similar pre-decorated or non-decorated panels to studs or solid surfaces.

250 PERIMETER BONDED SHEET FLOORING ADHESIVE: 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.

251 PLASTIC: A synthetic material chemically formed by the polymerization of organic (carbon-based) substances.

252 PLASTIC CEMENT WELDING ADHESIVE: Any adhesive made of resins and solvents that is formulated to dissolve the surfaces of plastic, except ABS, PVC, and CPVC plastic, to form a bond between mating surfaces.

253 PLASTIC CEMENT WELDING ADHESIVE PRIMER: Any primer intended by the manufacturer to prepare plastic substrates prior to bonding or welding.

254 PLASTIC FOAM: A foam constructed of plastic material.

255 PLASTICIZER: 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.

256 POLYVINYL CHLORIDE (PVC) WELDING ADHESIVE: Any adhesive intended by the manufacturer to weld PVC plastic pipe.

257 POROUS MATERIAL: A material whose surface is permeable to liquids; such materials include, but are not limited to, paper and cardboard. For purposes of this rule, porous material does not include wood.

258 PROPELLANT: A fluid under pressure that expels the contents of a container when a valve is opened.

259 REACTIVE ADHESIVE: An adhesive containing 20 grams or less per liter (0.17 lbs/gal) of VOCs actual content, that cures upon exposure to ultraviolet light, electron beam, visible light, radio frequency, or microwave.

260 REINFORCED PLASTIC COMPOSITE: A composite material consisting of plastic reinforced with fibers.

261 ROADWAY SEALANT: Any sealant intended by the manufacturer to be applied to public streets, highways, and related surfaces such as curbs, berms, driveways, and parking lots.

262 RUBBER: Any 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.

263 RUBBER FLOORING: Flooring material in which both the back and the top surface are made of synthetic rubber, and which may be in sheet or tile form.

264 RUBBER VULCANIZATION BONDING: The bonding of rubber to metal, rubber, or polyester or nylon fabrics during one or more of the following vulcanization processes:

264.1 Molded vulcanization: The application of heat and pressure to uncured rubber in a mold;

264.2 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;

264.3 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. Rubber vulcanization bonding does not include tire retreading.

265 SEALANT: Any material with adhesive properties that is applied as a rope or bead and that is formulated for use primarily to fill, seal, waterproof, or weatherproof gaps or joints between two surfaces. Sealants include caulks. Sealants do not include sealers that are applied as continuous coatings.

266 SEALANT PRIMER: Any material intended by the manufacturer for application to a substrate, prior to the application of a sealant, to enhance the bonding surface.

267 SHEET RUBBER LINING INSTALLATION: The process of applying sheet rubber liners by hand to metal or plastic substrates to protect the underlying substrate from corrosion or abrasion. These operations also include laminating sheet rubber to fabric by hand.

268 SINGLE-PLY ROOF MEMBRANE: A prefabricated single sheet of rubber, normally ethylene-propylenediene terpolymer, that is field applied to a building roof using one layer of membrane material. For the purposes of this rule, single-ply roof membrane does not include membranes prefabricated from ethylene-propylene diene monomer (EPDM).

269 SINGLE-PLY ROOF MEMBRANE ADHESIVE: An adhesive intended by the manufacturer, and so labeled, for use in the installation or repair of single-ply roof membrane. Installation 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. Repair 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.

270 SINGLE-PLY ROOF MEMBRANE ADHESIVE PRIMER: A primer intended by the manufacture for use to clean and promote adhesion of the single-ply roof membrane seams or splices prior to bonding, and labeled as such.

271 SINGLE-PLY ROOF MEMBRANE SEALANT: A sealant intended by the manufacturer to be used for the installation or repair of single-ply roof membrane to the edge of the roof and applying flashings to vents, pipes, or ducts that protrude through the membrane.

272 SOLID MATERIAL: The nonvolatile portion of an adhesive or sealant product, surface preparation solvent, cleanup solvent, or stripper that remains after heating a sample of the product at 110°C for one hour.

273 SOLVENT WELDING: The softening of the surfaces of two substrates by wetting them with a solvent and/or adhesive, and joining them together with a chemical and/or physical reaction(s) to form a fused union.

274 STATIONARY SOURCE: Any building, structure, facility, or emissions unit which emits or may emit any pollutant directly or as a fugitive emission. This includes all pollutant-emitting activities which:

274.1 Belong to the same industrial grouping, and

274.2 Are located on one property or on two or more contiguous properties, and

274.3 Are under the same or common ownership, operation, or control or which are owned or operated by entities, which are under common control.

Pollutant-emitting activities shall be considered as part of the same industrial grouping if they:

274.4 Belong to the same two-digit standard industrial classification code, or

274.5 Are part of a common production process. (Common production process includes industrial processes, manufacturing processes and any connected processes involving a common material.)

275 STRIPPER: A liquid used to remove cured adhesives and/or cured sealants.

276 STRUCTURAL GLAZING ADHESIVE: Any adhesive intended by the manufacturer to adhere glass, ceramic, metal, stone, or composite panels to exterior building frames.

277 STRUCTURAL WOOD MEMBER ADHESIVE: An adhesive intended by the manufacturer to be used for the construction of a load bearing joint in wooden joists, trusses, or beams.

278 SUBFLOOR: The installation of subflooring material, typically plywood, over flooring joists. Subfloor installation includes the construction of any load bearing joints in joists or trusses. Subflooring is covered by a finished surface material.

279 SUBSTRATE: The material onto which an adhesive or sealant product, surface preparation solvent, cleanup solvent, or stripper is applied.

280 SURFACE PREPARATION SOLVENT: Any VOC-containing material used to remove contaminants such as dust, soil, oil, grease, etc., from a substrate prior to the application of an adhesive or sealant product.

281 THIN METAL LAMINATING ADHESIVE: Any adhesive intended by the manufacturer to bond multiple layers of metal to metal or metal to plastic in which the thickness of the bond line(s) is less than 0.025 mils (0.000025 inches).

282 TIRE REPAIR: To mend a hole, tear, fissure, blemish, or defect in a tire casing by grinding and/or gouging, applying adhesive, and attaching replacement rubber.

283 TIRE RETREAD ADHESIVE: An adhesive applied to the back of precured tread rubber and to the casing and cushion rubber. Tire retread adhesive may also be used to seal buffed tire casings to prevent oxidation while the tire is being prepared for a new tread.

284 TOP AND TRIM ADHESIVE: An adhesive intended by the manufacturer to be used for installing automotive or marine trim, including, but not limited to headliners, vinyl tops, vinyl trims, sunroofs, dash covering, door covering, floor covering, panel covering and upholstery.

285 TRAFFIC MARKING TAPE ADHESIVE PRIMER: An adhesive primer intended by the manufacturer to be applied to surfaces prior to the installation of traffic marking tape. Traffic marking tape is a pre-formed reflective film intended by the manufacturer to be applied to public streets, highways, and other surfaces including, but not limited to, curbs, berms, driveways, and parking lots. It is not one of the "Traffic Coatings" included in and defined in Rule 218, ARCHITECTURAL COATINGS.

286 VCT AND ASPHALT TILE ADHESIVE: An adhesive intended by the manufacturer for the installation of vinyl composite tile or asphalt tile flooring.

287 VOC COMPOSITE PARTIAL PRESSURE: The VOC composite partial pressure is the sum of the partial pressures of the compounds defined as VOCs, and shall be calculated by the following equation:

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

Where: PP_c = VOC composite partial pressure at 20°C, in mm Hg.
W_i = Weight of the "i"th VOC compound, in grams, as determined by ASTM E 260-96
W_w = Weight of water, in grams as determined by ASTM D 3792-99.
W_e = Weight of the "e"th exempt compound, in grams, as determined
MW_i = Molecular weight of the "i"th VOC compound, in grams per g-mole, as given in chemical reference literature.
MW_w = Molecular weight of water, 18 grams per g-mole.
Mw_e = Molecular weight of the "e"th exempt compound, in grams per g-mole, as given in chemical reference literature.
Vp_i = Vapor pressure of the "i"th VOC compound at 20°C, in mm Hg, as determined by Section 502.10 of this rule.

288 VOLATILE ORGANIC COMPOUND (VOC): Any chemical compound containing at least one atom of carbon, except for the exempt compounds listed in Rule 102, DEFINITIONS.

289 VOC CONTENT:

289.1 <u>VOC Regulatory Content:</u> The weight of VOC per combined volume of VOC and material, calculated with the following equation:

VOC Regulatory Content = (Ws – Ww – Wec) / (Vm – Vw – Vec)

289.2 <u>VOC Actual Content:</u> The weight of VOC per volume of material, calculated with the following equation:

VOC Actual Content = (Ws – Ww – Wec) / Vm

Where:

Ws = Weight of volatile compounds in grams
Ww = Weight of water in grams
Wec = Weight of exempt compounds in grams
Vm = Volume of material in liters

Vw = Volume of water in liters
Vec = Volume of exempt compounds, as defined in Rule 102, DEFINITIONS, in liters

289.3 Percent of VOC by Weight: The ratio of the weight of the VOC to the weight of the material, expressed as a percent. The percent of VOC by weight shall be calculated as follows:

$$Percent\ of\ VOC\ by\ Weight = \frac{W_{voc}}{W_p}\ x\ 100$$

Where: W_{voc} = Weight of VOCs in grams
W_p = Weight of material in grams

290 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.

291 WIPE CLEANING: The method of cleaning a surface by physically rubbing it with a material such as a rag, paper, abrasive pad, brush, or a cotton swab moistened with a solvent.

292 WOOD FLOORING: A wood floor surface, which may be in the form of parquet tiles, planks, or strip-wood.

300 STANDARDS

301 MATERIAL APPLICATION METHODS:

301.1 A person shall not use any methods to apply any adhesive or sealant product except the following:

301.1.1 Hand application

301.1.2 Dip coat

301.1.3 Flow coat

301.1.4 Brush or roll coat

301.1.5 Electrodeposition

301.1.6 Electrostatic spray

301.1.7 High-volume low-pressure (HVLP) application equipment

301.1.8 Aerosol cans

301.1.9 Airless spray, air-assisted airless spray, air-atomized spray, only for applying adhesives and sealants with a viscosity greater than 200 centipoise, or for applying contact adhesives

301.1.10 Any other equivalent method approved in writing by the Air Pollution Control Officer and submitted to and approved by the United States Environmental Protection Agency.

301.2 A person shall not use any methods to apply any surface preparation solvent, cleanup solvent, or stripper except the following:

301.2.1 Wipe cleaning.

301.2.2 Non-propellant spray bottles or containers.

301.2.3 An enclosed gun cleaner as defined by Section 223.

301.2.4 Soaking application equipment parts in a closed container.

302 VOC CONTENT LIMITS, ADHESIVES, ADHESIVE PRIMERS, SEALANTS AND SEALANT PRIMERS:

302.1 No person shall apply a material that has a VOC regulatory content, or a VOC actual content for low-solids material only, in excess of the following limits. VOC regulatory and VOC actual shall be calculated pursuant to Section 289.1 and Section 289.2, respectively, as applied including thinners, reducers, hardeners, retarders, catalysts, and additives.

TABLE 302-1
VOC CONTENT LIMITS

Product Category	VOC Content g/l (lb/gal)
Architectural Adhesives Products:	
Multipurpose Construction	200 (1.7)
Ceramic Title	130 (1.1)
Cove Base	150 (1.3)
Dry Wall and/or Panel	50 (0.4)
Flooring:	
Outdoor Floor Covering	250 (2.1)
Indoor Floor Covering	150 (1.3)
Ceramic Tile	130 (1.1)
Indoor Carpet or Carpet Pad	150 (1.3)
Rubber Flooring	150 (1.3)
Perimeter Bonded Sheet Vinyl Flooring	660 (5.5)
Subfloor	50 (0.4)
VCT and Asphalt Tile	50 (0.4)
Roofing:	
Single-Ply Roof Membrane	250 (2.1)
Non-Membrane Roof	300 (2.5)
Structural Glazing	100 (0.8)
Structural Wood Member Glazing	140 (1.2)
Plastic Welding:	
ABS Welding	400 (3.3)
CPVC Welding	490 (4.1)
PVC Welding	510 (4.3)
Plastic Cement Welding Primer	400 (3.3)
Other Plastic Cement Welding	450 (3.8)
Specialty:	
Contact Adhesive including Specialty Substrates	200 (1.7)
Rubber Vulcanization Bonding	850 (7.1)
Tire Retread	100 (0.8)
Motor Vehicle	250 (2.1)
Motor Vehicle Weather Strip	750 (6.3)
Top and Trim	540 (4.5)
Thin Metal Laminating	780 (6.5)

TABLE 302-1 VOC CONTENT LIMITS	
Product Category	**VOC Content g/l (lb/gal)**
Computer Diskette Jacket Manufacturing	850 (7.1)
Metal to Urethane/Rubber Molding or Casting	250 (2.1)
Waterproof Resorcinol Glue	170 (1.4)
Adhesive Primers:	
Automotive Glass	700 (5.8)
Single-Ply Roof Membrane	250 (2.1)
Traffic Marking Tape	150 (1.3)
Other	250 (2.1)
Sealants:	
Architectural	250 (2.1)
Marine Deck	760 (6.3)
Non-Membrane Roof	300 (2.5)
Roadway	250 (2.1)
Single-Ply Roof Membrane	450 (3.8)
Other	420 (3.5)
Sealant Primers:	
Architectural - Non-Porous	250 (2.1)
Architectural - Porous	775 (6.5)
Marine Deck	760 (6.3)
Other	750 (6.3)

302.2 The standards in Table 302-2 apply to applications not specifically identified in Table 302-1. In Table 302-2, if an adhesive is used to bond two different types of substrates with different VOC limits, then the higher of the two VOC limits shall apply.

TABLE 302-2 VOC CONTENT LIMITS FOR ADHESIVE APPLICATIONS ONTO SUBSTRATES	
Substrate	**VOC Content g/l (lb/gal)**
Flexible Vinyl	250 (2.1)
Fiberglass	200 (1.7)
Metal	30 (0.3)
Porous Material (except wood)	120 (1.0)
Plastic Foam	80 (0.7)
Wood	30 (0.3)
Reinforced Plastic Composite	200 (1.7)
Rubber	250 (2.1)
Other	250 (2.1)

303 VOC CONTENT LIMITS FOR AEROSOL ADHESIVES

303.1 A person shall not use an aerosol adhesive unless the adhesive complies with the VOC limit specified in the California Air Resources Board consumer products regulation found in Title 17 of the California Code of Regulations, sections 94507 – 94517, and listed in the table below, in percent by weight, as determined by Sections 289.3 and 502.2.

TABLE 303-1 VOC CONTENT LIMITS FOR AEROSOL ADHESIVES	
Type of Aerosol Adhesive	**VOC % by Weight**
Adhesives – Aerosol:	
Mist Spray Adhesives	65%
Web Spray Adhesives	55%
Special Purpose Spray Adhesives:	
Mounting, Automotive Engine Compartment, and Flexible Vinyl Adhesives	70%
Polystyrene Foam and Automobile Headliner Adhesives	65%
Polyolefin and Laminate Repair/Edgebanding Adhesives	60%

303.2 No person shall manufacture for use in the District any aerosol adhesive which contains methylene chloride, perchloroethylene, or trichloroethylene, except that an aerosol adhesive manufactured before January 1, 2002 may be sold, supplied, or offered for sale until January 1, 2005, as long as the product container or package displays the date on which the product was manufactured, or a code indicating such date.

304 VOC CONTENT LIMITS, SURFACE PREPARATION, CLEANUP, AND STRIPPER SOLVENTS: A person shall comply with the following requirements:

304.1 Materials used for surface preparation, cleaning, or stripping shall not exceed the VOC actual content or the VOC composite partial pressure limits specified in the table below. Where VOC limits are shown as both VOC actual content (grams/liter) and VOC composite partial pressure, either may be used as the content limit for the specific application shown. The VOC actual content shall be calculated pursuant to Section 289.2. The composite partial pressure shall be determined using Section 502.9.

TABLE 304-1 VOC CONTENT LIMITS FOR SURFACE PREPARATION, CLEANUP, AND STRIPPER SOLVENTS		
Adhesive or Sealant Product Activity For Which the Solvent Is Used	**Actual VOC Content g/l (lb/gal)**	**VOC Composite Partial Pressure Millimeters of Mercury at 20°C (68°F)**
Substrate Preparation		
Single-Ply Roof Membrane Installation/Repair	--	45
Electrical Apparatus Components and Electronic Components	500 (4.2)	18
Medical Devices and Pharmaceuticals	800 (6.7)	33
Other Substrates	70 (0.6)	--
Cleanup		
Application Equipment		
Spray Gun in an Enclosed Gun Cleaner	--	45
Soaking in a Closed Container	--	9.5
Other	70 (0.6)	--
Other (Not Application Equipment)	--	45
Solvent Stripping Activity		
Wood Substrates	350 (2.9)	2
Other	--	9.5

304.2 A person applying any surface preparation solvent, cleanup solvent, or any stripper must use only the following methods:

304.2.1 Wipe cleaning.

304.2.2 Non-propellant spray bottles or containers.

304.2.3 An enclosed gun cleaner as defined by Section 223.

304.2.4 Soaking application equipment parts in a closed container provided that the container does not exceed five gallons in size and the container is kept tightly covered at all times except when accessing the container.

305 WORK PRACTICES FOR ADHESIVE PRODUCTS, SEALANT PRODUCTS, AND SOLVENT CLEANING MATERIALS: A person applying any adhesive products, sealant products, surface preparation, solvent cleaning, cleanup solvent, or any stripper shall comply with the following:

305.1 Closed containers or pipes shall be used for the disposal of all VOC-containing cloth, sponges, papers, or other materials used for solvent cleaning.

305.2 All VOC-materials shall be stored in closed containers except when adding, removing, or mixing contents.

305.3 Minimize spills of all VOC-containing materials.

305.4 Convey all VOC-containing materials from one location to another in closed containers or pipes.

305.5 Minimize VOC emission from cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

306 EMISSION CONTROL EQUIPMENT: As an alternative to utilizing materials that comply with the VOC limits in Sections 302 through 304.1, a person may use approved air pollution control equipment provided that the following conditions are met:

306.1 The air pollution control equipment is approved by the Air Pollution Control Officer pursuant to Rule 501, GENERAL PERMIT REQUIREMENTS, and

306.2 The air pollution control equipment is designed and operated with:

306.2.1 A control equipment efficiency of at least 95 percent on a mass basis, as determined pursuant to Sections 404 and 502.5, and

306.2.2 An emission collection efficiency of at least 90 percent on a mass basis, as determined pursuant to Section 502.6.

306.3 Submit an Operation and Maintenance Plan to the Air Pollution Control Officer for approval at least 90 days in advance of the date on which VOC emission control system is to be used in lieu of compliance with VOC content limitations. The plan shall specify operation and maintenance procedures that demonstrate continuous operation and compliance of the emissions control equipment during periods of emissions-producing operations. The Plan shall specify key system operating parameters necessary to determine compliance with this rule and describe in detail procedures to maintain the approved control equipment. The plan shall also specify which records must be kept to document these operations

and maintenance procedures. The records shall comply with the requirements of Section 501. This Plan shall be implemented upon approval by the Air Pollution Control Officer.

400 ADMINISTRATIVE REQUIREMENTS

401 PROHIBITION OF SALE: A person shall not supply, sell, solicit, or offer for sale, any noncompliant materials as defined in Section 245. The prohibition in this section shall apply to any material, which will be applied at any physical location within the District.

402 PROHIBITION OF SPECIFICATION: No person shall solicit, require the use of, or specify the application of any material subject to this rule, if the use or application would violate this rule. The prohibition in this section shall also apply to all written or oral contracts under the terms of which any such product or solvent is to be applied within the District.

403 HVLP MARKING: A person shall not sell, offer for sale, or distribute for use within the District any HVLP gun without a permanent marking, or accurate information provided on company letterhead or in the form of technical literature clearly identifying the spray gun manufacturer, salesperson or distributer, denoting the maximum inlet air pressure in psig at which the gun will operate within the parameters specified in Section 231.

404 CALCULATION FOR DETERMINING PERCENT CONTROL EFFICIENCY AND VOC MASS EMISSION RATE: The VOC mass emission rate shall be calculated both upstream and downstream of the emissions control device and shall be based on the VOC mass concentration and volumetric flowrate, pursuant to Section 502.5 and the following equations:

404.1 <u>VOC Mass Emission Rate:</u>

$$M = (Q) * (C) * (60 \frac{m}{hr}) \ (calculated\ upstream\ and\ downstream)$$

Where: M = VOC mass emission rate (upstream and downstream), in lb/hr.
Q = the volumetric flowrate at the inlet (upstream) or exhaust stack outlet (downstream), in standard cubic feet per minute as determined by Section 502.5.
C = the VOC mass concentration at the inlet (upstream) or outlet (downstream), in pounds per standard cubic feet, as determined pursuant to Section 502.5.

404.2 The percent control efficiency is calculated as follows:

$$\%CE = \left(\frac{M_u - M_d}{M_u} \right) * 100$$

Where: CE = control efficiency.
M_u = the upstream VOC mass emission rate, in lb/hr.
M_d = the downstream VOC mass emission rate, in lb/hr.

405 LABELING REQUIREMENTS: Any material subject to this rule shall be labeled pursuant to Sections 405.1 through 405.4 as appropriate.

405.1 <u>VOC Content:</u> Each container of any material subject to this rule shall display the maximum VOC regulatory content, or the maximum VOC actual content for solvents and low-solids products, expressed in grams per liter or pounds per gallon.

405.2 For Materials Subject to Section 304.1: 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 maximum VOC actual content, density of the solvent, and the total VOC composite partial pressure of the material. The VOC actual content shall be displayed as grams per liter or pounds per gallon. The composite partial pressure shall be displayed in millimeters of mercury at 20 ^{o}C (68 ^{o}F) as determined pursuant to Section 502.9.

405.3 Thinning Recommendation: Each container of adhesive product or sealant product subject to this rule shall display a statement of a manufacture's recommendations regarding thinning, or 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, or sealant product.

405.4 Labeling Requirements for Aerosol Adhesives: All aerosol adhesives regulated under Section 303 shall comply with the labeling requirements, applicable to aerosol adhesives, specified in the California Air Resources Board consumer products regulation found in Title 17 of the California Code of Regulations.

500 MONITORING AND RECORDS

501 RECORDKEEPING: In addition to any applicable recordkeeping requirements of either Rule 502, NEW SOURCE REVIEW, Rule 507, FEDERAL OPERATING PERMIT PROGRAM, Rule 511, POTENTIAL TO EMIT, or any other District rule which may be applicable, any person applying adhesive or sealant products, surface preparation solvents, cleanup solvents, or strippers subject to any provision of this rule shall maintain the following records, for non-exempt materials in order to evaluate compliance:

501.1 Product Data: A list of currently used adhesive or sealant products, surface preparation solvents, cleanup solvents, or strippers shall be provided and maintained. The list shall include all of the following items for each material used:

501.1.1 The material's manufacturer, product name, and product number or code.

501.1.2 Classification according to the terminology used in Sections 302, 303, and 304. of this rule (e.g.,"PVC Welding Adhesive", "Adhesive Applied to Metal", "Substrate Preparation", "Medical Devices", etc.).

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501.1.3 The material's VOC regulatory content, or VOC actual content, or weight percentage of volatiles, determined according to Sections 289.1, 289.2, and 289.3, when used in the mixing ratios recommended by the manufacturer. Labeling of aerosol adhesive containers shall comply with the requirements of Section 405.4.

501.1.4 The actual mixing ratio, if different from the manufacturer's recommendation, used in applying the material.

501.2 Product Usage and Frequency: Any person using materials regulated by this rule shall record and maintain records of the monthly usage of each individual material as listed pursuant to Section 501.1.

501.3 Emission Control Equipment Records:

501.3.1 A person using emission control equipment as a means of alternate compliance pursuant to Section 306, shall maintain records on a

daily basis, showing the type and volume of coatings and solvents used.

501.3.2 A person using emission control equipment as a means of alternate compliance with this rule pursuant to Section 306, shall maintain daily records of key system operating and maintenance procedures 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 the requirements of Section 306, and are defined in Section 235.

501. 4 Retention of Records: All records required by this rule shall be retained for at least three years, except for sources subject to Rule 507, FEDERAL OPERATING PERMIT PROGRAM, which shall be retained for at least five years. Such records shall be made available to the Air Pollution Control Officer upon request.

502 TEST METHODS:

502.1 Determination of VOC Content: Except as provided in Sections 502.2 and 502.3, VOC content of non-aerosol adhesive or sealant products, surface preparation solvents, cleanup solvents, or strippers shall be determined in accordance with United States Environmental Protection Agency (U.S. EPA) Method 24 or U.S. EPA Method 24A.

502.2 Determination of VOC Content of Aerosol Adhesives Primers: The VOC content of aerosol adhesive primers shall be determined using South Coast Air Quality Management District Test Method 305, "Determination of Volatile Organic Compounds (VOC) in Aerosol Applications," California Air Resources Board Method 310, "Products and Reactive Organic Compounds (VOC) in Consumer Products," or equivalent methods approved by the U.S. EPA.

502.3 Determination of VOC Content of Plastic Welding Cement Adhesive/Primer: The VOC content of ABS, CPVC, PVC, or other plastic welding cement adhesive or any plastic welding cement primer shall be determined by using the South Coast Air Quality Management District's "Determination of Volatile Organic Compounds (VOC) in Materials Used for Pipes and Fittings", Method 316A.

502.4 Determination of Compounds Exempt From VOC Definition: Exempt compounds referenced in Section 225 and listed in Rule 102, DEFINITIONS, shall be determined in accordance with ASTM Method D4457-85, "Test Method for Determination of Dichloromethane and 1,1,1-Tricholoroethane in Paints and Coatings by Direct Injection into a Gas Chromatograph," or California Air Resources Board Method 432, "Determination of Dichloromethane and 1,1,1-Trichoroethane in Paint and Coatings." If any of the perfluorocarbons or volatile cyclic and linear methyl siloxanes are being claimed as exempt compounds, the person making the claim must state in advance which compounds are present, and the U.S. EPA approved test method used to make the determination of these compounds.

502.5 Determination of Control Efficiency: Control efficiency of emissions control equipment shall be determined in accordance with U.S. EPA Method 18, 25, or 25A; or U.S. EPA 2 or 2C (whichever is applicable). The U.S. EPA Method 18 or CARB Method 422 "Determination of Volatile Organic Compounds Emissions from Stationary Sources" shall be used to determine emissions of exempt compounds.

502.6 Determination of Collection Efficiency: Efficiency of the collection system shall be determined in accordance with the U.S. EPA "Guidelines for Determining Capture Efficiency, January 9, 1995". Individual collection efficiency test runs subject to the U.S. EPA technical guidelines shall be determined by:

502.6.1 Applicable U.S. EPA Methods 204, 204A, 204B, 204C, 204E, and/or 204F; or

502.6.2 The South Coast Air Quality Management District "Protocol for Determination of Volatile Organic Compound (VOC) Capture Efficiency"; or

502.6.3 Any other method approved by the U.S. EPA, the California Air Resources Board, and the Air Pollution Control Officer.

502.7 Determination of VOC Content of Emissions: The VOC content of emissions shall be determined by U.S. EPA Method 18.

502.8 Determination of Plasticizer Content: The test method used to determine plasticizer content of flexible vinyls shall be ASTM Method E260-96, "General Gas Chromatography Procedures".

502.9 Determination of VOC Composite Partial Pressure: VOC composite partial pressure shall be determined in accordance with ASTM Method E260-96 for organic compounds, and ASTM Method D3792-86, "Test Method for Water and Water Reducible Paints by Direct Injection into a Gas Chromatograph", and Sections 288, and 502.10 of this rule.

502.10 Determination of Vapor Pressure: Vapor pressure of a VOC shall be determined in accordance with ASTM Method D2879-10, "Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature or Liquids by Isoteniscope", or may be obtained from standard reference texts, such as:

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

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

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

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

502.11 Determination of VOC Content of Cyanoacrylate Adhesives: The VOC content of cyanoacrylate adhesives shall be determined by the South Coast Air Quality Management District's Method 316B.

502.12 Determination of Viscosity: The viscosity shall be determined by ASTM Method D1084-88, "Standard Test Methods for Viscosity of Adhesives".

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