

RULE 1151.1

Motor Vehicle Assembly Coating Operations

(A) General

(1) Purpose

- (a) The purpose of this rule is to reduce emissions of Volatile Organic Compounds (VOCs) from Coatings and solvents associated with Motor Vehicle Assembly Coating Operations.

(2) Applicability

- (a) This rule is applicable to all Motor Vehicle Assembly Coating Operations who apply Coatings that contain VOCs to new Motor Vehicles, new Light-Duty Trucks, new Heavier Vehicles and other parts that are coated along with these body or body parts during the vehicle assembly process and associated solvent cleaning activities.
- (b) This rule does not apply to any operation that is subject to the provisions of Rule 1151 - *Motor Vehicle and Mobile Equipment Coating Operations*.
- (c) The provisions of this rule shall not apply to materials supplied in containers with a net volume of 16 fluid ounces or less, or a net weight of one (1) pound or less.
- (d) Except for record keeping requirements in section (D), the provisions of this rule shall not apply to an operation where the total actual VOC emissions from all Motor Vehicle Coating Operations, including related cleaning activities, at that facility are less than 15 pounds per day before consideration of controls.
- (e) Any Motor Vehicle Application Line exempt from all or a portion of this rule shall comply with the provisions of Rule 442 – *Usage of Solvents*.

(B) Definitions

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

- (1) “Adhesive” – Any chemical substance, including glass bonding Adhesive, used at an Automobile, Light-Duty Truck or Heavier Vehicle assembly Coating facility, applied for the purpose of bonding two vehicle surfaces together without regard to the substrates involved.

- (2) “Air Pollution Control Officer (APCO)” – The person appointed to the position of Air Pollution Control Officer of the District pursuant to the provisions of California Health & Safety Code §40750 and his or her designee.
- (3) “Application Line” – The portion of a Motor Vehicle Assembly production line which applies surface and other Coatings to Motor Vehicle bodies, hoods, fenders, cargo boxes, doors, and grill opening panels.
- (4) “Assembly Line” – An arrangement of industrial equipment and workers in which the product passes from one specialized operation to another until complete, by either automatic or manual means.
- (5) “Automobile” – A Motor Vehicle designed to carry up to eight passengers, excluding vans, sport utility vehicles, and Motor Vehicles designed primarily to transport light loads of property.
- (6) “Basecoat” – A pigmented Topcoat which is the first Topcoat applied as part of a Multistage Topcoat System.
- (7) “Basecoat/Clearcoat (BC/CC)” – A Topcoat consisting of a base coat portion and a clear coat portion.
- (8) “Bedliner” – Multi-component Coating, used at an Automobile or Light-Duty Truck or Heavier Vehicle assembly Coating facility, applied to a cargo bed after the application of Topcoat and outside of the Topcoat operation to provide additional durability and chip resistance.
- (9) “Brush Coating” – The manual application of coatings using brushes or rollers.
- (10) “Capture Efficiency” - The percentage of Volatile Organic Compounds used, emitted, evolved, or generated by the operation, that are collected and directed to an air pollution control device.
- (11) “Catalyst” –A substance whose presence enhances the reaction between chemical compounds.
- (12) “Cavity Wax” – A Coating used at an Automobile, Light-Duty Truck or Heavier Vehicle assembly Coating facility, applied into the cavities of the vehicle primarily for the purpose of enhancing corrosion protection.
- (13) “Clearcoat” – A Topcoat which contains no pigments or only transparent pigments and which is the final Topcoat applied as part of a Multistage Topcoat System.
- (14) “Coating(s)” – A material which is applied to a surface in order to beautify and/or protect such surface.

- (15) “Coating Solids” – The nonvolatile portion of the Coating.
- (16) “Continuous Coating” – An enclosed Coating system where spray nozzles coat parts and products as they are conveyed through the enclosure. Water wash zones control the inlet and outlet of the enclosure. Excess Coating drains into a recirculation system.
- (17) “Deadener” – A Coating used at an Automobile, Light-Duty Truck or Heavier Vehicle assembly Coating facility, applied to selected vehicle surfaces primarily for the purpose of reducing the sound of road noise in the passenger compartment.
- (18) “Dip Coating” – Process in which a substrate is immersed in a solution (or dispersion) containing the Coating material, and then withdrawn.
- (19) “Electrodeposition” – A Dip Coating application method where the Coating solids are given an electrical charge which is then attracted to a substrate.
- (20) “Electrodeposition Primer (EDP)” – A process of applying a protective, corrosion-resistant waterborne Primer on exterior and interior surfaces that provides thorough coverage of recessed areas. It is a Dip Coating method that uses an electrical field to apply or deposit the conductive Coating onto the part. The object being painted acts as an electrode that is oppositely charged from the particles of paint in the dip tank. Also referred to as E-Coat, Uni-Prime, and ELPO Primer.
- (21) “Electrostatic Spray Application” – A method of applying Coatings whereby the atomized Coating droplets are charged and subsequently deposited on the substrate by electrostatic attraction.
- (22) “Emission Control System” – Any combination of capture system and control devices used to reduce VOC emissions from Motor Vehicle Assembly Coating Operations.
- (23) “Exempt Compounds” – Those compounds listed in 40 CFR 51.100(s)(1).
- (24) “Final Repair” – The operations performed and Coating(s) applied to completely-assembled Motor Vehicles or to parts that are not yet on a completely assembled vehicle to correct damage or imperfections in the Coating. The curing of the Coatings applied in these operations is accomplished at a lower temperature than that used for curing Primer-Surfacer and Topcoat. This lower temperature cure avoids the need to send parts that are not yet on a completely assembled vehicle through the same type of curing process used for Primer-Surfacer and Topcoat and is necessary to protect heat sensitive components on completely assembled vehicles.
- (25) “Flow Coating” – A Coating application system, with no air supplied to the nozzle, where Coatings flow over the part and the excess Coating drains back into the collection system.

- (26) “Formulation Data” – The actual product recipe which itemizes all the ingredients contained in a product including VOCs and the quantities thereof used by the manufacturer to create the product. Material Safety Data Sheets (MSDS) are not considered Formulation Data.
- (27) “Gasket/Gasket Sealing Material” – Fluid used at an Automobile, Light-Duty Truck or Heavier Vehicle assembly Coating facility, applied to coat a gasket or replace and perform the same function as a gasket. Automobile, Light-Duty Truck and Heavier Vehicle Gasket/Gasket Sealing Material includes room temperature vulcanization (RTV) seal material.
- (28) “Glass Bonding Primer” – Primer, used at an Automobile, Light-Duty Truck or Heavier Vehicle assembly Coating facility, applied to windshield or other glass, or to body openings, to prepare the glass or body opening for the application of glass bonding, Adhesives or the installation of Adhesive bonded glass. Automobile, Light-Duty Truck or Heavier Vehicle Glass Bonding Primer includes Glass Bonding Primers that perform both functions (cleaning and priming of the windshield or other glass, or body openings) prior to the application of Adhesive or the installation of Adhesive bonded glass.
- (29) “Grams of VOC per Liter of Coating Less Water and Less Exempt Compounds (VOC Regulatory)” – The weight of VOC per combined volume of VOC and Coating solids and can be calculated by the following equation:

Grams of VOC per Liter of Coating

$$\text{Less Water and Less Exempt Compounds:} = \frac{W_s - W_w - W_{ec}}{V_m - V_w - V_{ec}}$$

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

- (30) “Grams of VOC per Liter of Material (VOC Actual)” – The weight of VOC per volume of material and can be calculated by the following equation:

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

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

- (31) “Hand Application Methods” – The application of Adhesive or Sealant by manually held equipment. Such equipment includes paint brush, hand roller, trowel, spatula, dauber, rag, sponges, and mechanically and/or pneumatic-driven syringes without atomization of the materials.
- (32) “Heat Resistant Coating” – Coatings which, during normal use, must withstand temperatures of at least 400 °F.
- (33) “Heavier Vehicles” – A self-propelled vehicle designed for transporting persons or property on a street or highway that has a gross vehicle weight rating over 8,500 pounds.
- (34) “High-Volume, Low-Pressure (HVL) 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 pounds per square inch gauge (psig) of air atomizing pressure measured dynamically at the center of the air cap and at the air horns.
- (35) “Impact Resistant Coating” – Any Coating which is applied to a rocker panel for the purpose of chip resistance to road debris.
- (36) “In-line Repair” – Operation performed and Coating(s) applied to correct damage or imperfections in the Topcoat on parts that are not yet on a completely assembled vehicle. The curing of the Coatings applied in these operations is accomplished at essentially the same temperature as that used for curing the previously applied Topcoat. This can also be referred to as high bake repair or high bake reprocess. In-line Repair is considered part of the Topcoat operation.
- (37) “Light-Duty Truck” – Vans, sport utility vehicles, and motor vehicles designed primarily to transport light loads of property, with a gross Motor Vehicle weight rating of 8,500 pounds or less.
- (38) “Lubricating Wax/Compound” – Protective lubricating material, used at an Automobile, Light-Duty Truck or Heavier Vehicle assembly Coating facility, applied to vehicle hubs and hinges.
- (39) “Motor Vehicles” – Automobiles, Light-Duty Trucks, and Heavier Vehicles as defined herein.
- (40) “Motor Vehicle Assembly Coating Operation” – Any person who applies Coatings to new Automobiles, Light-Duty Trucks, Heavier Vehicles, or body parts for new Automobiles, Light-Duty Trucks, or Heavier Vehicles, and other parts coated along with these bodies or body parts during the assembly process, and associated solvent cleaning activities.

- (41) “Multistage Topcoat System” – Any Basecoat/Clearcoat Topcoat system or any Three-Stage Topcoat System, manufactured as a system, and used as specified by the manufacturer.
- (42) “Overall Control Efficiency” – The product of capture and control efficiencies.
- (43) “Primer” – Any Coating which is labeled and formulated for application to a substrate to provide 1) a bond between the substrate and subsequent coats, 2) corrosion resistance, 3) a smooth substrate surface, or 4) resistance to penetration of subsequent coats, and on which a subsequent Coating is applied. Primers may be pigmented.
- (44) “Primer Sealer” – Any Coating which is labeled and formulated for application prior to the application of a color Coating for the purpose of color uniformity, or to promote the ability of the underlying Coating to resist penetration by the color Coating.
- (45) “Primer-Surfacer” – An intermediate protective Coating applied over the Electrodeposition Primer and under the Topcoat. Primer-Surfacer provides adhesion, protection, and appearance properties to the total finish. Primer-Surfacer may also be called guide coat or surfacer. Primer-Surfacer operations may include other Coating(s) (e.g., anti-chip, lower-body anti-chip, chip-resistant edge Primer, spot Primer, blackout, Deadener, interior color, Basecoat replacement Coating, etc.) that is (are) applied in the same spray booth(s).
- (46) “Reactive Adhesive” – An Adhesive system composed, in part, of volatile monomers that react during the adhesive curing reaction, and, as a result, do not evolve from the film during use. These volatile components instead become integral parts of the Adhesive through chemical reaction. At least 70 percent of the liquid components of the system, excluding water, react during the process.
- (47) “Reducer/Thinner” – Any volatile liquid used to reduce the viscosity of the Coating, but not used for Cleaning Operations. This liquid may be solvents, diluents, or both.
- (48) “Roll Coating” – The application of Coatings from a paint trough to a flat surface by a mechanical series of rollers.
- (49) “Sealer” – High viscosity material, used at an Automobile, Light-Duty Truck or Heavier Vehicle assembly Coating facility, generally, but not always, applied in the paint shop after the body has received an Electrodeposition Primer Coating and before the application of subsequent Coatings (e.g., Primer-Surfacer). The primary purpose of Automobile, Light-Duty Truck or Heavier Vehicle Sealer is to fill body joints completely so that there is no intrusion of water, gases or corrosive materials into the passenger area of the body compartment. Such materials are also referred to as sealant, sealant Primer, or caulk.
- (50) “Solids Turnover Ratio” – The ratio of total volume of Coating solids that is added to the EDP system in a calendar month divided by the total volume design capacity of the EDP system.

- (51) “Solvent Cleaning Operation” – The removal of loosely held uncured Adhesives, uncured inks, uncured Coatings, and contaminants which include, but are not limited to, dirt, soil, and grease from parts, products, tools, machinery, equipment, and general work areas. Each distinct method of cleaning in a cleaning process which consists of a series of cleaning methods shall constitute a separate Solvent Cleaning Operation.
- (52) “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.
- (53) “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.
- (54) “Technical Data Sheet” – A document that defines physical values of the product when mixed as recommended with the listed components.
- (55) “Three-Stage Topcoat System” – A Topcoat system composed of a basecoat portion, a midcoat portion, and a transparent Clearcoat portion.
- (56) “Topcoat” – The final Coating system applied to provide the final color and/or a protective finish. The Topcoat may be a monocoat color or Basecoat/Clearcoat system. In-line Repair and two-tone are part of a Topcoat. Topcoat operations may include other Coating(s) (e.g., blackout, interior color, etc.) that is (are) applied in the same spray booth(s).
- (57) “Transfer Efficiency (TE)” – The ratio of the weight (or volume) of Coating solids adhering to an object to the total weight (or volume) of Coating solids used in the application process expressed as a percentage.
- (58) “Trunk Interior Coating” – A Coating, used at an Automobile, Light-Duty Truck or Heavier Vehicle assembly Coating facility outside of the Primer-Surfacer and Topcoat operations, applied to the trunk interior to provide chip protection.
- (59) “Underbody Coating” – A Coating, used at an Automobile, Light-Duty Truck or Heavier Vehicle assembly Coating facility, applied to the undercarriage or firewall to prevent corrosion and/or provide chip protection.
- (60) “VOC Actual” - This definition is the same as the definition of Grams of VOC per Liter of Material as listed under subsection (B)(30).
- (61) “VOC Regulatory” – This definition is the same as the definition of Grams of VOC per Liter of Coating Less Water and Less Exempt Compounds as listed under subsection (B)(29).

- (62) “Volatile Organic Compound (VOC)” –Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and Exempt Compounds, which participate in atmospheric photochemical reactions.
- (63) “Weatherstrip Adhesive” – Adhesive, used at an Automobile, Light-Duty Truck or Heavier Vehicle assembly Coating facility, applied to weatherstripping materials for the purpose of bonding the weatherstrip material to the surface of the vehicle.
- (64) “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.

(C) Requirements

(1) VOC Content of Coatings

- (a) An operator of a Motor Vehicle Assembly Operation shall not apply a Coating that has a VOC content in excess of the limits contained in Table 1 or Table 2 of this subsection, except as provided in Section (C)(2).
- (b) The pounds of VOC per gallon of Coating solids deposited shall be calculated according to the following formula using content average listed on the suppliers Technical Data Sheet:

$$\text{Coating Density} \left[\frac{\text{lb coating}}{\text{gal coating}} \right] \times \frac{(W_v - (W_w + W_{ec}))}{\text{lb coating}} \times \frac{1 \text{ gal coating}}{V_s} = \frac{\text{lb VOC}}{\text{gal solids}}$$

$$\frac{\text{lb VOC}}{\text{gal solids}} \times \frac{l \text{ gal solids used}}{TE} = \frac{\text{lb VOC}}{\text{gal solids deposited}}$$

Where:

Coating Density (lb Coating)	=	Pound per Gallon (Average)
W_v	=	Weight percent volatiles lb (Average)
W_w	=	Weight percent water (Average)
W_{ec}	=	Weight percent exempt VOC (Average)
V_s	=	Volume percent (gallon of solids)-(Average)
TE	=	Transfer Efficiency-ratio

- (c) If a coating(s) is determined to be non-compliant pursuant to the calculation in (C)(1)(b), and more than one coating in the same assembly coating process is used in the same day, the following daily weighted average calculation may be used to determine compliance within each assembly coating process:

- (i) Determine $\frac{\text{lb VOC}}{\text{gal solids deposited}}$ as per the equation in (C)(1)(b) for each coating used within a specific process.
- (ii) The daily weighted average is the quotient of total VOCs (pounds), (within a specific process) divided by total gallons solids deposited (within a specific process).

Table 1
VOC Emission Limits for Motor Vehicle Assembly Coating Operations

Assembly Coating Process	VOC Emission Limit		
	When Solids Turnover Ratio (R_T) ≥ 0.16	When $0.040 \leq R_T < 0.160$	When $R_T < .040$
Electrodeposition Primer operations (including application area, spray/rinse stations, and curing oven)	0.084 kg VOC /liter (0.7 lb/gal) Coating solids applied	$0.084 \times 350^{0.160 - R_T}$ kg VOC/liter ($0.084 \times 350^{0.160 - R_T} \times 8.34$ lb/gal) Coating solids applied	No VOC emission limit
Primer-Surfacer operations (including application area, flash off area, and oven)	1.44 kg of VOC/liter of deposited solids (12.0 lb VOC/gal of deposited solids) using the calculation in (C)(1)(b), or for non-compliant coating(s), using the daily weighted average calculation in (C)(1)(c)		
Topcoat operations (including application area, flash-off area, and oven)	1.44 kg of VOC/liter of deposited solids (12.0 lb VOC/gal of deposited solids) using the calculation in (C)(1)(b), or for non-compliant coating(s), using the daily weighted average calculation in (C)(1)(c)		
Combined Primer-Surfacer and Topcoat operations	1.44 kg of VOC/liter of deposited solids (12.0 lb VOC/gal of deposited solids) using the calculation in (C)(1)(b), or for non-compliant coating(s), using the daily weighted average calculation in (C)(1)(c)		
Final Repair operations	0.58 kg VOC/liter (4.8 lb VOC/gallon of Coating) less water and less exempt solvents on a daily weighted average basis or as an occurrence weighted average.		

Table 2
 VOC Content Limits for Miscellaneous Materials Used at Motor Vehicle Assembly Coating Operations (Grams of VOC per Liter of Coating Less Water and Less Exempt Compounds, as applied.)

Material	VOC Emission Limit, as applied, in grams per liter (pounds per gallon)
Glass Bonding Primer	900 (7.5)
Adhesive	250 (2.1)
Cavity Wax	650 (5.4)
Sealer	650 (5.4)
Deadener	650 (5.4)
Gasket/Gasket Sealing Material	200 (1.7)
Underbody Coating	650 (5.4)
Trunk Interior Coating	650 (5.4)
Bedliner	200 (1.7)
Weatherstrip Adhesive	750 (6.3)
Lubricating Wax/Compound	700 (5.8)

(2) Emission Control System Requirements

- (a) In lieu of complying with the requirements in section (C)(1), an operator may use a Emission Control System that meets all of the following requirements:
 - (i) The Emission Control System, consisting of collection and control devices, shall be approved in writing by the APCO.
 - (ii) The approved Emission Control System shall achieve an overall capture and control efficiency of at least 90 percent by weight as calculated according to section (C)(2)(a)(iv).
 - (iii) Use of an Emission Control System shall result in VOC emissions equal to or less than VOC emissions which would result from compliance with the applicable requirements of section (C)(1), (C)(3) or (C)(4).

- (iv) 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 the following equation:

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

- Where:
- C.E. = Overall Control Efficiency, percent
 - VOC_{LWc} = VOC Limit less water and less Exempt compounds
 - VOC_{LWn,Max} = Maximum VOC content of non-compliant Coating used in conjunction with a control device, less water and Exempt compounds.
 - D_{n,Max} = Density of solvent, Reducer/Thinner contained in the non-compliant Coating.
 - D_c = Density of corresponding solvent, Reducer/Thinner used in the compliant Coating system.

(3) Coating Application Methods

- (a) The operator shall apply Coatings using one of the following methods:
- (i) Brush, Dip or Roll Coating; or
 - (ii) Electrostatic Application; or
 - (iii) Flow Coating; or
 - (iv) Continuous Coating; or
 - (v) High Volume, Low Pressure (HVLP) spray equipment operated in accordance with the manufacturer's recommendations.
- (b) Any other Coating application method which is demonstrated in accordance with the provisions of (E)(1)(e) to be capable of achieving equivalent or better Transfer Efficiency than the automotive Coating application listed in (C)(3)(a)(v), provided written approval from the APCO is obtained prior to use.
- (c) In lieu of compliance with Section (C)(1), an operator may control emissions from application equipment with a VOC Emission Control System that meets the requirements of section (C)(2).

(4) Solvent Cleaning Operations

- (a) Solvent Cleaning Operations shall use solvents that have a VOC content equal to or less than 25 grams VOC/liter of cleaning material as calculated using the equations listed in section (B)(30).
- (b) Cleaning activities that use solvents shall be performed by one or more of the following methods:
 - (i) Wipe Cleaning; or
 - (ii) Application of solvent from hand-held spray bottles from which solvents are dispensed without a propellant induced force; or
 - (iii) Non-atomized solvent flow method in which the cleaning system 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
 - (iv) 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.
- (c) Solvent shall not be atomized into the open air unless it is vented to an APCO approved VOC Emission Control System that complies with section (C)(2). 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 (C)(4)(b)(ii).
- (d) An 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; when not in use, it must be closed.
- (e) In lieu of complying with sections (C)(4)(a) through (C)(4)(d), an operator may control VOC emissions from solvent cleaning with an APCO approved VOC Emission Control System that meets the requirements of section (C)(2).

- (5) Solvent Disposal and Storage
- (a) The operator shall store or dispose of fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, Coating, 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.
- (6) Work Practice Plan
- (a) The operator shall develop a work practice plan to reduce VOC emissions from Automobile, Light-Duty Truck and Heavier Vehicle assembly Coating-related activities which include, but are not limited to:
- (i) Store all VOC-containing Coatings, thinners and Coating-related waste materials in closed containers
 - (ii) Ensure that mixing and storage containers used for VOC-containing Coatings, thinners and Coating-related waste materials are kept closed at all times except when depositing or removing these materials
 - (iii) Minimize spills of VOC-containing Coatings, thinners, and Coating-related waste materials
 - (iv) Transport VOC-containing Coatings, thinners, and Coating-related waste materials from one location to another in closed containers or pipes
 - (v) Minimize VOC emission from cleaning of storage, mixing and transporting equipment.
- (b) The operator shall develop and implement a work practice plan to minimize VOC emissions from cleaning and from purging of equipment associated with new Motor Vehicle Assembly Coating Operations for which emission limits are required by this rule. The plan should specify practices and procedures to ensure VOC emissions from the following operations are minimized:
- (i) Vehicle Body wiping;
 - (ii) Coating line purging;
 - (iii) Flushing of Coating systems;
 - (iv) Cleaning of spray booth grates, walls and equipment;
 - (v) Cleaning external spray booth areas; and
 - (vi) Other housekeeping measures.
 - (vii) If an operator has a 2004 National Emission Standard for Hazardous Pollutants (NESHAP) (40 CFR, part 63, subpart IIII) work practice plan in place, instead of creating another work practice plan to address VOC emissions, the operator shall add to its NESHAP work practice plan procedures for minimizing non-hazardous air pollutants (HAP) VOC emissions.

(D) Record Keeping Requirements

- (1) All persons subject to this rule and any person claiming any exemption under sections (A)(2) shall comply with the following requirements
 - (a) Maintain and have available during an inspection, a current list of Coatings and solvents in use which provides all of the Coating data necessary to evaluate compliance, including the following information:
 - (i) The name and manufacturer;
 - (ii) The mix ratio of components used;
 - (iii) The VOC Actual and the VOC Regulatory content of each Coating as applied, or VOC content for each solvent;
 - (iv) Current Technical Data Sheet, Product Data Sheet or an equivalent manufacturers document for each coating and solvent, which provide the physical properties necessary to determine the lb VOC/Coating Solids deposited.
 - (v) Purchase records identifying the automotive category, name and the total volume of all coatings and solvents.
 - (b) Maintain records on a daily basis including:
 - (i) Coating category and mix ratio of components used in the Coating; and
 - (ii) Volume of each Coating applied (gallons); and
 - (iii) Application method used to apply Coating; and,
 - (iv) VOC content ((pounds per gallon) or (grams per liter)) and, for Dip Coating operations, viscosity (cSt) of Coating; and
 - (v) Non-compliant coatings that use the daily weighted average calculation (C)(1)(c)
 - (c) Maintain records on a monthly basis for Surface Preparation and Cleaning Operations including:
 - (i) The name and manufacturer of the solvent used, including methylene chloride MeCl.
 - (ii) The amount of each solvent and MeCl consumed for any use, in gallons.
 - (iii) The weight percentage of each solvent and MeCl consumed for any use.
 - (d) Such records shall be retained and available for inspection by the APCO for a minimum of five (5) years.

- (2) An operator using an Emission Control System as a means of complying with the provisions in section (C) 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 include, but are not limited to temperature, pressures and flowrates.

(E) Test Methods

- (1) The following test methods are incorporated by reference herein and shall be used to determine compliance with the provisions of the rule. Alternate test methods may be used, provided they are approved by the APCO, ARB and USEPA.
 - (a) VOC content of Coatings, other than reactive Adhesives, used at Motor Vehicle Assembly Coating Operations shall be determined using USEPA Method 24 and analysis of halogenated Exempt Compounds shall be analyzed by ARB Method 432.
 - (b) The procedure for reactive Adhesives in appendix A of the NESHAP for surface Coating of plastic parts (40 CFR Part 63, subpart PPPP) shall be used to determine the VOC content of reactive Adhesives.
 - (c) The manufacturer's Formulation Data shall be accepted as an alternative to these methods. If there is a disagreement between manufacturer's Formulation Data and the results of a subsequent test, use the test method results unless the facility can make a demonstration to the APCO's satisfaction that the manufacturer's Formulation Data are correct.
 - (d) Determination of emissions of VOC from spray gun cleaning systems shall be made using South Coast Air Quality Management District (SCAQMD) "General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems," October 3, 1989.
 - (e) The Transfer Efficiency of alternative Coating application methods shall be determined in accordance with the SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User," May 24, 1989 and SCAQMD "Guidelines for Demonstrating Equivalency With District Approved Transfer Efficiency Spray Gun", September 26, 2002.
- (2) Determination of Efficiency of Emission Control System
 - (a) The Capture Efficiency of the Emission Control System as specified in paragraph (C)(2) shall be determined by the procedures presented in the USEPA technical guidance document, "Guidelines for Determining Capture Efficiency", January 9, 1995 and 40 CFR 51, Appendix M, Methods 204-204f as applicable for determination of capture efficiency. Alternate test methods may be used, provided they are approved by the APCO, ARB and USEPA.

- (b) The control efficiency of a VOC Emission Control System as specified in paragraph (C)(2) and the VOC content in the control device exhaust gases, measured and calculated as carbon, shall be determined by the USEPA Test Methods 25, 25A, or SCAQMD Method 25.1 (Determination of Total Gaseous Non-Methane Organic Emissions as Carbon) as applicable. USEPA Test Method 18 or ARB Method 432 shall be used to determine emissions of Exempt Compounds.
- (3) For VOC Emission Control Systems that consist of a single VOC emission collection device connected to a single VOC emission control device, the overall capture and control efficiency shall be calculated by using the following equation:

CECAPTURE AND CONTROL	=	$[CE_{CAPTURE} \times CE_{CONTROL}]/100$
WHERE:		
CECAPTURE AND CONTROL	=	Overall Capture and Control Efficiency, in percent
CECAPTURE	=	Capture Efficiency of the collection device, in percent, as determined in section (E)(2)(a)
CECONTROL	=	Control Efficiency of the control device, in percent, as determined in section (E)(2)(b)

(4) Multiple Test Methods

- (a) When more than one test method or set of methods are 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 the rule.

See SIP Table at www.avaqmd.ca.gov