



Enhanced Regulatory Outreach Program  
Maricopa County Air Quality Department  
**Notice of Stakeholder Workshop**

**Date/Time: Thursday, July 10, 2014, 10:00 a.m.**  
**Location: 1001 North Central Avenue, Floor 9 Classroom\***

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The Maricopa County Air Quality Department (department) will conduct Stakeholder Workshop #3 to discuss proposed rule revisions regarding **AQ-2013-002-Rule 345: Vehicle and Mobile Equipment Coating**. The Stakeholder Workshop is an informal meeting for all interested parties, is free of charge and no advance registration or RSVP is required.

Two versions of draft Rule 345 are attached to this notice. The first version is a strikeout/underline version and the second version, for convenience of reading, is a clean version of the strikeout/underline version.

In order to enhance the discussion and cost savings, as well as support the county's sustainability initiative, information will be electronically displayed during the workshop. If you prefer a hardcopy of the documentation, please print the draft rule from this notice and bring it with you to the meeting. If you prefer a Word version of the draft rule, please contact Kathleen Sommer at 602-506-6706 or [kathleensommer@mail.maricopa.gov](mailto:kathleensommer@mail.maricopa.gov).

Additional information about AQ-2013-002-Rule 345 and links to the current Maricopa County Air Pollution Control Regulations are available at: <http://www.maricopa.gov/regulations/aq/process.aspx>. At any time, you can submit comments about AQ-2013-002-Rule 345 and the rulemaking process at: <http://www.maricopa.gov/regulations/comments.aspx>.

Thank you for participating in the rulemaking process.

\*When you arrive at 1001 North Central Avenue, please check-in in Suite #125 then proceed to the ninth floor classroom.



**REGULATION III – CONTROL OF AIR CONTAMINANTS**

**RULE 345**

**MOTOR VEHICLE AND MOBILE EQUIPMENT COATING**

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Adopted 02/15/95  
 Revised 11/20/96  
 Revised 04/21/99  
 Revised 09/25/13

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**MARICOPA COUNTY  
 AIR POLLUTION CONTROL REGULATIONS**

**REGULATION III – CONTROL OF AIR CONTAMINANTS**

**RULE 345  
MOTOR VEHICLE AND MOBILE EQUIPMENT COATING**

**SECTION 100 – GENERAL**

**101 PURPOSE:** To limit emissions of volatile organic compounds (VOCs) from ~~the surface preparation and coating of highway vehicles and mobile equipment~~ motor vehicle and mobile equipment coating and surface preparation operations, which contribute to the formation of ground level ozone.

**102 APPLICABILITY:**

~~102.1~~ The provisions of this rule apply to ~~the coating of any vehicle or mobile equipment able to travel or be drawn upon a highway, except for Original Equipment coatings at light-duty vehicle manufacturing plants. A summary is provided by the following directory: any owner and/or operator, who leases, operates and/or controls a motor vehicle or mobile equipment refinishing operation.~~

**DIRECTORY OF THE REGULATIONS THAT APPLY TO NEW FINISHES & TO REFINISHES**

Type of Vehicle II	Applicable Regulation for Original Equipment Coating and Coating on Never-Coated Surface II	Applicable Regulation for Refinishing II
Car, pickup, minivan, & light-duty utility vehicle, or their chassis, produced on large assembly lines; i.e., included by code #33611 in NAICS, as incorporated by reference in subsection 505.3.	New Source Performance Standard for cars & light-duty vehicles made on assembly lines, subpart MM, 40 CFR 60, as incorporated by reference in Rule 360.	Table 1 (of this rule) (vehicle bodies, cabs, and chassis only)
Car, pickup, minivan, or light-duty utility vehicle NOT produced on large assembly lines; all motorcycles and golf carts.	Table 3 (of this rule)	Table 1 (vehicle bodies, cabs, and chassis only)
All vehicles that qualify as “heavy trucks”, as defined by §215 of this rule, (buses, large trucks, tractor/trailers, etc.)	Table 3	Table 2 (of this rule) (vehicle bodies, cabs, chassis & their trailers)
All heavy-duty vehicles that do not qualify as “heavy trucks”, and all mobile equipment	Table 3	Table 3 except for pretreatment wash

\*Small never coated surfaces on a coated vehicle being refinished are subject to Table 2 or §302.3.

~~102.2~~ **103 Non-Applicability: EXEMPTIONS:**



a. ~~This rule~~ Rule 345 does not apply to:

**103.1 Use of Materials with Low VOC:** Owners and/or operators who exclusively use:

a. ~~materials~~ Materials that contain 2.0% or less VOC by either weight or volume,  
 ;or

b. ~~have~~ Materials with a VOC content that is less than 0.17 lbs VOC per gallon (20 g/liter) ~~material VOC content~~, as determined by the formula in ~~subsection 503.3~~  
Section 503 of this rule.

b. **103.2 Coating Individual Parts:** Owners and/or operators that exclusively coat ~~This rule does not apply to the coating of separate~~ motor vehicle parts or mobile equipment parts that have never been installed since manufacture or remanufacture, ~~unless they are current~~  
This does not include replacements for a defective/missing body part ~~and are being coated~~ installed in the course of refinishing the vehicle body, ~~they will become part of.~~

**103.3 Coating with a Non-Refillable Aerosol Can:** Coating with a non-refillable aerosol can is exempt from Rule 345.

~~102.3 NSPS & NESHAP: In addition to this rule, facilities may be subject to New Source Performance Standards (NSPS) in Rule 360 and/or to National Emission Standards for Hazardous Air Pollutants (NESHAP) in Rule 370 of these Rules and Regulations.~~

**SECTION 200 – DEFINITIONS:** For the purpose of this rule, the following definitions shall apply, in addition to those definitions found in Rule 100 (General Provisions and Definitions) of these rules. In the event of any inconsistency between any of the Maricopa County air pollution control rules, the definitions in this rule take precedence.

**201 AEROSOL-SPRAY COATING:** A coating which is sold in a hand-held, pressurized, non-refillable container, of less than 22 fluid ounces (0.66 liter) capacity, and which is expelled from the container in a finely divided form when a valve on the container is depressed.

**202 AIRLESS AND AIR-ASSISTED AIRLESS SPRAY:** Any paint spray technology that relies solely on the fluid pressure of the paint to create an atomized paint spray pattern and does not apply any atomizing compressed air to the paint before it leaves the paint nozzle. Air assisted airless spray uses compressed air to shape and distribute the fan of atomized paint, but still uses fluid pressure to create the atomized paint.

~~201~~ **203 AUTOMATIC SPRAY GUN-CLEANING MACHINE (GUN CLEANER):** A machine which, after being loaded, cleans paint spray-guns without the assistance of a person.

~~202~~ **AUTOMOBILE/LIGHT DUTY VEHICLE:** A vehicle manufactured by a facility that is designated by code 33611 of the 1997 North American Industrial Classification System (NAICS), as incorporated by reference in subsection 505.3. This comprises only vehicles manufactured by a large production line facility that makes the following complete vehicles or chassis [for such vehicles]: automobile, light duty van, light duty motor home, pick up truck, and/or utility vehicle.



- 204**     **BASECOAT:** Basecoat is a pigmented topcoat which is the first topcoat applied as part of a multistage topcoat system.
- 205**     **BUS:** A motor vehicle, which is designed primarily for the transportation of persons, that has a manufacturer's gross vehicle weight of more than 8600 pounds and a design capacity of over 12 persons.
- 206**     **CLEAR COATING:** A coating that contains no pigments and is labeled and formulated for application over a color coating or another clear coating.
- 203     **207**     **COATING AS APPLIED:** Refers to coating at the time immediately prior to its application, including any final addition of solvent to the coating before such coating is applied.
- 208**     **COATING COMPONENT:** Any portion of a coating, such as a reducer, thinner, hardener, or additive recommended (by the manufacturer or importer) to distributors or end-users for motor vehicle refinishing. The raw materials, such as polyurethane resin, used to produce the coating component that are mixed by the end user to prepare a coating for application are not considered coating components.
- 204     ~~**CONVENTIONAL AIR ATOMIZED SPRAY (SYSTEM):**~~ ~~A spray which is atomized with air in a system designed to exceed 25 psig (1.7 bar) at the center of the spray gun tip and which is not used with an electrostatic transfer system.~~
- 205     **209**     **DAY:** A period of 24 consecutive hours beginning at midnight.
- 206     ~~**DEPARTMENT:**~~ ~~The Maricopa County Air Quality Department.~~
- 207     **210**     **DETAILING GUNS AND TOUCH-UP GUNS:** Small air spray devices, including air brushes, that operate at no greater than 6 cfm (170 liters per minute) air flow and no greater than 50 psig (3.4 bar) air pressure and are used to coat small areas.
- 208     **211**     **DILUENT:** For the purposes of this rule, any fluid in or added to a coating such as thinner, retarder, reducer, solvent, or drying accelerator which solubilizes, adjusts concentration, viscosity, flow, or drying rates and which evaporates as the coating film solidifies and cures.
- 209     **212**     **ELECTROSTATIC APPLICATION:** A method of applying coating by electrically charging coating droplets or particles with an electrical device, causing their deposition onto a substrate by electrostatic attraction.
- 240     **213**     **EMISSION CONTROL SYSTEM (ECS):** A system, approved in writing by the Control Officer, designed and operated in accordance with good engineering practice to reduce emissions of volatile organic compounds. Such system consists of an emissions collection subsystem and an emissions processing subsystem.
- 241     **214**     **ENAMEL:** Any non-lacquer topcoat.
- 242     **215**     **FLEXIBLE PLASTIC:** A surface or part made of solid (non-rubber) polymer designed to withstand significant deformation without damaging it for its intended use.
- 216**     **GROUP I MOTOR VEHICLES AND MOBILE EQUIPMENT:**
- 216.1**     Automobiles (transport and capacity less than 12 persons)
- 216.2**     Small and medium-sized trucks and vans
- 216.5**     Motor homes



- 216.6 Motorcycles
- 216.7 Mobile equipment
- 217 **GROUP II MOTOR VEHICLES:**
- 217.1 Large trucks
- 217.2 Bus
- 217.3 Construction equipment, such as earthmovers, tractors, diggers, mobile cranes, bulldozers, and concrete mixers
- 217.4 Farm machinery, such as forklifts, tractors, and plows
- 217.5 Miscellaneous equipment, such as street cleaners
- 243 218 **HARDENER:** A coating component specifically designed to promote a faster cure of an enamel finish.
- 244 ~~HEAVY TRUCK: Any cab/tractor, truck, van, bus, or motorhome with a manufacturer's gross vehicle weight rating of 8600 lbs or more that is licensable for highway travel; this includes any trailer or semi-trailer that is equipped to be pulled by any such cab/tractor, truck, or van.~~
- 245 ~~HEAVY DUTY VEHICLE: Any highway vehicle, except for an automobile/light duty vehicle as defined in Section 202. This includes, but is not limited to, all vehicular products manufactured under NAICS code 3362, such as trailers, buses, canopies, and the following: trucks, construction equipment, and recreational vehicles.~~
- 246 ~~HIGH VOLUME LOW PRESSURE (HVLP) APPLICATION: A type of coating spray system in which the final air pressure does not exceed 10 psig (67 kilopascals) and which depends on relatively large volumes of air to atomize the coating.~~
- 219 **HIGH-VOLUME LOW PRESSURE (HVLP) SPRAY GUN:** Spray equipment that is permanently labeled as such and used to apply any coating by means of a spray gun, which is designed and operated between 0.1 and 10 pounds per square inch gauge (psig) air atomizing pressure measured dynamically at the center of the air cap and at the air horns.
- 247 220 **LACQUER:** A coating which becomes or remains soft when subjected to heat (thermoplastic), which dries primarily by solvent evaporation, and which is resolvable in its original solvent.
- 248 221 **LOW PRESSURE GUN:** An air atomized spray gun which by design functions best at tip pressures below 10 psig (0.7 bar), measured according to subsection 502.4, and for which the manufacturer makes no written claims that the gun can be used effectively above 12 psig (0.8 bar).
- 222 **MIDCOAT:** A semi-transparent topcoat which is the middle topcoat applied as part of a three-stage topcoat system.
- 249 223 **MIXING INSTRUCTIONS:** The coating or coating component manufacturer's or importer's specification of the quantities of coating components for mixing a coating.
- 220 224 **MOBILE EQUIPMENT:** ~~Any equipment that is physically capable of being driven or drawn upon a highway including, but not limited to, the following types of equipment: construction vehicles (such as mobile cranes, bulldozers, concrete mixers); farming equipment (such as wheel tractor, plow, pesticide sprayer); hauling equipment (such as truck trailers, utility bodies, camper shells); and miscellaneous equipment (such as street cleaners, golf carts, all terrain vehicles {ATVs}, mopeds) etc.~~



Any equipment that is physically capable of being driven or drawn upon a highway and that is not eligible as or considered an automobile used for transportation on roads or highways, even if such mobile equipment is self-propelled. Mobile equipment includes but is not limited to, the following types of equipment:

224.1 Hauling equipment, such as truck trailers, utility bodies, and camper shells;

224.2 Miscellaneous equipment, such golf carts, all-terrain vehicles (ATVs), and mopeds; and

224.3 Equipment used inside and around an airport, dock, depot, and industrial and commercial plants.

225 **MOTOR HOME:** A motor vehicle originally designed, or permanently altered, and equipped for human habitation as defined in Arizona Revised Statutes (A.R.S.) § 28-4301(20).

226 **MOTOR VEHICLE:** A self-propelled vehicle for use on the public roads and highways of the State of Arizona and required to be registered under the Arizona State Uniform Motor Vehicle Act, including both small and large sized vehicles trucks, buses, large sized off-road equipment and-any non-motorized attachments, such as but not limited to, automobiles, light duty trucks, golf carts, vans, and motorcycles, trailers or other conveyances which are connected to or propelled by the actual motorized portion of the vehicle.

227 **MOTORCYCLE:** A motor vehicle other than a tractor having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground and weighing less than 1500 pounds, except that four wheels may be in contact with the ground when two of the wheels are a functional part of a sidecar.

228 **MULTI-COLORED PROCESS:** A process that exhibits more than one color when applied, is packaged in a single container, and camouflages surface defects on areas of heavy use, such as cargo beds and other surfaces of trucks and other utility vehicles.

224 ~~MULTI-COLORED TOPCOAT: A topcoat that exhibits more than one color, is packaged in a single container, and camouflages surface defects on areas of heavy use, such as cargo beds and other surfaces of trucks and other utility vehicles.~~

229 **PAINT STRIPPING:** The removal of dried coatings from wood, metal, plastic, and other substrates. A single affected source may have multiple paint stripping operations. other surfaces of trucks and other utility vehicles.

230 **PRETREATMENT COATING:** Any (coating) that contains a minimum of one-half (0.5) percent acid by weight and not more than 16 percent solids by weight necessary to provide surface etching and is labeled and formulated for application directly to bare metal surfaces to provide corrosion resistance and adhesion.

222 ~~PRETREATMENT WASH PRIMER: A primer that contains a minimum of 0.5 percent acid by weight that is applied directly to bare metal surfaces to provide corrosion resistance and to promote adhesion of subsequent coatings.~~

223 **231** **PRIMER:** Any coating applied prior to the application of a topcoat for the purpose of corrosion resistance and/or adhesion.

224 **232** **PRIMER-SEALER:** Any coating applied prior to the application of a topcoat for the purpose of corrosion resistance, adhesion of the topcoat, and/or color uniformity and to promote the ability of an undercoat to resist penetration by the topcoat.



- 225 233 **PRIMER-SURFACER:** Any coating applied prior to the application of a topcoat for the purpose of filling surface imperfections in the substrate, corrosion resistance, and/or adhesion of the topcoat. Primer surfacers are applied directly to metal surfaces.
- 226 234 **REDUCER:** Any solvent used to thin enamels.
- 227 235 **REFINISH, REFINISHING:** Recoating previously paint-finished parts of and motor vehicles, a motorcycle or of the body of an automobile/light duty vehicle. The body does not include mechanical parts or chassis, except as they are incorporated into the surface of the body, such as a motor driven mirror assembly and coated underbody.
- 228 236 **SINGLE-STAGE TOPCOAT PROCESS:** A ~~topcoat~~ process consisting of only a single coating formulation applied in one or more coats.
- 237 **SOLVENT:** A fluid containing organic compounds used to perform paint stripping, surface preparation, or cleaning of surface coating equipment.
- 229 238 **SPECIALTY COATING:** Any coating that is specifically designated by the coating manufacturer as being one or more of the following:
- 229.1 238.1 **Adhesion Promoter:** A coating designed to facilitate the bonding of a primer or topcoat on surfaces such as trim moldings, door locks, and door sills, where sanding is impracticable, and on plastic parts and the edges of sanded areas.
- 229.2 238.2 **Bright Metal Trim Repair Coating:** A coating applied directly to chrome plated or other bright metal surface(s) to attain a desired appearance.
- 229.3 238.3 **Cut-In, or Jambing, Clearcoat:** A fast-drying, ready-to-spray clearcoat applied to surfaces such as door jambs and trunk and hood edges to allow for quick closure.
- 229.4 238.4 **Elastomeric Coating:** A coating designed for application over flexible parts, such as elastomeric bumpers.
- 229.5 238.5 **Impact-Resistant Coating:** A specialty coating used on the lower 12 inches (31.6 cm) of a quarter-panel, door, or fender to resist chipping caused by road debris.
- 229.6 238.6 **Low-Gloss Coating:** A coating which exhibits a gloss reading less than or equal to 25 on a 60° glossmeter.
- 229.7 238.7 **Radar Dispersing Coating:** A coating designed to disperse radar signals, applied to any part of a military vehicle or military mobile equipment.
- 229.8 238.8 **Underbody Coating:** A coating designed for protection and sound deadening that is typically applied to the wheel wells and underbody of an automobile.
- 229.9 238.9 **Uniform Finish Blenders:** Any coating that is applied in a spot repair for the purpose of blending a paint overspray (“feathered”) area of a repaired topcoat to match the appearance of an adjacent existing topcoat.
- 229.10 238.10 **Water Hold-Out Coating:** A coating applied to the interior cavity areas of doors, quarter panels and rocker panels for the purpose of corrosion resistance to prolonged water exposure.
- 229.11 238.11 **Weld-Through Primer:** A primer that is applied to an area before welding is performed, and that provides corrosion resistance to the surface after welding has been performed.



- 230 **239** **SPOT REPAIR ON A HEAVY TRUCK GROUP II MOTOR VEHICLES:** A repair of a damaged or uncoated area of a Group II motor vehicle ~~heavy truck~~ in which not more than a total of 1 liter (1.1 quart) of topcoat(s) and a total of 1 liter primers are used; and such coatings are applied from a reservoir that can hold no more than 1.2 liters when completely full.
- 231 **SURFACE PREPARATION AND SURFACE CLEANING FLUIDS:** ~~Fluids that are used to prepare a surface for further operations by aiding the removal of grime, greases, waxes, unwanted deposits and embedded particles from the surface.~~
- 240** **SPRAY-APPLIED COATING (SPRAY-GUN) OPERATIONS:** Applies to operations in which coatings are applied using a hand-held device that creates an atomized mist of coating and deposits the coating on a substrate. For the purposes of this rule, spray-applied coating operations do not include the following materials or activities:
- 240.1** Surface coating application using powder coating, hand-held, non-refillable aerosol containers, or non-atomizing application technology, including, but not limited to, paint brushes, rollers, hand wiping, flow coating, dip coating, electro-deposition coating, web coating, coil coating, touch-up markers, or marking pens;
- 240.2** Thermal spray operations (also known as metallizing, flame spray, plasma arc spray, and electric arc spray) in which solid metallic or non-metallic material is heated to a molten or semi-molten state and propelled to the work piece or substrate by compressed air or other gas, where a bond is produced upon impact.
- 241** **STRIPPABLE BOOTH COATING:** A coating that is applied to a paint booth wall to provide a protective film to receive overspray during finishing operations and that is subsequently peeled off and disposed of.
- 232 ~~**STRIPPERS:** Powerful solvents used to dissolve permanent, cured coatings, usually to attain a bare substrate.~~
- 242** **SURFACE PREPARATIONS AND CLEANERS/CLEANING MATERIALS:** Products designed to remove old coatings and rust, either mechanically or chemically, or to prepare for a new coating:
- 242.1** **Surface Preparations:** Preparation products include gunwash (a product designed for cleaning spray-guns and other equipment), paint strippers, dirt, oil, or degreasers (including anti-static types for plastic) and silicone removers.
- 242.2** **Cleaners/Cleaning Materials:** Cleaning products include those designed for the removal of surface contamination and other materials, such as dirt, grease, or oil from equipment associated with a coating operation, such as cleaning spray booths, spray guns, racks, tanks, and hangers used during preparation for and prior to the application of coating materials.
- 233 **243** **THINNER:** Any solvent used to reduce the viscosity or solids content of a coating.
- 234 **244** **THREE-STAGE TOPCOAT PROCESS:** A ~~topcoat~~ process composed of a pigmented basecoat, a midcoat, and a transparent clearcoat.
- 235 **245** **TOPCOAT:** Any coating or series of coatings applied over a primer or an existing finish for the purpose of protection or beautification.
- 236 **246** **TOUCH UP COATING:** A coating applied by brush, air-brush, or nonrefillable aerosol can to cover minor surface damage.



- ~~237~~ ~~TWO-STAGE TOPCOAT: A topcoat consisting of a pigmented basecoat and a transparent clearcoat.~~
- 247 **TRANSFER EFFICIENCY:** The ratio of the weight or volume of coating solids adhering to the part being coated to the weight or volume of coating solids as applied in the application process, expressed as a percentage.
- 248 **TRUCK:** A motor vehicle designed, used, or maintained primarily for the transportation of property.
- 248.1 **Large-Sized Truck:** Any motor vehicle having a manufacturer's gross vehicle weight rating of more than 8600 pounds.
- 248.2 **Medium-Sized Truck:** Any motor vehicle having a manufacturer's gross vehicle weight rating of 6001 to 8600 pounds.
- 248.3 **Small-Sized Truck:** Any motor vehicle having a manufacturer's gross vehicle weight rating of 6000 pounds or less and which is designed primarily for the purposes of transportation of property or is a derivative of such vehicle, or is available with special features enabling on-street or off-highway operation and use.
- 249 **TWO-STAGE PROCESS:** A process consisting of a pigmented basecoat and a transparent clear coating.
- 250 **VAN:** A closed truck for carrying property or persons.
- 250.1 **Medium-Sized Vaz:** A van having a manufacturer's gross vehicle weight rating of 6001 to 8600 pounds.
- 250.2 **Small-Sized Vaz:** A van having a manufacturer's gross vehicle weight rating at 6000 pounds or less.
- ~~238~~ ~~VEHICLE REFINISH COATING COMPONENT: Any portion of a coating, such as a reducer or thinner, hardener, additive, etc., recommended (by its manufacturer or importer) to distributors or end users for vehicle refinishing. The raw materials (such as polyurethane resin, etc.) used to produce the components that are mixed by the end user to prepare a coating for application are not considered vehicle refinish coating components.~~
- ~~239~~ ~~VEHICLE REFINISHING OPERATION: For the purposes of this rule, any coating of vehicles or mobile equipment, their parts and components, including partial body collision repairs, for the purpose of protection, restoration or beautification, and which is subsequent to the original coating applied at a coating assembly line at an Original Equipment Manufacturing (OEM) plant.~~
- ~~240~~ 251 **VOC CONTENT:** See subsections 503.2 and 503.3. The VOC content of a chemical or substance is that portion of the organic compound that participates in atmospheric photochemical reactions, except for the non-precursor organic compounds. Section 503 of this rule instructs how to calculate the VOC content of a substance.

## SECTION 300 – STANDARDS

- 301 **LIMITATIONS: VOC CONTENT OF REFINISH COATINGS FOR LIGHT DUTY VEHICLES: VOC COATING LIMITS FOR MOTOR VEHICLE REFINISHING**
- 301.1 ~~No person shall sell for use, supply for use, or apply, coating on a previously finished automobile/light duty vehicle in Maricopa County unless the coating's VOC content complies with the applicable limits in Table 1.~~ **VOC Coating Limits:** The VOC coating



limits for refinishing motor vehicles, mobile equipment, their parts and components are listed in Tables 345-1, 345-2, and 345-3 of this rule.

- a. ~~VOC content is determined according to Sections 502, 503.2, and 505.~~
- b. ~~Compliance will be determined based on the VOC content limit, as expressed in metric units. (English units {lbs VOC/gal} are provided for information only.)~~

TABLE 1  
 REFINISHES APPLIED TO THE BODIES OF AUTOMOBILE/LIGHT DUTY VEHICLES OR  
 MOTORCYCLES

**TABLE 345-1**  
**VOC COATING LIMITS FOR GROUP I MOTOR VEHICLES AND MOBILE EQUIPMENT**  
 VOC LIMITS FOR REFINISH COATINGS AS APPLIED, MINUS EXEMPT COMPOUNDS

Coating category	Grams VOC per liter	Pounds VOC per gal
Pretreatment wash primers	780	6.5
Primers/primer surfacers	580	4.8
Primer sealers	550	4.6
Single/two-stage topcoats	600	5.0
Topcoats of more than two stages	630	5.2
Multi-colored topcoats	680	5.7
Specialty coatings	840	7.0
Strippable booth coatings	420	3.5
Surface preparations and Cleaners	<u>200</u>	<u>1.4</u>

~~301.2 Refinishing Surfaces that are Not Part of Body/Chassis: The recoating of a section of a light duty vehicle that is not part of its body/chassis, its body's appurtenances, nor its wheels, shall comply with the VOC limits of Table 3. This includes drive train, steering gear, suspension, etc.~~

~~301.3 Refinishing Replacement Appurtenances on the Vehicle Body: Vehicle body appurtenances such as mirrors, trim strips, license plate frames, etc., used to replace or supplement existing appurtenances on an automobile/light duty vehicle bodies may be coated with coatings that meet the applicable VOC limits in Table 1, even if the item has never been coated or used.~~

**302 REFINISHING HEAVY DUTY TRUCKS AND TRUCK TRAILERS:**

~~302.1 Refinish VOC Limits: No person shall apply refinish coating to any section or appurtenance of the body or chassis of a heavy truck unless that coating complies with the VOC limits in Table 2.~~

- a. ~~VOC content is determined according to Sections 502, 503.2, and 505.~~
- b. ~~Compliance will be determined based on the VOC content limit, as expressed in metric units. (English units {lbs VOC/gal} are provided for information only.)~~

TABLE 2  
 VOC LIMITS FOR REFINISH COATING AS APPLIED TO HEAVY TRUCK BODIES

VOC LIMIT and Effective Date	Current	November 1, 1999	November 1, 2000	November 1, 2001	ROW
TYPE OF COATING					
Pretreatment wash primer	780 g/L 6.5 lb/gal				1



Primers/primer surfacers	580 g/L 4.8 lb/gal	same	same	420 g/L 3.5 lb/gal	2
Primer sealers	550 g/L 4.6 lb/gal	same	same	420 g/L 3.5 lb/gal	3
Single stage, solid color	600 g/L 5.0 lb/gal	same	same	420 g/L 3.5 lb/gal	4
Single stage, metallic/iridescent	550 g/L 4.6 lb/gal	same	same	420 g/L 3.5 lb/gal	5
2-Stage topcoat basecoat & clearcoat	600 g/L 5.0 lb/gal per formula**	same	same	480 g/L 4.0 lb/gal per formula**	6
Topcoats of more than two stages	630 g/L 5.2 lb/gal per formula**	same	same	480 g/L 4.0 lb/gal for trailers**	7
Spot coats, 1 liter limit each stage	600 g/L 5.0 lb/gal			546g/L (11/2/02)	8
Specialty Coatings as defined by §231	840 g/L 7.0 lb/gal				9
Strippable booth coatings	2.0 lb/gal				
**Formula for computing the VOC content of multi stage coating is in subsection 503.1					

302.2 ~~Refinishing Replacement Appurtenances on A Heavy Truck: At the time of (re)placement, a person may coat heavy truck body appurtenances such as mirrors, trim strips, license plate frames, wheel covers, etc., with coatings that meet the applicable VOC limits in Table 2 or the requirements of subsection 302.3, if the item is about to be used to replace or supplement existing appurtenances, even if the item has never been coated or used.~~

302.3 ~~Spot Refinishing of Heavy Trucks: A person may coat a heavy truck panel, a juncture of panels, or a body appurtenance using a coating with a VOC content that does not exceed the VOC limits set forth in subsection a below, provided that the coatings as applied meet the requirements as set forth in subsection b:~~

a. ~~VOC Limits for Spot Refinishing of Heavy Trucks:~~

- (1) ~~Through November 1, 2002—600 g VOC/L (5.0 lb VOC/gal).~~
- (2) ~~After November 1, 2002—546 g VOC/L (4.55 lb VOC/gal).~~

b. ~~Volume Limits:~~

- (1) ~~The coating shall be applied from a reservoir having a gross volume not exceeding 1.2 liters (5 cups) and containing no more than 1 liter (1.1 qt.) of coating.~~
- (2) ~~The complete topcoat of a single stage finish shall not use more than 1 liter.~~
- (3) ~~The complete topcoat of a multi stage finish shall not exceed 2 liters.~~
- (4) ~~The total of all non-topcoat coatings, including wash and primers shall not exceed 1 liter.~~

e. ~~Wash Primers may have up to 780 g/L (6.5 lb/gal).~~



**TABLE 345-2**  
**VOC COATING LIMITS FOR GROUP II MOTOR VEHICLES**

Type of Coating	Grams VOC per liter	Pounds VOC per gal
Pretreatment coating	780	6.5
Primer surfacers	420	3.5
Primer sealers	420	3.5
Single stage, solid color	420	3.5
Single stage, metallic/iridescent	420	3.5
2-Stage process - basecoat & clear coating	480	4.0
Process of more than two stages	480	4.0
Spot Repair, 1 liter each stage	546	4.6
(Volume limits apply §301.3 of this rule)		
Specialty coatings	840	7.0
Strippable booth coatings	240	2.0

303 COATING NEW SURFACES & REFINISHING HEAVY VEHICLES:

- 303.1 ~~Coating New or Never Coated Surfaces: New or never coated surfaces of mobile equipment and of a vehicle, including a heavy truck, that is not manufactured under NAICS code 33611, are subject to a VOC limit of 3.5 lb VOC/gal (420 g/L) for all unbaked coatings over metal or plastic. The VOC content of coating applied on or over surfaces included in Table 3 shall comply with the VOC limits of Table 3.~~
- 303.2 ~~Refinishing Surfaces that are Not Part of Body/Chassis: The recoating of a section of mobile equipment or a heavy duty vehicle, including a heavy truck, that is not part of its body/chassis, its wheels, nor appurtenances, shall comply with the VOC limits of Table 3. This includes drive train, steering gear, suspension, etc.~~
- 303.3 ~~Refinishing Mobile Equipment and Heavy Duty Vehicles: No person shall refinish mobile equipment or any heavy duty vehicle that is not a heavy truck unless the coating as applied conforms to the VOC limits in Table 3, except that pre-treatment acid etchant wash shall conform to the VOC limits of row 1 in Table 2.~~

**TABLE 3**  
**VOC Limits for Coating As Applied To Uncoated Vehicle Surfaces COATING**

COATING ON METAL SURFACES	Lbs. per gallon	Grams per liter
The following includes Coating, Adhesive, & Adhesive Primer		
— Air Dried Coating	3.5	420
— Baked Coating [above 200°F (93°C)]	3.0	360
COATING ON VINYL SURFACES	3.8	450
COATING ON FABRIC SURFACES	2.9	350
COATING PLASTIC SURFACES not defined as flexible	3.5	420
COATING FLEXIBLE PLASTIC SURFACES (not Vinyl)		
— Primer	4.1	490
— Color Topcoat	3.8	450
— Basecoat/Clear Coat (Combined System)	4.5	540

**TABLE 345-3**  
**VOC COATING LIMITS FOR REFINISHING NEW & MISCELLANEOUS SURFACES**

COATING ON METAL SURFACES	Grams VOC per liter	Pounds VOC per gal
The following includes coating, adhesive, and adhesive primer		



<u>Air Dried Coating</u>	<u>420</u>	<u>3.5</u>
<u>Baked Coating (above 200°F (93°C))</u>	<u>360</u>	<u>3.0</u>
<u>Coating On Vinyl Surfaces</u>	<u>450</u>	<u>3.8</u>
<u>Coating On Fabric Surfaces</u>	<u>350</u>	<u>2.9</u>
<u>Coating On Plastic Surfaces (not defined flexible)</u>	<u>420</u>	<u>3.5</u>
<u>Coating Flexible Plastic Surfaces (not vinyl)</u>		
<u>Primer</u>	<u>490</u>	<u>4.1</u>
<u>Color Topcoat</u>	<u>450</u>	<u>3.8</u>
<u>Basecoat/Clear Coating (Combined System)</u>	<u>540</u>	<u>4.5</u>

304            **301.2**    **Mixing Requirements:**

304.1    ~~Suppliers Provide Mixing Instructions: No person shall supply vehicle refinishes regulated by Table 1 or Table 2 of this rule unless instructions for proper mixing/diluting are provided.~~

304.2    ~~Vehicle Appropriate VOC Content and Instructions: If a supplier of a refinish coating represents that such coating is appropriate to coat a particular type of vehicle listed in Table 1 or Table 2:~~

- a.    ~~The coating as mixed and applied must meet the applicable VOC limit in Table 1 or Table 2; and,~~
- b.    ~~The supplier must provide only those mixing/blending instructions that meet the VOC limit; except,~~
- e.    ~~Instructions that included both compliant and non compliant formulation directions are acceptable if they have a line, mark, or totally obscuring coating through/over each word of all non-compliant mixing instructions.~~

304.3    ~~Mixing Requirements for the Coating User: No person Owners and/or operators adding VOC containing thinner, reducer, or other diluent to any refinish coating regulated by either Table 1 or Table 2 Tables 345-1, 345-2, or Table 345-3 of this rule shall:~~

- a.    Meet the applicable VOC limit in these tables and
- b.    Not add such diluents in proportions higher than those specified or recommended by in the instructions provided by the supplier of the coating.

**301.3**    **Volume Limits for Spot Repair on Group II Motor Vehicles:**

- a.    The coating shall be applied from a reservoir having a gross volume not exceeding 1.2 liters (5 cups) and containing no more than 1 liter (1.1 qt.) of coating.
- b.    The complete topcoat of a single stage finish shall not use more than 1 liter.
- c.    The complete topcoat of a multi-stage finish shall not exceed 2 liters.
- d.    The total of all non-topcoat coatings, including wash and primers shall not exceed 1 liter.



**301.4** Calculation of VOC Content: Instruction on how to calculate VOC content is available in Section 503 of this rule.

**301.5** Compliance: Compliance will be determined based on the VOC content limit, as expressed in metric units. (English units (lbs VOC/gal) are provided for information only).

**302** OPERATING REQUIREMENTS:

**305** 302.1 SURFACE PREPARATION AND SURFACE CLEANING FLUIDS

Surface-Preparations and Cleaners/Cleaning Materials: Limits and work-practices for surface preparations and cleaners include the following:

305.1 a. ~~A person~~ An owner and/or operator cleaning or preparing a surface of a motor vehicle or mobile equipment for coating using a wipe method or other non-dip method shall use a material with a VOC content as applied of no more than 1.4 pounds of VOC per gallon as ~~determined~~ calculated by methods the formula set forth in ~~subsections 502.1d or 502.3~~ Section 503.3 of this rule.

305.2 b. ~~Neither surface cleaning nor surface preparation material that contains VOC~~ Surface-preparations or cleaning materials containing VOC shall not be applied by means of motor-compressed air if applied in a mist or (finely atomized) spray.

305.3 c. Rule 331(Solvent Cleaning) applies to the dip cleaning of motor vehicle or mobile equipment surfaces.

d. Tanks used for stripping off coating or for cleaning objects shall:

(1) Be covered when not in use and

(2) Solvent-dragout shall be minimized by tilting or rotating the object to drain off any pools of solvent before removing the object from above the tank.

e. All solvent used for line cleaning shall be pumped or drained into a container and kept closed when not in use.

**302.2** Emission Control System (ECS): An alternative to meeting an applicable coating-VOC limit and/or work practice pursuant to Sections 301 and 302 of this rule, an owner and/or operator is allowed to operate an Emission Control System (ECS) that reduces VOC emissions by at least 85% pursuant to Section 504 of this rule.

**306** **302.3** Maintenance: ~~Any person~~ An owner and/or operator subject to this rule shall operate and maintain in proper working order all production and cleaning equipment in which VOC-containing materials are used or stored.

**302.4** Storage and Disposal Of VOC and VOC-Containing Material: An owner and/or operator subject to this rule shall comply with the following:

a. Store all VOC-containing materials, including but not limited to waste coatings, waste solvents and their residues, and rags in closed containers.

b. Provide a legible label identifying all container's contents.

c. Keep all containers closed except when contents are added or removed.



- d. Dispose of waste or surplus VOC-containing materials in a manner that inhibits VOC evaporation, such as having these materials hauled off site in sealed containers.

**303 APPLICATION REQUIREMENTS**

**307 303.1 Spray-Applied Coating (Spray Gun) ~~Paint Gun~~ Requirements and Limits:**

307.1 a. ~~No person shall apply any coating with a VOC content exceeding 3.0 lb VOC/gal (360 g/l) using a spray gun, unless such spraying employs one of the following devices or systems:~~ **Spray Application of Coatings Containing More than 3.0 lb VOC/gal.:** An owner and/or operator shall employ one of the following devices or systems when using a coating as applied, in a spray gun that that exceeds 3.0 lb VOC/gal (360 g/l):

~~a.~~ (1) **Low Pressure Spray Gun:** A low pressure spray gun or system (such as HVLP), ~~or~~ having at least a 65% transfer efficiency and meeting the following requirements:

(a) **Air Cap Pressure:** Air cap pressure confirmed by either:

(i) Proper operating pressure gauges; or

(ii) Manufacturer’s technical information regarding the correlation between the handle air inlet pressure and the air cap pressure and properly operating inlet pressure gauges if using this correlation option to demonstrate compliance; or

(b) Any method which is approved by EPA and the Control Officer as:

(i) Having a transfer efficiency of 65% or greater; and

(ii) The operating parameters under which they were demonstrated to achieve such transfer efficiency are permanent features of the method; and

(iii) Such coating application methods shall be approved in writing by the Control Officer prior to use.

~~b.~~ (2) An electrostatic system, or

~~e.~~ (3) A system that atomizes principally by hydraulic pressure, including “airless” and “air-assisted airless”.

307.2 b. ~~A person~~ An owner and/or operator is allowed to use a spray gun other than ~~that described in Section 303.1(a) of this rule~~ one allowed by subsection 307.1 under the following conditions:

~~a.~~ (1) For applying materials that have a VOC content ~~not exceeding~~ less than 3.0 lb VOC/gal (360 g/l) as applied, less water and non-precursor compounds.

~~b.~~ (2) If such guns are designed and used solely for detailing and/or touch-up, and have a maximum reservoir capacity of 250 cc (8.8 fluid ounces).



e- **(3)** If such guns are used to apply adhesives.

- 308 ~~EMISSION CONTROL SYSTEM: As an alternative to meeting an applicable coating VOC limit and/or work practice pursuant to Sections 302, 304, 305, or 307, an operator is allowed to operate an Emission Control System (ECS) that reduces VOC emissions by at least 85%, pursuant to Section 504.~~
- 309 ~~CLEANUP AND CLEANING SUPPLY AND APPLICATION EQUIPMENT:~~
- 309.1 ~~All solvent used to manually clean spray guns shall be collected into a container which shall be immediately closed after all the solvent has been collected.~~
- 309.2 ~~All solvent used for line cleaning shall be pumped or drained into a container kept closed when not in use.~~
- 309.3 ~~Tanks used for stripping off coating or for cleaning objects shall be covered when not in use. Solvent dragout shall be minimized by tilting or rotating the object to drain off any pools of solvent before removing the object from above the tank.~~
- 310 ~~GUN CLEANING MACHINES: Any person subject to this rule shall use a paint gun cleaning machine to clean paint guns if the vehicle refinishing operation is required to have an Air Pollution Control Permit by Rule 200 of these Rules.~~
- 310.1 ~~Manual Pre-Cleaning and Water Cleanup:~~
- a. ~~Manual cleaning outside of the cleaning machine is allowed if the cleaning machine is used immediately after manual cleaning, and if done without spraying cleaning solvent with the gun.~~
- b. ~~A cleaning machine is not required to clean a paint gun if the gun is cleaned with water or a cleaning mixture that is more than 1/2 water by weight or volume.~~
- 310.2 ~~General Requirements for Gun Cleaning Machines: The gun cleaning machine shall:~~
- a. ~~Be designed to clean paint guns and be kept in proper repair and free from liquid leaks.~~
- b. ~~Have at least one pump which drives cleaning solvent through and over the gun, and a basin which permits containment of the cleaning solvent.~~
- c. ~~Have all covers and other surfaces that are exposed to gaseous or liquid VOC solvent be impervious to both gaseous and liquid VOC solvent.~~
- 310.3 ~~Specific Requirements for 2 Types of Cleaning Machines:~~
- a. ~~Automatic Gun Cleaning Machine:~~
- (1) ~~Shall be self covering or enclosing when not loading or unloading.~~
- (2) ~~The machine shall have a self-closing cover or other self-enclosing feature which in the cover's closed position allows no gaps exceeding 1/8 inch (3 mm) between the cover and the cabinet.~~
- (3) ~~The machine shall be designed and maintained to prevent operation of its mechanical cleaning feature(s) unless it is completely covered or enclosed to the gap limits specified in the preceding subsection 310.3a.(2).~~



~~b. Non Automatic Remote Reservoir Gun Cleaning Machine:~~

- ~~(1) The cleaning machine shall be designed such that cleaning solvent drains from the sink/work space quickly and completely into a remote reservoir when the work space is not in use.~~
- ~~(2) The reservoir shall have the ability to contain VOC vapors and shall not have a cumulative total opening, including the drain opening(s), allowing VOC escape to the atmosphere exceeding two square inches in area.~~
- ~~(3) Machine designs are allowed in which the base of the sink/work space functions as the reservoir's top surface, as long the fit/seal between sink base and reservoir container allows the reservoir to meet the opening limits specified in the preceding subsection 310.3b(2).~~

311 ~~STORAGE AND DISPOSAL OF VOC AND VOC CONTAINING MATERIAL:~~

- 311.1 ~~Any person subject to this rule shall store all VOC containing materials, including but not limited to waste coatings, waste solvents and their residues, and rags in closed containers.~~
- 311.2 ~~A container must have a legible label identifying the container's contents.~~
- 311.3 ~~A container shall be kept closed except when contents are added or removed.~~
- 311.4 ~~Disposal of waste or surplus VOC containing materials shall be done in a manner that inhibits VOC evaporation, such as having these materials hauled off site in sealed containers.~~

312 ~~EXEMPTIONS:~~

- 312.1 ~~Exemptions from other Rules: Maricopa County Air Pollution Rules and Regulations Rules 330 and 336 do not apply to any vehicle or mobile equipment coating or refinishing operation to which this Rule 345 is applicable.~~
- 312.2 ~~Formal Vehicle Refinishing Training: A student in classes at an accredited school which teaches vehicle refinishing is exempt from the recordkeeping provisions of this rule.~~
- 312.3 ~~Coating with a non-refillable aerosol can is exempt from this Rule 345.~~
- 312.4 ~~Out of Date Coatings: Coating otherwise subject to Table 1 limits but manufactured before January 15, 1999, is exempt from Table 1 VOC limits until November 1, 1999.~~

**303.2 Spray-Gun Cleaning:**

**a. Spray-Gun Cleaning Machine:** An owner and/or operator subject to this rule and required by Rule 200 of these rules to have an Air Pollution Control Permit, shall use a paint gun cleaning machine to clean spray-guns.

**(1) Spray-Gun Cleaning Machines-General Requirements:** The gun-cleaning machine shall:

**(a)** Be designed to clean paint-guns; and

**(b)** Have at least one pump which drives cleaning solvent through and over the gun; and



- (c) Have a basin which permits containment of the cleaning solvent; and
- (d) Be kept in proper repair and free from liquid leaks; and
- (e) Have all covers and other surfaces that are exposed to gaseous or liquid VOC-solvent be impervious to both gaseous and liquid VOC-solvent.

(2) **Spray-Gun Cleaning Machines-Specific Requirements:**

(a) **Automatic Spray-Gun-Cleaning Machine:**

- (i) Shall be self-covering or enclosing when not loading or unloading.
- (ii) Shall have a self-closing cover or other self-enclosing feature which in the cover's closed position allows no gaps exceeding 1/8 inch (3 mm) between the cover and the cabinet.
- (iii) Shall be designed and maintained to prevent operation of its mechanical cleaning feature(s) unless it is completely covered or enclosed to the gap limits specified in Section 303.2(a)(2)(a)(i) of this rule.

(b) **Non-Automatic Remote Reservoir Spray Gun-Cleaning Machine:**

- (i) Shall drain cleaning solvent from the sink/work-space quickly into a remote reservoir when work-space is not in use.
- (ii) Shall have the machine reservoir ability to contain VOC vapors and shall not have a cumulative total opening, including the drain opening(s), allowing VOC-escape to the atmosphere exceeding two square inches in area.
- (iii) Shall allow a machine design in which the base of the sink/work-space functions as the reservoir's top surface, as long the fit/seal between sink base and reservoir container allows the reservoir to meet the opening limits specified in Section 303.2(a)(2)(a)(ii) of this rule.

b. **Manual Spray-Gun Cleaning:**

(1) **Pre-Cleaning: Manual spray-gun pre-cleaning is allowed:**

- (a) If the cleaning machine is used immediately after manual pre-cleaning, and
- (b) If manual pre-cleaning is done without spraying or atomizing a solvent with the gun.



- (2) All solvent used to manually clean spray guns shall be collected into a container which shall be immediately closed after all the solvent has been collected.
- (3) A paint-gun cleaning machine is not required if the gun is cleaned with water or a cleaning mixture that is more than 1/2 water by weight or volume.

## SECTION 400 – ADMINISTRATIVE REQUIREMENTS

401 **ECS SCHEDULE:** Any owner or operator intending to install an ECS in a facility to comply with requirements of this rule shall comply with the requirements of ~~subsection 504.3~~ Section 504 of this rule.

### 402 ~~THE RESPONSIBILITIES OF LARGE USERS:~~

~~402.1 The owner or operator of a facility which emits 10,000 pounds or more of VOC in any calendar year must submit a report of such emissions on a form supplied by the Department after the end of that calendar year.~~

~~402.2 An owner or operator of a facility which in a calendar year meets or exceeds any of the following quantities must notify the Control Officer of this fact in writing by February 28 (within two months) after the end of that calendar year:~~

- ~~a. Used a total of 1000 gallons (3785 l) of coating (with reducer and hardener); or~~
- ~~b. Received a total of 1300 gallons (4920 l) of cleaning solvent, lacquer thinner and wash thinner; or~~
- ~~c. Disposed of more than 1000 gallons or 6000 pounds (2722 kg) to hazardous waste collection; or~~
- ~~d. Submitted a total exceeding 9000 pounds (4082 kg) of VOC in the facility's most recently completed Maricopa County annual air emission inventory form.~~

~~402.3 The Control Officer may require in writing a report of annual emissions from a facility which has given notification as required by the preceding subsection 402.2, or from any other facility which in the Control Officer's determination can have annually emitted 5 tons (4536 kg) or more of VOC.~~

### 403 ~~JOBBERS/SUPPLIERS RECORDKEEPING RESPONSIBILITY FOR REFINISHES:~~

~~403.1 An owner or operator selling or supplying vehicle refinishing coatings, coating components, or refinishing supplies directly to facilities that refinish automobiles, light duty vehicles, or heavy trucks in Maricopa County shall maintain records of the VOC content of such materials; and~~

- ~~a. Records shall be sufficient to calculate the total VOC annually sold to facilities described in the preceding subsection 403.1.~~
- ~~b. Records shall include sales of cleanup and surface preparation materials that contain more than 2% VOC by weight or volume, or more than 0.17 lb VOC/gal (20 g/L).~~

~~403.2 An owner or operator shall total cumulative vehicle refinishing VOC sold during a current calendar year (pursuant to 403.1) in a quarterly manner, by the end of the month following each quarter.~~



~~403.3 Jobbers or suppliers annually supplying less than 100 pounds of vehicle refinishes and supplying less than 100 pounds of cleaning/surface prep materials to vehicle refinishers are exempt from the requirement of subsections 403.1 and 403.2.~~

404 ~~WEIGHT EXCLUSION: Vehicles having a manufacturer's gross vehicle weight rating of 8600 lbs or more are excluded from NAICS code 33611, unless clearly identified as being included by the NAICS, as incorporated by reference in Section 505.~~

## SECTION 500 – MONITORING AND RECORDS

**501 RECORDKEEPING AND REPORTING:** ~~Any person~~ An owner and/or operator subject to this rule shall keep the records required under this Section 501 in a consistent and complete manner and shall make them available to the Control Officer without delay during normal business hours. Recordkeeping shall comply with the following:

~~501.1 Responsibility for Products in Use: An owner or operator shall maintain written records in the facility which give the name or code number of each VOC containing product and its VOC content as received. VOC content shall be expressed in pounds of VOC per gallon (or grams/liter), less water and non-precursors, excepting waterborne cleaners which shall include the water.~~

- ~~a. Examples of What to Include: All coating components as received from the supplier, before any in-house blending, such as coating base and tint base for topcoats, midcoats, primers, specialty coatings, sealers, and strippable booth coating; other coating components such as hardeners, catalysts, reducers, promoters, inhibitors and other coating additives; and stripper, wash thinner, lacquer thinner, gun cleaning solvent, surface prep cleaners and other cleaners, including waterborne cleaners which contain some VOC.~~

501.1 Be retained for at least 5 five years.

501.2 Be kept in either written or electronic format, and comprise an up-to-date list prepared for that facility.

501.3 Express VOC content in pounds of VOC per gallon (or grams/liter), less water and non-precursors, excepting waterborne cleaners which shall include the water.

501.4 Require the following materials and operational information be retained, as applicable:

- a. Current VOC Materials List: Maintain a list and amount of coatings, thinners, cleaners and any other VOC-containing materials used;
- b. Spray gun transfer efficiency documentation; and
- c. Hazardous wastes manifests.

501.5 Include a daily list of products in use:

a. Name or code number of each VOC-containing product and its VOC content as received; and

b. All coating components used:

- (1) As received from the supplier, before any in-house blending, such as coating base and tint base for topcoats, midcoats, primers, specialty coatings, sealers, and strippable booth coating; and



- (2) Other coating components such as hardeners, catalysts, reducers, promoters, inhibitors and other coating additives; and
  - (3) Strippers, wash-thinner, lacquer thinner, gun cleaning solvent, surface prep cleaners and other cleaners, including waterborne cleaners which contain some VOC.
- b. **501.6 Sufficient Documentation:** Any one of the following may be used to meet the requirements of ~~subsection 501.1, as long as all VOC containing refinishing products are accounted for pursuant to subsection 501.1, (first paragraph)~~ Section 501 of this rule :
- (1) ~~An up to date hardcopy (in writing) list prepared for that facility.~~
  - (2) a. Current material safety data sheets (MSDS) or product data sheets showing the VOC content.
  - (3) b. Purchase documentation that gives VOC content, such as invoices and/or receipts showing VOC content.
  - (4) c. Current, dated manufacturers publications such as charts or lists which show VOC content, with the products used in the facility highlighted or otherwise clearly marked.
  - d. Deviation and corrective action documentation.
- 501.2 **501.7 Documentation Of Purchases:** Purchase records showing the volume of each VOC-containing refinishing-related product purchased shall be kept available for the current and the previous year. Actual invoices and receipts showing the volume of the material purchased will suffice in place of ledger-style records.
- 501.3 ~~Record Retention: Records shall be retained for five years.~~
- 501.4 ~~Records: The Control Officer may account as VOC emissions to the atmosphere any VOC that is not accounted for by adequate records of disposal or of reuse within a facility.~~
- 501.8 Record Disposal or Reuse:** An owner and/or operator shall record the disposal of or reuse of VOC containing materials used in processes within a facility.

**502 COMPLIANCE DETERMINATION:**

- 502.1** ~~For routine purposes, the~~ The Control Officer may determine VOC content from a manufacturer's product data document such as a current manufacturer's safety data sheet (MSDS) that provides exact product contents.
- 502.2** ~~Measurement of VOC content of coating materials subject to this rule, including the requirements of Section 301, shall be conducted and reported in accordance with EPA Test Method 24 (as incorporated by reference in Section 505), with the following restrictions for multi-component, polymerizing coatings: Method 24 shall be a modified to eliminate the post mixing dilution step (that employs toluene or other solvent). The mixture shall be spread instead by appropriate technique to form a thin layer, occupying the entire bottom of the foil pan. California's Bay Area Air Quality Management District Method 31 (amended 4/15/92) can be used as a guide for such spreading.~~  
Measurement of VOC Content of Coating Materials Subject to this Rule: EPA Test Method 24 (as incorporated by reference in Section 505 of this rule) shall be used to determine VOC coating material content with the following restrictions for multi-component, polymerizing coatings:



- a. Method 24 shall be modified to eliminate the post-mixing dilution step (that employs toluene or other solvent).
- b. Method 31 (amended 4/15/92) California's Bay Area Air Quality Management District shall be spread by appropriate technique to form a thin layer, occupying the entire bottom of the foil pan. Refer to Section 505 of this rule as a guide for this calculation.

**502.3 Low or No-Solids Materials:**

- a. The VOC content of solutions, dispersions, and emulsions that have no solids or less than 5% solids shall be determined by ± either of the following methods:
  - (1) Method 313-91 -South Coast Air Quality Management District Method 313-91, as incorporated by reference in Section 505 of this rule.
  - (2) Method 31 of California's Bay Area Air Quality Management District, as incorporated by reference in Section 505 of this rule.
- b. Measurement of the VOC content of cleaning fluids materials, including those cleaners limited by Section 305 of this rule, shall be calculated according to the formula in subsection Section 503.3 of this rule and applicable test methods in Section 505 of this rule.

**502.4** With reference to subsection 307.1a, measurement of air pressure at the tip of an air atomized paint spray gun that atomizes shall be performed using a device supplied by the gun's manufacturer for that purpose. The measurement shall be made dynamically at the center of the air cap and at the air horns, with the spray configured to a fan diameter of eight to ten inches on a flat surface being coated. The axis of the fan pattern shall be perpendicular to this surface.

**Spray Gun Tip Pressure Measurement:** The measurement required in Section 303.1(a)(1) of this rule and shall be performed with the instructions supplied by the manufacturer for that purpose. The measurement shall be made:

- a. Dynamically at the center of the air cap and
- b. At the air horns, with the spray configured to a fan diameter of eight to ten inches on a flat surface being coated.
- c. The axis of the fan pattern shall be perpendicular to this surface.

**502.5** Pretreatment Wash Primers: The acid weight percent of pretreatment wash primers must be determined using the American Society for Testing and Materials (ASTM) Test Method D 1613-96, as incorporated by reference in Section 505. If the pigment in a pretreatment wash primer prevents the use of this test method for determining the acid weight percent of the coating, then the test method shall be used for the nonpigmented component of the coating, and the acid weight percent shall be calculated based on the acid content of the nonpigmented component and the mixing ratio of the nonpigmented component to the remaining components recommended by the regulated entity.

**Pretreatment Coatings:** ASTM D1613-06 as incorporated by reference in Section 505.3(c) of this rule shall be used determine the acid weight percent of a pretreatment coating, with the following exception:



- a. The pigment in a pretreatment coating prevents the use of this test method for determining the acid weight percent of the coating, then the test method shall be used for the non-pigmented component of the coating; and
- b. The acid weight percent shall be calculated based on the acid content and the mixing ratio of the non-pigmented component and compared to the remaining components recommended by the regulated entity.

**502.6 ECS Testing:**

- a. ~~The VOC content of gaseous emissions entering and exiting an ECS shall be determined by either EPA Method 18 or EPA Method 25 and its submethod(s), as are incorporated by reference in Section 505.~~ **EPA Method 18 or EPA Method 25 and its Submethod(s):** These methods, incorporated by reference in Section 505 of this rule, shall be used to determine VOC content of gaseous emissions entering and exiting an ECS.
- b. Capture efficiency of an ECS shall be determined either by EPA Method 204 and its submethods, or by using mass balance calculation methods in concert with EPA Methods 2, 2a, 2c, and 2d, as are incorporated by reference in Section 505 of this rule.

**503 FORMULAS:** For the purpose of determining compliance with the VOC content limits listed in the tables in Section 301 of this rule, the following calculations apply:

**503.1** ~~For the purpose of determining compliance with the VOC content limits in Table 1 of this rule, each regulated entity shall determine the VOC content of a coating using the procedures described in subsection 503.2 for a single coating stage or as follows for the VOC content of a multi-stage coating.~~ **Multi-Stage VOC Content Calculation:**

$$\text{VOC multi} = \frac{\text{VOC}_{bc} + \sum_{i=0}^M \text{VOC}_{mci} + 2(\text{VOC}_{cc})}{M + 3}$$

Where:

- VOC multi = VOC content of multi-stage ~~topcoat~~ repeat process, in grams VOC/liter of coating;
- VOC<sub>bc</sub> = VOC content of the basecoat, as determined in ~~subsection~~ Section 503.2 of this rule;
- VOC<sub>mc<sub>i</sub></sub> = VOC content of midcoat i, as determined in ~~subsection~~ Section 503.2 of this rule ;
- VOC<sub>cc</sub> = VOC content of the ~~clear coat~~ clear coating, as determined in ~~subsection~~ Section 503.2 of this rule; ~~and~~
- M = Number of midcoats; and
- N = Number of coats.

In a situation where a “ground coat” is used prior to a basecoat, use of the equation shall be adjusted as follows: The ground coat will be considered the basecoat and the basecoat will be considered one of the midcoats.

**503.2** ~~Pounds of VOC per Gallon of Coating (Grams VOC/Liter)~~ **Single Stage VOC Content Calculation:** The mass of VOC per combined volume of VOC-plus-coating-solids before coating application, which can be calculated by the following equation:



$$\text{Pounds of VOC per Gallon (Grams/liter) of Coating} = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where:

$W_s$  = weight of volatile material in pounds (or grams)

$W_w$  = weight of water in pounds (or grams)

$W_{es}$  = weight of non-precursors in pounds (or grams)

$V_m$  = volume of total material in gallons (or liters if using grams)

$V_w$  = volume of water in gallons (or liters if using grams)

$V_{es}$  = volume of non-precursor compounds in gallons (or liters)

**503.3 VOC Content of Cleaners and Reducers (Material VOC-Content):**

$$\text{VOC Content of Material} = \frac{W_s - W_w - W_{es}}{V_m}$$

Using consistently either English or metric measures in the calculations

Where:

$W_s$  = weight of all volatile material in pounds (or grams) including VOC, water, non-precursor organic compounds and dissolved vapors.

$W_w$  = weight of water in pounds (or grams)

$W_{es}$  = weight of all non-precursor compounds in pounds (or grams)

$V_m$  = volume of total material in gallons (or liters)

**504 EMISSION CONTROL SYSTEM (ECS) AND RELATED SYSTEM OPERATING REQUIREMENTS:**

**504.1 ECS Requirements:** To meet the requirements pursuant to Section ~~308~~ 302.2 of this rule, an ECS shall be operated as follows:

- a. The emissions-processing subsystem of the ECS shall reduce the VOC entering it by at least 90 percent.
- b. Throughout the period when the VOC content exceeds the applicable VOC limits, the ECS shall be operated to control VOC emissions.
- c. Materials that exceed the applicable VOC-limits shall be clearly identified such that workers are informed an ECS must be used.

**504.2 Recordkeeping for An ECS:**

- a. On each day that an ECS is used to comply pursuant to Section 308, an owner or operator shall record the amount and VOC content of the material for which the ECS was used.
- b. **ECS Operation and Maintenance Records:**



- (1) On each day an ECS is used, make a permanent record of the operating parameters of the key systems as required by the O&M Plan.
- (2) For each day or period in which the O&M Plan requires that maintenance be performed, a permanent record shall be made of the maintenance actions taken within 24 hours of maintenance completion.

**504.3 ECS Schedule:** Any owner or operator of a facility, first intending to install and commence to use an ECS pursuant to ~~Section 308~~ Section 302.2 of this rule, shall submit for the Control Officer's approval an emission control plan describing the following: the ECS by the first day of the 4th month after the month in which such facility becomes subject to the ECS requirement. The plan shall show how the ECS is to be used to achieve full compliance. The plan shall specify dates for completing increments of progress, such as the contractual arrival date of new control equipment. The Control Officer may require a person submitting such emission control plan to submit subsequent reports on progress in achieving compliance. Any and all ECS used to achieve such compliance shall be in operation by 15 months after the facility becomes subject to the ECS requirement.

- a. The ECS by the first day of the 4th month after the month in which such facility becomes subject to the ECS requirement.
- b. The plan shall show how the ECS is to be used to achieve full compliance.
- c. The plan shall specify dates for completing increments of progress, such as the contractual arrival date of new control equipment.
- d. The Control Officer may require a person submitting such emission control plan to submit subsequent reports on progress in achieving compliance.
- e. Any and all ECS used to achieve such compliance shall be in operation by 15 months after the facility becomes subject to the ECS requirement.

**504.4 Operation and Maintenance (O&M) Plan Required for ECS:** For any ECS used to meet the requirements of this rule:

- a. An owner ~~or~~ and/or operator shall provide and maintain (an) O&M Plan(s) for the ECS and any ECS monitoring device.
- b. The owner ~~or~~ and/or operator shall submit to the Control Officer for approval the O&M Plans of each ECS and each ECS monitoring device.
- c. The owner ~~or~~ and/or operator shall comply with all the identified actions and schedules provided in each O&M Plan.

**504.5 Providing and Maintaining ECS Monitoring Devices:** ~~Any person~~ Any owner and/or operator incinerating, adsorbing, or otherwise processing VOC emissions pursuant to this rule shall provide, properly install and maintain in calibration, in good working order and in operation, devices described in the facility's O&M Plan that indicate temperatures, pressures, rates of flow, or other operating conditions necessary to determine if air pollution control equipment is functioning properly and is properly maintained.

**504.6 O&M Plan Responsibility:** An owner ~~or~~ and/or operator of a facility that is required to have an O&M Plan pursuant to ~~subsection 504.4~~ Section 504.4 of this rule must fully comply with all O&M Plans that the owner ~~or~~ and/or operator has submitted for approval, but which have not yet been approved, unless notified otherwise by the Control Officer in writing.



**505** ~~TEST METHODS ADOPTED BY REFERENCE~~ **COMPLIANCE DETERMINATION-TEST METHODS ADOPTED BY REFERENCE:** The EPA test methods as they exist in the Code of Federal Regulations (CFR) (July 1, 1998), as listed below, are adopted by reference. The other test methods listed here are also adopted by reference, each having paired with it a specific date that identifies the particular version/revision of the method that is adopted by reference. These adoptions by reference include no future editions or amendments. Copies of test methods referenced in this section are available at the Maricopa County Air Quality Department, 1001 N. Central Ave., Phoenix, AZ, 85004: An exceedance of the limits established in this rule determined by any of the applicable test methods constitutes a violation of this rule.

505.1 EPA Test Methods:

- a. ~~EPA Methods 2 (“Determination of Stack Gas Velocity and Volumetric Flow Rate”), 2a (“Direct Measurement of Gas Volume Through Pipes and Small Ducts”), 2c (“Determination of Stack Gas Velocity and Volumetric Flow rate in Small Stacks or Ducts”), and 2d (“Measurement of Gas volumetric Flow Rates in Small Pipes and Ducts”). All 4 of the foregoing methods are in 40 CFR 60, Appendix A.~~
- b. EPA Method 18 (“Measurement of Gaseous Organic Compound Emissions by Gas Chromatography”) and its submethods (40 CFR 60, Appendix A).
- c. EPA Test Method 24 (“Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings”) (40 CFR 60, Appendix A).
- d. EPA Method 25 (“Determination of Total Gaseous Nonmethane Organic Emissions as Carbon”) and its submethods (40 CFR 60, Appendix A).
- e. EPA Test Methods 204 (“Criteria For and Verification Of a Permanent or Temporary Total Enclosure”), 204a, 204b, 204c, 204d, 204e, and 204f (Appendix M, 40 CFR 51).

505.2 Other Test Methods (Not EPA):

- a. ~~California’s Bay Area Air Quality Management District (BAAQMD) Method 31 (April 15, 1992), “Determination of Volatile Organic Compounds in Paint Strippers, Solvent Cleaners, and Low Solids Coatings”.~~
- b. ~~California’s South Coast Air Quality Management District (SCAQMD) Method 313-91 (April, 1997).~~
- c. ~~American Society for Testing and Materials (ASTM) Test Method D 1613-96 (1996).~~

505.3 Other Reference Material: ~~North American Industrial Classification System, Executive Office of the President, Office of Management and Budget, 1997, pp. 334-339, et. seq.~~

**505.1** The EPA test methods, ASTM International (ASTM) standards and other documents as they exist in the Code of Federal Regulations (CFR) as listed below, are adopted and incorporated by reference in Appendix G of the Maricopa County Air Pollution Control Regulations. Copies of the test methods referenced in this section are available at the Maricopa County Department, 1001 N. Central Ave., Phoenix, AZ, 85004.

- a. ASTM standards are also available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428, or from its website at [www.astm.org](http://www.astm.org).



- b.** Bay Area Air Quality Management District test methods are available from Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, CA 94109, or from its website at [www.baaqmd.gov](http://www.baaqmd.gov).
- c.** South Coast Air Quality Management test methods are available from South Coast Air Quality Management, 21865 Copley Drive, Diamond Bar, CA 91765, or from its website at: [www.aqmd.gov](http://www.aqmd.gov).

**505.2 EPA Test Methods:**

- a.** CFR 60, APPENDIX A-1:
  - (1)** Method 2—Determination of stack gas velocity and volumetric flow rate (Type S pitot tube);
  - (2)** Method 2A—Direct measurement of gas volume through pipes and small ducts;
  - (3)** Method 2C—Determination of stack gas velocity and volumetric flow rate in small stacks or ducts (standard pitot tube);
  - (4)** Method 2D—Measurement of gas volume flow rates in small pipes and ducts;
- b.** 40 CFR 60, APPENDIX A:  
Method 18 - Measurement of Gaseous Organic Compound Emissions by Gas Chromatography and its submethods.
- c.** 40 CFR 60, APPENDIX A-7:  
Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.
- d.** 40 CFR 60, APPENDIX A:  
Method 25 - Determination of Total Gaseous Nonmethane Organic Emissions as Carbon and its submethods.
- e.** 40 CFR 51, APPENDIX M:  
Methods 204, 204a, 204b, 204c, 204d, 204e and 204f - Criteria For and Verification Of a Permanent or Temporary Total Enclosure.
- f.** 40 CFR 63.11173(e):  
Methods 2 and 3 – Criteria for measuring paint booth filter efficiency and spray gun transfer efficiency.

**505.3 Other Test Methods (Not EPA):**

- a.** California’s Bay Area Air Quality Management District (BAAQMD) Method 31 (April 15, 1992), “Determination of Volatile Organic Compounds in Paint Strippers, Solvent Cleaners, and Low Solids Coatings”.
- b.** California’s South Coast Air Quality Management District (SCAQMD) Method 313-91 (April, 1997).



**AQ-2013-002 Public Workshop #3 - July 10, 2014**

Strikeout/Underline **Draft** Rule 345: Motor Vehicle and Mobile Equipment Coating  
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**Maricopa County Air Quality Dept.**

Planning & Analysis Division

1001 N. Central Ave. Suite 125

Phoenix, AZ 85004

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- c.** ASTM D1613-06(2012): Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products.



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## REGULATION III – CONTROL OF AIR CONTAMINANTS

### RULE 345 MOTOR VEHICLE AND MOBILE EQUIPMENT COATING

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Adopted 02/15/95; Revised 11/20/96; Revised 04/21/99; Revised 09/25/13; Revised XX/XX/XX

**MARICOPA COUNTY  
AIR POLLUTION CONTROL REGULATIONS**

**REGULATION III – CONTROL OF AIR CONTAMINANTS**

**RULE 345  
MOTOR VEHICLE AND MOBILE EQUIPMENT COATING**

**SECTION 100 – GENERAL**

**101 PURPOSE:** To limit emissions of volatile organic compounds (VOCs) from motor vehicle and mobile equipment coating and surface preparations operations, which contribute to the formation of ground level ozone.

**102 APPLICABILITY:** The provisions of this rule apply to any owner and/or operator, who leases, operates and/or controls a motor vehicle or mobile equipment refinishing operation.

**103 EXEMPTIONS:** Rule 345 does not apply to:

**103.1 Use of Materials with Low VOC:** Owners and/or operators who exclusively use:

- a. Materials that contain 2.0% or less VOC by either weight or volume; or
- b. Materials with a VOC content that is less than 0.17 lbs VOC per gallon (20 g/liter), as determined by the formula in Section 503 of this rule.

**103.2 Coating Individual Parts:** Owners and/or operators that exclusively coat separate motor vehicle or mobile equipment parts that have never been installed since manufacture or remanufacture. This does not include replacements for a defective/missing body part installed in the course of refinishing the vehicle body.

**103.3 Coating with a Non-Refillable Aerosol Can:** Coating with a non-refillable aerosol can is exempt from Rule 345.

**SECTION 200 – DEFINITIONS:** For the purpose of this rule, the following definitions shall apply, in addition to those definitions found in Rule 100 (General Provisions and Definitions) of these rules. In the event of any inconsistency between any of the Maricopa County air pollution control rules, the definitions in this rule take precedence.

**201 AEROSOL-SPRAY COATING:** A coating which is sold in a hand-held, pressurized, non-refillable container, of less than 22 fluid ounces (0.66 liter) capacity, and which is expelled from the container in a finely divided form when a valve on the container is depressed.

**202 AIRLESS AND AIR-ASSISTED AIRLESS SPRAY:** Any paint spray technology that relies solely on the fluid pressure of the paint to create an atomized paint spray pattern and does not apply any atomizing compressed air to the paint before it leaves the paint nozzle. Air assisted airless spray uses compressed air to shape and distribute the fan of atomized paint, but still uses fluid pressure to create the atomized paint.

**203 AUTOMATIC SPRAY GUN-CLEANING MACHINE (GUN CLEANER):** A machine which, after being loaded, cleans paint spray-guns without the assistance of a person.

**204 BASECOAT:** Basecoat is a pigmented topcoat which is the first topcoat applied as part of a multistage topcoat system.



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- 205 BUS:** A motor vehicle, which is designed primarily for the transportation of persons, that has a manufacturer's gross vehicle weight of more than 8600 pounds and a design capacity of over 12 persons.
- 206 CLEAR COATING:** A coating that contains no pigments and is labeled and formulated for application over a color coating or another clear coating.
- 207 COATING AS APPLIED:** Refers to coating at the time immediately prior to its application, including any final addition of solvent to the coating before such coating is applied.
- 208 COATING COMPONENT:** Any portion of a coating, such as a reducer, thinner, hardener, or additive recommended (by the manufacturer or importer) to distributors or end-users for motor vehicle refinishing. The raw materials, such as polyurethane resin, used to produce the coating component that are mixed by the end user to prepare a coating for application are not considered coating components.
- 209 DAY:** A period of 24 consecutive hours beginning at midnight.
- 210 DETAILING GUNS AND TOUCH-UP GUNS:** Small air spray devices, including air brushes, that operate at no greater than 6 cfm (170 liters per minute) air flow and no greater than 50 psig (3.4 bar) air pressure and are used to coat small areas.
- 211 DILUENT:** For the purposes of this rule, any fluid in or added to a coating such as thinner, retarder, reducer, solvent, or drying accelerator which solubilizes, adjusts concentration, viscosity, flow, or drying rates and which evaporates as the coating film solidifies and cures.
- 212 ELECTROSTATIC APPLICATION:** A method of applying coating by electrically charging coating droplets or particles with an electrical device, causing their deposition onto a substrate by electrostatic attraction.
- 213 EMISSION CONTROL SYSTEM (ECS):** A system, approved in writing by the Control Officer, designed and operated in accordance with good engineering practice to reduce emissions of volatile organic compounds. Such system consists of an emissions collection subsystem and an emissions processing subsystem.
- 214 ENAMEL:** Any non-lacquer topcoat.
- 215 FLEXIBLE PLASTIC:** A surface or part made of solid (non-rubber) polymer designed to withstand significant deformation without damaging it for its intended use.
- 216 GROUP I MOTOR VEHICLES AND MOBILE EQUIPMENT:**
- 216.1** Automobiles (transport and capacity less than 12 persons)
  - 216.2** Small and medium-sized trucks and vans
  - 216.5** Motor homes
  - 216.6** Motorcycles
  - 216.7** Mobile equipment
- 217 GROUP II MOTOR VEHICLES:**
- 217.1** Large trucks



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- 217.2 Bus
- 217.3 Construction equipment, such as earthmovers, tractors, diggers, mobile cranes, bulldozers, and concrete mixers
- 217.4 Farm machinery, such as forklifts, tractors, and plows
- 217.5 Miscellaneous equipment, such as street cleaners
- 218 **HARDENER:** A coating component specifically designed to promote a faster cure of an enamel finish.
- 219 **HIGH-VOLUME LOW PRESSURE (HVLP) SPRAY GUN:** Spray equipment that is permanently labeled as such and used to apply any coating by means of a spray gun, which is designed and operated between 0.1 and 10 pounds per square inch gauge (psig) air atomizing pressure measured dynamically at the center of the air cap and at the air horns.
- 220 **LACQUER:** A coating which becomes or remains soft when subjected to heat (thermoplastic), which dries primarily by solvent evaporation and which is resolvable in its original solvent.
- 221 **LOW PRESSURE GUN:** An air atomized spray gun which by design functions best at tip pressures below 10 psig (0.7 bar), measured according to subsection 502.4, and for which the manufacturer makes no written claims that the gun can be used effectively above 12 psig (0.8 bar).
- 222 **MIDCOAT:** A semi-transparent topcoat which is the middle topcoat applied as part of a three-stage topcoat system.
- 223 **MIXING INSTRUCTIONS:** The coating or coating component manufacturer's or importer's specification of the quantities of coating components for mixing a coating.
- 224 **MOBILE EQUIPMENT:** Any equipment that is physically capable of being driven or drawn upon a highway and that is not eligible as or considered an automobile used for transportation on roads or highways, even if such mobile equipment is self-propelled. Mobile equipment includes but is not limited to, the following types of equipment:
- 224.1 Hauling equipment, such as truck trailers, utility bodies, and camper shells;
- 224.2 Miscellaneous equipment, such as golf carts, all-terrain vehicles (ATVs), and mopeds; and
- 224.3 Equipment used inside and around an airport, dock, depot, and industrial and commercial plants.
- 225 **MOTOR HOME:** A motor vehicle originally designed, or permanently altered, and equipped for human habitation as defined in Arizona Revised Statutes (A.R.S.) § 28-4301(20).
- 226 **MOTOR VEHICLE:** A self-propelled vehicle for use on the public roads and highways of the State of Arizona and required to be registered under the Arizona State Uniform Motor Vehicle Act, including both small and large sized vehicles trucks, buses, large sized off-road equipment and-any non-motorized attachments, such as but not limited to, automobiles, light duty trucks, golf carts, vans, and motorcycles, trailers or other conveyances which are connected to or propelled by the actual motorized portion of the vehicle.
- 227 **MOTORCYCLE:** A motor vehicle other than a tractor having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground and weighing less than 1500 pounds, except that four wheels may be in contact with the ground when two of the wheels are a functional part of a sidecar.
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- 228 MULTI-COLORED PROCESS:** A process that exhibits more than one color when applied, is packaged in a single container, and camouflages surface defects on areas of heavy use, such as cargo beds and other surfaces of trucks and other utility vehicles.
- 229 PAINT STRIPPING:** The removal of dried coatings from wood, metal, plastic, and other substrates. A single affected source may have multiple paint stripping operations. other surfaces of trucks and other utility vehicles.
- 230 PRETREATMENT COATING:** Any (coating) that contains a minimum of one-half (0.5) percent acid by weight and not more than 16 percent solids by weight necessary to provide surface etching and is labeled and formulated for application directly to bare metal surfaces to provide corrosion resistance and adhesion.
- 231 PRIMER:** Any coating applied prior to the application of a topcoat for the purpose of corrosion resistance and/or adhesion.
- 232 PRIMER-SEALER:** Any coating applied prior to the application of a topcoat for the purpose of corrosion resistance, adhesion of the topcoat, and/or color uniformity and to promote the ability of an undercoat to resist penetration by the topcoat.
- 233 PRIMER-SURFACER:** Any coating applied prior to the application of a topcoat for the purpose of filling surface imperfections in the substrate, corrosion resistance, and/or adhesion of the topcoat. Primer surfacers are applied directly to metal surfaces.
- 234 REDUCER:** Any solvent used to thin enamels.
- 235 REFINISH, REFINISHING:** Recoating previously paint-finished parts of and motor vehicles.
- 236 SINGLE-STAGE PROCESS:** A process consisting of only a single coating formulation applied in one or more coats.
- 237 SOLVENT:** A fluid containing organic compounds used to perform paint stripping, surface preparation, or cleaning of surface coating equipment.
- 238 SPECIALTY COATING:** Any coating that is specifically designated by the coating manufacturer as being one or more of the following:
- 238.1 Adhesion Promoter:** A coating designed to facilitate the bonding of a primer or topcoat on surfaces such as trim moldings, door locks, and door sills, where sanding is impracticable, and on plastic parts and the edges of sanded areas.
  - 238.2 Bright Metal Trim Repair Coating:** A coating applied directly to chrome plated or other bright metal surface(s) to attain a desired appearance.
  - 238.3 Cut-In, or Jambing, Clearcoat:** A fast-drying, ready-to-spray clearcoat applied to surfaces such as door jambs and trunk and hood edges to allow for quick closure.
  - 238.4 Elastomeric Coating:** A coating designed for application over flexible parts, such as elastomeric bumpers.
  - 238.5 Impact-Resistant Coating:** A specialty coating used on the lower 12 inches (31.6 cm) of a quarter-panel, door, or fender to resist chipping caused by road debris.
  - 238.6 Low-Gloss Coating:** A coating which exhibits a gloss reading less than or equal to 25 on a 60° glossmeter.
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- 238.7 Radar Dispersing Coating:** A coating designed to disperse radar signals, applied to any part of a military vehicle or military mobile equipment.
- 238.8 Underbody Coating:** A coating designed for protection and sound deadening that is typically applied to the wheel wells and underbody of an automobile.
- 238.9 Uniform Finish Blenders:** Any coating that is applied in a spot repair for the purpose of blending a paint overspray (“feathered”) area of a repaired topcoat to match the appearance of an adjacent existing topcoat.
- 238.10 Water Hold-Out Coating:** A coating applied to the interior cavity areas of doors, quarter panels and rocker panels for the purpose of corrosion resistance to prolonged water exposure.
- 238.11 Weld-Through Primer:** A primer that is applied to an area before welding is performed, and that provides corrosion resistance to the surface after welding has been performed.
- 239 SPOT REPAIR ON GROUP II MOTOR VEHICLES:** A repair of a damaged or uncoated area of a Group II motor vehicle in which not more than a total of 1 liter (1.1 quart) of topcoat(s) and a total of 1 liter primers are used; and such coatings are applied from a reservoir that can hold no more than 1.2 liters when completely full.
- 240 SPRAY-APPLIED COATING (SPRAY-GUN) OPERATIONS:** Applies to operations in which coatings are applied using a hand-held device that creates an atomized mist of coating and deposits the coating on a substrate. For the purposes of this rule, spray-applied coating operations do not include the following materials or activities:
- 240.1** Surface coating application using powder coating, hand-held, non-refillable aerosol containers, or non-atomizing application technology, including, but not limited to, paint brushes, rollers, hand wiping, flow coating, dip coating, electro-deposition coating, web coating, coil coating, touch-up markers, or marking pens;
- 240.2** Thermal spray operations (also known as metallizing, flame spray, plasma arc spray, and electric arc spray) in which solid metallic or non-metallic material is heated to a molten or semi-molten state and propelled to the work piece or substrate by compressed air or other gas, where a bond is produced upon impact.
- 241 STRIPPABLE BOOTH COATING:** A coating that is applied to a paint booth wall to provide a protective film to receive overspray during finishing operations and that is subsequently peeled off and disposed of.
- 242 SURFACE PREPARATIONS AND CLEANERS/CLEANING MATERIALS:** Products designed to remove old coatings and rust, either mechanically or chemically, or to prepare for a new coating:
- 242.1 Surface Preparations:** Preparation products include gunwash (a product designed for cleaning spray-guns and other equipment), paint strippers, dirt, oil, or degreasers (including anti-static types for plastic) and silicone removers.
- 242.2 Cleaners/ Cleaning Materials:** Cleaning products include those designed for the removal of surface contamination and other materials, such as dirt, grease, or oil from equipment associated with a coating operation, such as cleaning spray booths, spray guns, racks, tanks, and hangers used during preparation for and prior to the application of coating materials.
- 243 THINNER:** Any solvent used to reduce the viscosity or solids content of a coating.



- 244 THREE-STAGE PROCESS:** A process composed of a pigmented basecoat, a midcoat, and a transparent clearcoat.
- 245 TOPCOAT:** Any coating or series of coatings applied over a primer or an existing finish for the purpose of protection or beautification.
- 246 TOUCH UP COATING:** A coating applied by brush, air-brush, or nonrefillable aerosol can to cover minor surface damage.
- 247 TRANSFER EFFICIENCY:** The ratio of the weight or volume of coating solids adhering to the part being coated to the weight or volume of coating solids as applied in the application process, expressed as a percentage.
- 248 TRUCK:** A motor vehicle designed, used, or maintained primarily for the transportation of property.
- 248.1 Large-Sized Truck:** Any motor vehicle having a manufacturer's gross vehicle weight rating of more than 8600 pounds.
- 248.2 Medium-Sized Truck:** Any motor vehicle having a manufacturer's gross vehicle weight rating of 6001 to 8600 pounds.
- 248.3 Small-Sized Truck:** Any motor vehicle having a manufacturer's gross vehicle weight rating of 6000 pounds or less and which is designed primarily for the purposes of transportation of property or is a derivative of such vehicle, or is available with special features enabling on-street or off-highway operation and use.
- 249 TWO-STAGE PROCESS:** A process consisting of a pigmented basecoat and a transparent clear coating.
- 250 VAN:** A closed truck for carrying property or persons.
- 250.1 Medium-Sized Van:** A van having a manufacturer's gross vehicle weight rating of 6001 to 8600 pounds.
- 250.2 Small-Sized Van:** A van having a manufacturer's gross vehicle weight rating at 6000 pounds or less.
- 251 VOC CONTENT:** The VOC content of a chemical or substance is that portion of the organic compound that participates in atmospheric photochemical reactions, except for the non-precursor organic compounds. Section 503 of this rule instructs how to calculate the VOC content of a substance.

## SECTION 300 – STANDARDS

### 301 VOC COATING LIMITS FOR MOTOR VEHICLE REFINISHING

- 301.1 VOC Coating Limits:** The VOC coating limits for refinishing motor vehicles, mobile equipment, their parts and components are listed in Tables 345-1, 345-2, and 345-3 of this rule.



**TABLE 345-1**  
**VOC COATING LIMITS FOR GROUP I MOTOR VEHICLES AND MOBILE EQUIPMENT**  
**VOC LIMITS FOR REFINISH COATINGS AS APPLIED, MINUS EXEMPT COMPOUNDS**

Coating category	Grams VOC per liter	Pounds VOC per gal
Pretreatment wash primers	780	6.5
Primers/primer surfacers	580	4.8
Primer sealers	550	4.6
Single/two-stage topcoats	600	5.0
Topcoats of more than two stages	630	5.2
Multi-colored topcoats	680	5.7
Specialty coatings	840	7.0
Strippable booth coatings	420	3.5
Surface preparations and Cleaners	200	1.4

**TABLE 345-2**  
**VOC COATING LIMITS FOR GROUP II MOTOR VEHICLES**

Type of Coating	Grams VOC per liter	Pounds VOC per gal
Pretreatment coating	780	6.5
Primer surfacers	420	3.5
Primer sealers	420	3.5
Single stage, solid color	420	3.5
Single stage, metallic/iridescent	420	3.5
2-Stage process - basecoat & clear coating	480	4.0
Process of more than two stages	480	4.0
Spot Repair, 1 liter each stage (Volume limits apply §301.3 of this rule)	546	4.6
Specialty coatings	840	7.0
Strippable booth coatings	240	2.0

**TABLE 345-3**  
**VOC COATING LIMITS FOR REFINISHING NEW & MISCELLANEOUS SURFACES**

COATING ON METAL SURFACES The following includes coating, adhesive, and adhesive primer	Grams VOC per liter	Pounds VOC per gal
Air Dried Coating	420	3.5
Baked Coating (above 200°F (93°C))	360	3.0
Coating On Vinyl Surfaces	450	3.8
Coating On Fabric Surfaces	350	2.9
Coating On Plastic Surfaces (not defined flexible)	420	3.5
Coating Flexible Plastic Surfaces (not vinyl)		
Primer	490	4.1
Color Topcoat	450	3.8
Basecoat/Clear Coating (Combined System)	540	4.5



**301.2 Mixing Requirements:** Owners and/or operators adding VOC containing thinner, reducer, or diluent to any refinish coating regulated by Tables 345-1, 345-2, or 345-3 of this rule shall:

- a. Meet the applicable VOC limit in these tables and
- b. Not add such diluents in proportions higher than those specified or recommended in the instructions provided by the supplier of the coating.

**301.3 Volume Limits for Spot Repair on Group II Motor Vehicles:**

- a. The coating shall be applied from a reservoir having a gross volume not exceeding 1.2 liters (5 cups) and containing no more than 1 liter (1.1 qt.) of coating.
- b. The complete topcoat of a single stage finish shall not use more than 1 liter.
- c. The complete topcoat of a multi-stage finish shall not exceed 2 liters.
- d. The total of all non-topcoat coatings, including wash and primers shall not exceed 1 liter.

**301.4 Calculation of VOC Content:** Instruction on how to calculate VOC content is available in Section 503 of this rule.

**301.5 Compliance:** Compliance will be determined based on the VOC content limit, as expressed in metric units. (English units (lbs VOC/gal) are provided for information only).

**302 OPERATING REQUIREMENTS:**

**302.1 Surface-Preparations and Cleaners/Cleaning Materials:** Limits and work-practices for surface preparations and cleaners include the following:

- a. An owner and/or operator cleaning or preparing a surface of a motor vehicle or mobile equipment for coating using a wipe method or other non-dip method shall use a material with a VOC content as applied of no more than 1.4 pounds of VOC per gallon as calculated by the formula set forth in Section 503.3 of this rule.
- b. Surface-preparations or cleaning materials containing VOC shall not be applied by means of motor-compressed air if applied in a mist or (finely atomized) spray.
- c. Rule 331(Solvent Cleaning) applies to the dip cleaning of motor vehicle or mobile equipment surfaces.
- d. Tanks used for stripping off coating or for cleaning objects shall:
  - (1) Be covered when not in use and
  - (2) Solvent-dragout shall be minimized by tilting or rotating the object to drain off any pools of solvent before removing the object from above the tank.



- e. All solvent used for line cleaning shall be pumped or drained into a container and kept closed when not in use.

**302.2 Emission Control System (ECS):** An alternative to meeting an applicable coating-VOC limit and/or work practice pursuant to Sections 301 and 302 of this rule, an owner and/or operator is allowed to operate an Emission Control System (ECS) that reduces VOC emissions by at least 85% pursuant to Section 504 of this rule.

**302.3 Maintenance:** An owner and/or operator subject to this rule shall operate and maintain in proper working order all production and cleaning equipment in which VOC-containing materials are used or stored.

**302.4 Storage And Disposal Of VOC And VOC-Containing Material:** An owner and/or operator subject to this rule shall comply with the following:

- a. Store all VOC-containing materials, including but not limited to waste coatings, waste solvents and their residues, and rags in closed containers.
- b. Provide a legible label identifying all container's contents.
- c. Keep all containers closed except when contents are added or removed.
- d. Dispose of waste or surplus VOC-containing materials in a manner that inhibits VOC evaporation, such as having these materials hauled off site in sealed containers.

### 303 APPLICATION REQUIREMENTS

#### 303.1 Spray-Applied Coating (Spray Gun) Requirements and Limits:

a. **Spray Application of Coatings Containing More than 3.0 lb VOC/gal.:** An owner and/or operator shall employ one of the following devices or systems when using a coating as applied, in a spray gun that that exceeds 3.0 lb VOC/gal (360 g/l):

(1) **Low Pressure Spray Gun:** A low pressure spray gun or system (such as HVLP), having at least a 65% transfer efficiency and meeting the following requirements:

(a) **Air Cap Pressure:** Air cap pressure confirmed by either:

- (i) Proper operating pressure gauges; or
- (ii) Manufacturer's technical information regarding the correlation between the handle air inlet pressure and the air cap pressure and properly operating inlet pressure gauges if using this correlation option to demonstrate compliance; or

(b) Any method which is approved by EPA and the Control Officer as:

- (i) Having a transfer efficiency of 65% or greater; and



- (ii) The operating parameters under which they were demonstrated to achieve such transfer efficiency are permanent features of the method; and
      - (iii) Such coating application methods shall be approved in writing by the Control Officer prior to use.
  - (2) An electrostatic system, or
  - (3) A system that atomizes principally by hydraulic pressure, including "airless" and "air-assisted airless".
- b. An owner and/or operator is allowed to use a spray gun other than that described in Section 303.1(a) of this rule under the following conditions:
  - (1) For applying materials that have a VOC content less than 3.0 lb VOC/gal (360 g/l) as applied, less water and non-precursor compounds.
  - (2) If such guns are designed and used solely for detailing and/or touch-up, and have a maximum reservoir capacity of 250 cc (8.8 fluid ounces).
  - (3) If such guns are used to apply adhesives.

### 303.2 Spray-Gun Cleaning:

- a. **Spray-Gun Cleaning Machine:** An owner and/or operator subject to this rule and required by Rule 200 of these rules to have an Air Pollution Control Permit, shall use a paint gun cleaning machine to clean spray-guns.
  - (1) **Spray-Gun Cleaning Machines-General Requirements:** The gun-cleaning machine shall:
    - (a) Be designed to clean paint-guns; and
    - (b) Have at least one pump which drives cleaning solvent through and over the gun; and
    - (c) Have a basin which permits containment of the cleaning solvent; and
    - (d) Be kept in proper repair and free from liquid leaks; and
    - (e) Have all covers and other surfaces that are exposed to gaseous or liquid VOC-solvent be impervious to both gaseous and liquid VOC-solvent.
  - (2) **Spray-Gun Cleaning Machines-Specific Requirements:**
    - (a) **Automatic Spray-Gun-Cleaning Machine:**
      - (i) Shall be self-covering or enclosing when not loading or unloading.
      - (ii) Shall have a self-closing cover or other self-enclosing feature which in the cover's closed position allows no



gaps exceeding 1/8 inch (3 mm) between the cover and the cabinet.

- (iii) Shall be designed and maintained to prevent operation of its mechanical cleaning feature(s) unless it is completely covered or enclosed to the gap limits specified in Section 303.2(a)(2)(a)(ii) of this rule.

**(b) Non-Automatic Remote Reservoir Spray Gun-Cleaning Machine:**

- (i) Shall drain cleaning solvent from the sink/work-space quickly into a remote reservoir when work-space is not in use.
- (ii) Shall have the machine reservoir ability to contain VOC vapors and shall not have a cumulative total opening, including the drain opening(s), allowing VOC-escape to the atmosphere exceeding two square inches in area.
- (iii) Shall allow a machine design in which the base of the sink/work-space functions as the reservoir's top surface, as long the fit/seal between sink base and reservoir container allows the reservoir to meet the opening limits specified in Section 303.2(a)(2)(a)(ii) of this rule.

**b. Manual Spray-Gun Cleaning:**

- (1) **Pre-Cleaning:** Manual spray-gun pre-cleaning is allowed:
  - (a) If the cleaning machine is used immediately after manual pre-cleaning, and
  - (b) If manual pre-cleaning is done without spraying or atomizing a solvent with the gun.
- (2) All solvent used to manually clean spray guns shall be collected into a container which shall be immediately closed after all the solvent has been collected.
- (3) A paint-gun cleaning machine is not required if the gun is cleaned with water or a cleaning mixture that is more than 1/2 water by weight or volume.

**SECTION 400 – ADMINISTRATIVE REQUIREMENTS**

- 401 ECS SCHEDULE:** Any owner or operator intending to install an ECS in a facility to comply with requirements of this rule shall comply with the requirements of Section 504 of this rule.

**SECTION 500 – MONITORING AND RECORDS**

- 501 RECORDKEEPING AND REPORTING:** An owner and/or operator subject to this rule shall keep the records required under this Section 501 in a consistent and complete manner and shall



make them available to the Control Officer without delay during normal business hours.  
Recordkeeping shall comply with the following:

- 501.1** Be retained for at least 5 five years.
- 501.2** Be kept in either written or electronic format, and comprise an up-to-date list prepared for that facility.
- 501.3** Express VOC content in pounds of VOC per gallon (or grams/liter), less water and non-precursors, excepting waterborne cleaners which shall include the water.
- 501.4** Require the following materials and operational information be retained, as applicable:
  - a.** Current VOC Materials List: Maintain a list and amount of coatings, thinners, cleaners and any other VOC-containing materials used;
  - b.** Spray gun transfer efficiency documentation; and
  - c.** Hazardous wastes manifests.
- 501.5** Include a daily list of products in use:
  - a.** Name or code number of each VOC-containing product and its VOC content as received; and
  - b.** All coating components used:
    - (1) As received from the supplier, before any in-house blending, such as coating base and tint base for topcoats, midcoats, primers, specialty coatings, sealers, and strippable booth coating; and
    - (2) Other coating components such as hardeners, catalysts, reducers, promoters, inhibitors and other coating additives; and
    - (3) Strippers, wash-thinner, lacquer thinner, gun cleaning solvent, surface prep cleaners and other cleaners, including waterborne cleaners which contain some VOC.
- 501.6** **Sufficient Documentation:** Any one of the following may be used to meet the requirements of Section 501 of this rule:
  - a.** Current material safety data sheets (MSDS) or product data sheets showing the VOC content.
  - b.** Purchase documentation that gives VOC content, such as invoices and/or receipts showing VOC content.
  - c.** Current, dated manufacturers publications such as charts or lists which show VOC content, with the products used in the facility highlighted or otherwise clearly marked.
  - d.** Deviation and corrective action documentation.
- 501.7** **Documentation Of Purchases:** Purchase records showing the volume of each VOC-containing refinishing-related product purchased shall be kept available for the current



and the previous year. Actual invoices and receipts showing the volume of the material purchased will suffice in place of ledger-style records.

**501.8 Record Disposal or Reuse:** An owner and/or operator shall record the disposal of or reuse of VOC containing materials used in processes within a facility.

## 502 COMPLIANCE DETERMINATION:

**502.1** The Control Officer may determine VOC content from a manufacturer's product data document such as a current manufacturer's safety data sheet (MSDS) that provides exact product contents.

**502.2 Measurement of VOC Content of Coating Materials Subject to this Rule:** EPA Test Method 24 (as incorporated by reference in Section 505 of this rule) shall be used to determine VOC coating material content with the following restrictions for multi-component, polymerizing coatings:

- a. Method 24 shall be modified to eliminate the post-mixing dilution step (that employs toluene or other solvent).
- b. Method 31 (amended 4/15/92) California's Bay Area Air Quality Management District shall be spread by appropriate technique to form a thin layer, occupying the entire bottom of the foil pan. Refer to Section 505 of this rule as a guide for this calculation.

### 502.3 Low or No-Solids Materials:

- a. The VOC content of solutions, dispersions, and emulsions that have no solids or less than 5% solids shall be determined by either of the following methods:
  - (1) Method 313-91 -South Coast Air Quality Management District as incorporated by reference in Section 505 of this rule.
  - (2) Method 31 of California's Bay Area Air Quality Management District, as incorporated by reference in Section 505 of this rule.
- b. Measurement of the VOC content of cleaning materials shall be calculated according to the formula in Section 503.3 of this rule and applicable test methods in Section 505 of this rule.

**502.4 Spray-Gun Tip Pressure Measurement:** The measurement required in Section 303.1(a)(1) of this rule and shall be performed with the instructions supplied by the manufacturer for that purpose. The measurement shall be made:

- a. Dynamically at the center of the air cap and
- b. At the air horns, with the spray configured to a fan diameter of eight to ten inches on a flat surface being coated.
- c. The axis of the fan pattern shall be perpendicular to this surface.

**502.5 Pretreatment Coatings:** ASTM D1613-06 as incorporated by reference in Section 505.3(c) of this rule shall be used determine the acid weight percent of a pretreatment coating, with the following exception:



- a. The pigment in a pretreatment coating prevents the use of this test method for determining the acid weight percent of the coating, then the test method shall be used for the non-pigmented component of the coating; and
- b. The acid weight percent shall be calculated based on the acid content and the mixing ratio of the non-pigmented component and compared to the remaining components recommended by the regulated entity.

**502.6 ECS Testing:**

- a. **EPA Method 18 or EPA Method 25 and its Submethod(s):** These methods, incorporated by reference in Section 505 of this rule, shall be used to determine VOC content of gaseous emissions entering and exiting an ECS.
- b. Capture efficiency of an ECS shall be determined either by EPA Method 204 and its submethods, or by using mass balance calculation methods in concert with EPA Methods 2, 2a, 2c, and 2d, as are incorporated by reference in Section 505 of this rule.

**503 FORMULAS:** For the purpose of determining compliance with the VOC content limits listed in the tables in Section 301 of this rule, the following calculations apply:

**503.1 Multi-Stage VOC Content Calculation:**

$$\text{VOC multi} = \frac{\text{VOC}_{bc} + \sum_{i=0}^M \text{VOC}_{mc_i} + 2(\text{VOC}_{cc})}{M + 3} \text{ Where:}$$

- VOC<sub>multi</sub> = VOC content of multi-stage process, in grams VOC/liter of coating;
- VOC<sub>bc</sub> = VOC content of the basecoat, as determined in Section 503.2 of this rule;
- VOC<sub>mc<sub>i</sub></sub> = VOC content of midcoat i, as determined in Section 503.2 of this rule;
- VOC<sub>cc</sub> = VOC content of the clear coating, as determined in Section 503.2 of this rule;
- M = Number of midcoats; and
- N = Number of coats.

In a situation where a “ground coat” is used prior to a basecoat, use of the equation shall be adjusted as follows: The ground coat will be considered the basecoat and the basecoat will be considered one of the midcoats.

**503.2 Single-Stage VOC Content Calculation:** The mass of VOC per combined volume of VOC-plus-coating-solids before coating application, which can be calculated by the following equation:

$$\text{Pounds of VOC per Gallon (Grams/liter) of Coating} = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where:

- $W_s$  = weight of volatile material in pounds (or grams)
- $W_w$  = weight of water in pounds (or grams)



- $W_{es}$  = weight of non-precursors in pounds (or grams)
- $V_m$  = volume of total material in gallons (or liters if using grams)
- $V_w$  = volume of water in gallons (or liters if using grams)
- $V_{es}$  = volume of non-precursor compounds in gallons (or liters)

**503.3 VOC Content of Cleaners and Reducers (Material VOC-Content):**

$$VOC\ Content\ of\ Material = \frac{W_s - W_w - W_{es}}{V_m}$$

Using consistently either English or metric measures in the calculations

Where:

- $W_s$  = weight of all volatile material in pounds (or grams) including VOC, water, non-precursor organic compounds and dissolved vapors.
- $W_w$  = weight of water in pounds (or grams)
- $W_{es}$  = weight of all non-precursor compounds in pounds (or grams)
- $V_m$  = volume of total material in gallons (or liters)

**504 EMISSION CONTROL SYSTEM (ECS) AND RELATED SYSTEM OPERATING REQUIREMENTS:**

**504.1 ECS Requirements:** To meet the requirements pursuant to Section 302.2 of this rule, an ECS shall be operated as follows:

- a. The emissions-processing subsystem of the ECS shall reduce the VOC entering it by at least 90 percent.
- b. Throughout the period when the VOC content exceeds the applicable VOC limits, the ECS shall be operated to control VOC emissions.
- c. Materials that exceed the applicable VOC-limits shall be clearly identified such that workers are informed an ECS must be used.

**504.2 Recordkeeping for An ECS:**

- a. On each day that an ECS is used to comply pursuant to Section 308, an owner or operator shall record the amount and VOC content of the material for which the ECS was used.
- b. **ECS Operation and Maintenance Records:**
  - (1) On each day an ECS is used, make a permanent record of the operating parameters of the key systems as required by the O&M Plan.
  - (2) For each day or period in which the O&M Plan requires that maintenance be performed, a permanent record shall be made of the maintenance actions taken within 24 hours of maintenance completion.



- 504.3 ECS Schedule:** Any owner or operator of a facility, first intending to install and commence to use an ECS pursuant to Section 302.2 of this rule, shall submit for the Control Officer's approval an emission control plan describing the following:
- a. The ECS by the first day of the 4th month after the month in which such facility becomes subject to the ECS requirement.
  - b. The plan shall show how the ECS is to be used to achieve full compliance.
  - c. The plan shall specify dates for completing increments of progress, such as the contractual arrival date of new control equipment.
  - d. The Control Officer may require a person submitting such emission control plan to submit subsequent reports on progress in achieving compliance.
  - e. Any and all ECS used to achieve such compliance shall be in operation by 15 months after the facility becomes subject to the ECS requirement.

- 504.4 Operation and Maintenance (O&M) Plan Required for ECS:** For any ECS used to meet the requirements of this rule:

- a. An owner and/or operator shall provide and maintain (an) O&M Plan(s) for the ECS and any ECS monitoring device.
- b. The owner and/or operator shall submit to the Control Officer for approval the O&M Plans of each ECS and each ECS monitoring device.
- c. The owner and/or operator shall comply with all the identified actions and schedules provided in each O&M Plan.

- 504.5 Providing and Maintaining ECS Monitoring Devices:** Any owner and/or operator incinerating, adsorbing, or otherwise processing VOC emissions pursuant to this rule shall provide, properly install and maintain in calibration, in good working order and in operation, devices described in the facility's O&M Plan that indicate temperatures, pressures, rates of flow, or other operating conditions necessary to determine if air pollution control equipment is functioning properly and is properly maintained.

- 504.6 O&M Plan Responsibility:** An owner and/or operator of a facility that is required to have an O&M Plan pursuant to Section 504.4 of this rule must fully comply with all O&M Plans that the owner and/or operator has submitted for approval, but which have not yet been approved, unless notified otherwise by the Control Officer in writing.

- 505 COMPLIANCE DETERMINATION-TEST METHODS ADOPTED BY REFERENCE:** An exceedance of the limits established in this rule determined by any of the applicable test methods constitutes a violation of this rule.

- 505.1** The EPA test methods, ASTM International (ASTM) standards and other documents as they exist in the Code of Federal Regulations (CFR) as listed below, are adopted and incorporated by reference in Appendix G of the Maricopa County Air Pollution Control Regulations. Copies of the test methods referenced in this section are available at the Maricopa County Department, 1001 N. Central Ave., Phoenix, AZ, 85004.

- a. ASTM standards are also available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428, or from its website at [www.astm.org](http://www.astm.org).



- b. Bay Area Air Quality Management District test methods are available from Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, CA 94109, or from its website at [www.baaqmd.gov](http://www.baaqmd.gov).
- c. South Coast Air Quality Management test methods are available from South Coast Air Quality Management, 21865 Copley Drive, Diamond Bar, CA 91765, or from its website at: [www.aqmd.gov](http://www.aqmd.gov).

**505.2 EPA Test Methods:**

- a. CFR 60, APPENDIX A-1:
  - (1) Method 2—Determination of stack gas velocity and volumetric flow rate (Type S pitot tube);
  - (2) Method 2A—Direct measurement of gas volume through pipes and small ducts;
  - (3) Method 2C—Determination of stack gas velocity and volumetric flow rate in small stacks or ducts (standard pitot tube);
  - (4) Method 2D—Measurement of gas volume flow rates in small pipes and ducts;
- b. 40 CFR 60, APPENDIX A:  
Method 18 - Measurement of Gaseous Organic Compound Emissions by Gas Chromatography and its submethods.
- c. 40 CFR 60, APPENDIX A-7:  
Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.
- d. 40 CFR 60, APPENDIX A:  
Method 25 - Determination of Total Gaseous Nonmethane Organic Emissions as Carbon and its submethods.
- e. 40 CFR 51, APPENDIX M:  
Methods 204, 204a, 204b, 204c, 204d, 204e and 204f - Criteria For and Verification Of a Permanent or Temporary Total Enclosure.
- f. 40 CFR 63.11173(e):  
Methods 2 and 3 – Criteria for measuring paint booth filter efficiency and spray gun transfer efficiency.

**505.3 Other Test Methods (Not EPA):**

- a. California's Bay Area Air Quality Management District (BAAQMD) Method 31 (April 15, 1992), "Determination of Volatile Organic Compounds in Paint Strippers, Solvent Cleaners, and Low Solids Coatings".



- b.** California's South Coast Air Quality Management District (SCAQMD) Method 313-91 (April, 1997).
- c.** ASTM D1613-06(2012): Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products.