



Enhanced Regulatory Outreach Program Maricopa County Air Quality Department

Notice of Stakeholder Workshops

Date: Thursday, September 3, 2015

Location: 1001 North Central Avenue, Floor 5 Classroom*

The Maricopa County Air Quality Department will conduct Stakeholder Workshops to discuss proposed rule revisions. The schedule and a description of each rule to be discussed are provided below. Also, the draft rules associated with these workshops are attached to this announcement.

9:00 am – 10:30 am **AQ-2015-002-Rule 322 (Power Plant Operations) and**
AQ-2015-003-Rule 323 (Fuel Burning Equipment from
Industrial/Commercial/Institutional (ICI) Sources)

This is the second workshop. Staff will discuss proposed rule revisions since the first workshop conducted on June 29, 2015. Regarding draft Rule 322, discussion will focus on:

- Applicability particularly regarding equipment installed prior to 1996
- Emissions limitations for nitrogen oxides (NO_x)
- Reasonably available control technology (RACT) requirements
- Compliance schedule and plan
- Operation and maintenance (O&M) plan record requirements Regarding draft Rule 323, discussion will focus on:
- Emissions limitations for NO_x
- Compliance schedule and determination

1:30 pm – 3:00 pm **AQ-2015-005-Rule 336 (Surface Coating Operations)**

This is the second workshop. Staff will discuss proposed rule revisions since the first workshop conducted on June 29, 2015. Discussion will focus on:

- Proposed Applicability section: Manufacturing and repair operations, industrial adhesives and/or adhesive primers, and surface coating operations
- Proposed Exemptions section: Exemptions for VOC content polyester resin operations, pleasure craft and fiberglass boat manufacturing and repair, industrial adhesives and/or adhesive primers, and surface coating operations
- General standards for emission control systems, application methods, and work practices
- Specific process standards for polyester resin operations, pleasure craft and fiberglass boat manufacturing and repair, industrial adhesives and/or adhesive primers, and surface coating operations
- Compliance schedule
- Recordkeeping requirements
- Relationship of this proposed Rule 336 with other County rules
- Definitions

Additional information about these draft rules is available on the Enhanced Regulatory Outreach Program (EROP) website (<http://www.maricopa.gov/regulations>).

To enhance the discussion and cost savings, as well as support the county's sustainability initiative, information will be electronically displayed during the workshops. If you prefer a hardcopy of the documentation, please print the information from this announcement.

*When you arrive at 1001 North Central Avenue, please check-in in Suite #125 then proceed to the Floor 5 classroom.



REGULATION III - CONTROL OF AIR CONTAMINANTS

RULE 322

POWER PLANT OPERATIONS

ELECTRIC UTILITY STATIONARY GAS TURBINES, ELECTRIC UTILITY STEAM GENERATING UNITS

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Adopted 7/02/03
 Revised 10/17/07

Adopted 07/02/03; Revised 10/17/07; **Revised MM/DD/YY**

**MARICOPA COUNTY
 AIR POLLUTION CONTROL REGULATIONS
 REGULATION III - CONTROL OF AIR CONTAMINANTS**

**RULE 322
 POWER PLANT OPERATIONS
ELECTRIC UTILITY STATIONARY GAS TURBINES, ELECTRIC UTILITY STEAM GENERATING
 UNITS**

SECTION 100 - GENERAL

- 101 PURPOSE:** To limit the discharge of nitrogen oxides, sulfur oxides, particulate matter and carbon monoxide emissions into the atmosphere from stationary fossil-fuel-fired equipment at ~~existing power plants and existing cogeneration plants~~ Electrical Utility Stationary Gas Turbines, Electric Utility Steam Generating Units and to limit particulate matter emissions from cooling towers associated with this equipment.
- 102 APPLICABILITY:** This rule applies to any of the following types of equipment that burn fossil fuel for which construction commenced prior to May 10, 1996 or when a major modification occurs:
- 102.1** Each electric utility steam generating unit or cogeneration steam generating unit used to generate electric power that has a heat input of equal to or greater than 100 million (MM) Btu/hour (29 megawatts (MW)).
 - 102.2** Each electric utility stationary gas turbine with a heat input at peak load equal to or greater than 10 MMBtu/hour (2.9 MW) based upon the lower heating value of the fuel.
 - 102.3** Each cooling tower associated with the type of equipment listed in ~~subsections 102.1 and 102.2~~ Sections 102.1 and 102.2 of this rule.
- 103 EXEMPTIONS:** This rule shall not apply to the following types of equipment:
- 103.1** Combustion equipment associated with nuclear power plant operations; or
 - 103.2** Reciprocating internal combustion equipment.
- 104 PARTIAL EXEMPTIONS:**
- 104.1** Stationary gas turbines that meet any of the following criteria listed below are exempt from ~~Sections 304 and 305 and subsections 301.1, 301.2, 306.4, and 501.4~~ Sections 301.1, 301.2, 304, 305, 306.6, and 501.4 of this rule:
 - a. Used for fire-fighting; or
 - b. Used for flood control; or
 - c. Used in the military at military training facilities or military gas turbines for use in other than a garrison; or
 - d. Engaged by manufacturers in research and development of equipment for either gas turbine emission control techniques or gas turbine efficiency improvements.
 - 104.2** All equipment listed in Section 102 of this rule fired with an emergency fuel that is normally fired with natural gas is exempt from ~~Sections 304 and 305 and subsections 301.1, 301.2, and 306.4, 501.4~~ Sections 301.1, 301.2, 304, 305, 306.6, 501.4 of this rule.
 - 104.3** All equipment listed in Section 102 of this rule shall be exempt from ~~Sections 304 and 305 and subsections 301.1, 301.2, and 306.4~~ 306.6, Sections 301.1, 301.2, 304, 305, 306.6 of this rule for 36



cumulative ~~hrs~~ hours of firing emergency fuel per year, per unit for testing, reliability, training, and maintenance purposes.

SECTION 200 - DEFINITIONS: ~~For the purpose of this rule, the following definitions shall apply: See Rule 100 (General Provisions and Definitions) of these rules for definitions of terms that are used but not specifically defined in this rule.~~ 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 COGENERATION STEAM GENERATING UNIT:** A steam or hot water generating unit that simultaneously produces both electrical (or mechanical) and thermal energy (such as heat or steam) from the same primary energy source and supplies more than one-third of its potential electric output to any utility power distribution system for sale.
- 202 COMBINED CYCLE GAS TURBINE:** A type of stationary gas turbine wherein heat from the turbine exhaust is recovered by a steam generating unit to make steam for use in a steam-electric turbine.
- 203 CONTINUOUS EMISSION MONITORING SYSTEM (CEMS):** The total equipment required to sample and analyze emissions or process parameters such as opacity, nitrogen oxide, and oxygen or carbon dioxide, and to provide a permanent data record.
- 204 COOLING TOWERS:** Open water recirculating devices that use fans or natural draft to draw or force air through the device to cool water by evaporation and direct contact.
- 205 CORRECTIVE ACTION PLAN (CAP):** A methodical procedure that is used to evaluate and correct a turbine operational problem and that includes, at a minimum, improved preventative maintenance procedures, improved ECS operating practices, possible operational changes, and progress reports.
- 206 DISTILLATE OIL:** A petroleum fraction of fuel oil produced by distillation that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials in ASTM D396-01, "Standard Specification for Fuel Oils."
- 207 DRIFT:** Water droplets, bubbles, and particulate matter that escape from cooling tower stacks.
- 208 DRIFT ELIMINATOR:** Device used to remove drift from cooling tower exhaust air, thus reducing water loss by relying on rapid changes in velocity and direction of air-droplet mixtures by impaction on eliminator passage surfaces. A drift eliminator is not categorized as an emission control system but is an inherent part of the cooling tower's design requirements.
- 209 DRIFT RATE:** Percentage (%) of circulating water flow rate that passes through a drift eliminator on a cooling tower.
- 210 ELECTRIC UTILITY STATIONARY GAS TURBINE:** Any stationary gas turbine that is constructed for the purpose of supplying more than 1/3 of its potential electric output capacity to any utility power distribution system for sale. Both simple and combined cycle gas turbines are types of electric utility stationary gas turbines.
- 211 ELECTRIC UTILITY STEAM GENERATING UNIT:** Any steam electric generating unit that uses fossil fuel and is constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 MW electric output to any utility power distribution system for sale.
- 212 EMERGENCY FUEL:** Fuel fired only during circumstances such as natural gas emergency, natural gas curtailment, or breakdown of delivery system such as an unavoidable interruption of supply that makes it impossible to fire natural gas in the unit. Fuel is not considered emergency fuel if it is used to avoid either



peak demand charges or high gas prices during on-peak price periods or due to a voluntary reduction in natural gas usage by the power company.

- 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.
- 214 FOSSIL FUEL:** Naturally occurring carbonaceous substances from the ground such as natural gas, petroleum, coal and any form of solid, liquid, or gaseous fuel derived from such material for the purpose of creating energy.
- 215 FUEL SWITCHING STARTUP PROCESS:** The act of changing from one type of fuel to a different type of fuel.
- 216 HEAT INPUT:** Heat derived from the combustion of fuel, not including the heat input from preheated combustion air, recirculated flue gases, or exhaust gases from other sources, such as gas turbines, internal combustion engines, and kilns.
- 217 HIGHER HEATING VALUE (HHV) OR GROSS HEATING VALUE:** The amount of heat produced by the complete combustion of a unit quantity of fuel determined by a calorimeter wherein the combustion products are cooled to the temperature existing before combustion and all of the water vapor is condensed to liquid.
- 218 LOW SULFUR OIL:** Fuel oil containing less than or equal to 0.05 % by weight of sulfur.
- 219 LOWER HEATING VALUE (LHV) OR NET HEATING VALUE:** The amount of heat produced by the complete combustion of a unit quantity of fuel determined by a calorimeter wherein the combustion products are cooled to the temperature existing before combustion and all of the water vapor remains as vapor and is not condensed to a liquid. The value is computed from the higher heating value by subtracting the water originally present as moisture and the water formed by combustion of the fuel.
- 220 NATURAL GAS CURTAILMENT:** An interruption in natural gas service, such that the daily fuel needs of a combustion unit cannot be met with natural gas available due to one of the following reasons, beyond the control of the owner or operator:
- 220.1** An unforeseeable failure or malfunction, not resulting from an intentional act or omission that the governing state, federal or local agency finds to be due to an act of gross negligence on the part of the owner or operator; or
 - 220.2** A natural disaster; or
 - 220.3** The natural gas is curtailed pursuant to governing state, federal or local agency rules or orders; or
 - 220.4** The serving natural gas supplier provides notice to the owner or operator that, with forecasted natural gas supplies and demands, natural gas service is expected to be curtailed pursuant to governing state, federal or local agency rules or orders.
- 221 OPACITY:** A condition of the ambient air, or any part thereof, in which an air contaminant partially or wholly obscures the view of an observer.
- 222 PARTICULATE MATTER EMISSIONS:** Any and all particulate matter emitted to the ambient air as measured by applicable state and federal test methods.
- 223 PEAK LOAD:** 100% of the manufacturer's design capacity of a gas turbine at 288° Kelvin, 60% relative humidity, and 101.3 kilopascals pressure (ISO standard day conditions).
- 224 POWER PLANT OPERATION:** An operation whose purpose is to supply more than one-third of its potential electric output capacity to any utility power distribution system for sale.



- 225 RATED HEAT INPUT CAPACITY:** The heat input capacity in million Btu/hr. as specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified such that its maximum heat input is different than the heat input capacity on the name plate, the maximum heat input shall be considered the rated heat input capacity.
- 226 REGENERATIVE CYCLE GAS TURBINE:** Any stationary gas turbine that recovers thermal energy from the exhaust gases and utilizes the thermal energy to preheat air prior to entering the combustion unit.
- 227 RESIDUAL OIL:** The heavier oils that remain after the distillate oils and lighter hydrocarbons are distilled off in refinery operations. This includes crude oil or fuel oil numbers 1 and 2 that have a nitrogen content greater than 0.05 % by weight, and all fuel oil numbers 4, 5, and 6, as defined by the American Society of Testing and Materials in ASTM D396-01, “Standard Specifications for Fuel Oils.”
- 228 SELECTIVE CATALYTIC REDUCTION (SCR):** A post-combustion NO_x control technique, e.g., a reducing agent, e.g., ammonia, is used in a gas-phase reaction with oxides of nitrogen in the presence of a catalyst to form nitrogen and water.
- 228229 SIMPLE CYCLE GAS TURBINE:** Any stationary gas turbine that does not recover heat from the gas turbine exhaust gases to preheat the inlet combustion air to the gas turbine, or that does not recover heat from the gas turbine exhaust gases to heat water or generate steam.
- 229230 STATIONARY GAS TURBINE:** Any simple cycle gas turbine, regenerative gas turbine or any gas turbine portion of a combined cycle gas turbine that is not self-propelled or that is attached to a foundation.
- 230231 SULFUR OXIDES (SO_x):** The sum of the oxides of sulfur emitted from the flue gas from a combustion unit that are directly dependent upon the amount of sulfur in the fuel used.
- 231232 THIRTY (30) DAY ROLLING AVERAGE:** An arithmetic mean or average of all hourly emission rates for 30 successive combustion equipment operating days and calculated by a CEMS every hour.
- 232233 THREE (3) HOUR ROLLING AVERAGE:** An arithmetic mean or average of the most recent three one (1) hour tests, or an arithmetic mean or average over a period of three hours which is newly calculated with each hourly measurement.
- 233234 TOTAL DISSOLVED SOLIDS (TDS):** The amount of concentrated matter reported in milligrams/liter (mg/l) or parts per million (ppm) left after filtration of a well-mixed sample through a standard glass fiber filter. The filtrate is evaporated to dryness in a weighed dish and dried to constant weight at 180° C and the increase in dish weight represents the total dissolved solids.
- 234235 UNCOMBINED WATER:** Condensed water containing no more than analytical trace amounts of other chemical elements or compounds.

SECTION 300 – STANDARDS

301 LIMITATIONS – PARTICULATE MATTER:

- 301.1 Fuel Type:** An ~~owner or operator~~ owner and/or operator of any combustion equipment listed in Section 102 ~~of this rule~~ shall burn only natural gas except when firing emergency fuel per ~~subsections 104.2 and 104.3~~ Sections 104.2 and 104.3 of this rule. An ~~owner or operator~~ owner and/or operator may burn a fuel other than natural gas for non-emergency purposes providing that the fuel shall not cause to be discharged more than 0.007 lbs. of particulate matter per MMBtu, demonstrated and documented through performance testing of this alternate fuel using Test Method 5. This usage of different fuels other than natural gas shall be approved by the Control Officer prior to usage.



- 301.2 Particulate Matter Testing:** A backhalf analysis shall be performed, using Reference Method 202 referenced in ~~subsection 504.6~~ Section 504.6 of this rule, each time a compliance test for particulate matter emissions to meet the standard in ~~subsection 301.1~~ Section 301.1 of this rule is performed using Test Method 5.
- 301.3 Good Combustion Practices for Turbines:** An ~~owner or operator~~ owner and/or operator of any stationary gas turbine listed in ~~subsection 102.2~~ Section 102.2 of this rule, regardless of fuel type, shall use operational practices recommended by the manufacturer and parametric monitoring to ensure good combustion control as listed below. One of the following procedures may be used:
- Monitor the maximum temperature differential across the combustion burners or at locations around the back end of the turbine, dependent upon the particular unit, to ensure no more than a 100°F difference using a thermocouple. If a valid maximum temperature differential of greater than 100°F is observed across the burners, investigation and corrective action shall be taken within three hours to reduce the temperature difference to 100°F or less; or
 - If the manufacturer recommends that the maximum numerical temperature differential to ensure good combustion is a temperature that is greater than 100°F, then proof of this maximum alternate temperature shall be submitted to the Control Officer. The procedure to measure the maximum temperature differential listed ~~above in subsection 301.3a~~ Section 301.3 (a) of this rule shall then be followed using this alternate recommended maximum temperature differential after approval by the Control Officer.
 - If the frequency of failure to meet the proper temperature differential of 100°F or to meet the alternate temperature differential recommended by the manufacturer reflects a pattern that the turbine is not being operated in a manner consistent with good combustion practices, then the Control Officer may require the ~~owner or operator~~ owner and/or operator to submit a Corrective Action Plan (CAP).
- 301.4 Cooling Towers:** An ~~owner or operator~~ owner and/or operator of a cooling tower associated with applicable units listed in Section 102 of this rule shall:
- Equip the cooling tower with a drift eliminator. The drift eliminator shall not be manufactured out of wood.
 - The concentration of Total Dissolved Solids (TDS) multiplied by the percentage of drift rate shall not exceed the maximum numerical limit of 20.
 - Visually inspect the drift eliminator on a monthly basis only if the drift eliminator can be viewed safely and does not require an ~~owner or operator~~ owner and/or operator to walk into the tower. If the drift eliminator cannot be safely inspected monthly then ~~subsection 301.4d~~ Section 301.4(d) of this rule shall apply:
 - Visually inspect the drift eliminator for integrity during a regularly scheduled outage when the cooling tower is not operating, if it cannot be inspected on a monthly basis. This visual inspection shall be no less than once per year.

302 LIMITATIONS – OPACITY:

- 302.1** ~~No person shall~~ An owner and/or operator shall not discharge into the ambient air from any single source of emissions any air contaminant, other than uncombined water, in excess of 20% opacity, except as provided in ~~subsection 302.2~~ Section 302.2 of this rule.
- 302.2** Opacity may exceed the applicable limits established in ~~subsection 302.1~~ Section 302.1 of this rule for up to one hour during the startup of switching fuels; however, opacity shall not exceed 40% for any six (6) minute averaging period in this one hour period, provided that the Control Officer finds that the ~~owner or operator~~ owner and/or operator has, to the extent practicable, maintained and operated the source of emissions in a manner consistent with good air pollution control practices for minimizing emissions. The one hour period shall begin at the moment of startup of fuel switching.



- 302.3** Determination of whether good air pollution control practices are being used shall be based on information provided to the Control Officer upon request, which may include, but is not limited to, the following:
- Monitoring results.
 - Opacity observations.
 - Review of operating and maintenance procedures.
 - Inspection of the source.
- 303** **LIMITATIONS - SULFUR IN FUEL:** ~~An owner or operator~~ owner and/or operator of any applicable equipment listed in Section 102 ~~of this rule~~ that burns fuel oil alone or in combination with any other fuel as either emergency fuel or non-emergency fuel that meets the standards in ~~subsection 301.1~~ Section 301.1 of this rule shall use only low sulfur oil.
- 304** **LIMITATIONS – NITROGEN OXIDES:** ~~No owner or operator~~ An owner and/or operator of any applicable equipment listed in ~~subsection 102.1~~ Section 102.1, 102.2 and 102.3 of this rule that commenced construction or a major modification after May 30, 1972 shall not cause to be discharged into the atmosphere nitrogen oxides in excess of the following limits:
- 304.1 ~~155 ppmv, calculated as nitrogen dioxide when burning gaseous fossil fuel. During steady state operations, this test result using EPA Reference Method(s) 7 shall be based upon the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample time of one hour. If a Continuous Emission Monitoring System (CEMS) is used, the test result shall be based upon a 30-day rolling average.~~
- 304.2 ~~230 ppmv calculated as nitrogen dioxide when burning liquid fossil fuel. During steady state operations, this test result using EPA Reference Method(s) 7, shall be based upon the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample time of one hour. If a CEMS is used, the test result shall be based upon a 30-day rolling average.~~
- 304.3 ~~The nitrogen oxides concentration shall be measured dry and corrected to 3% oxygen for electric utility steam generating units and cogeneration steam generating units. The nitrogen oxides concentration shall be measured dry and corrected to 15% oxygen for stationary gas turbines.~~
- 304.1** **Emission Limits –Gaseous Fuel Firing:**
- The NO_x emissions from any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower greater than or equal to 2.9 MW operating less than 877 hours per year, shall not exceed 42 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O₂) when firing on gaseous fuels.
 - The NO_x emissions from any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower that is operated 877 hours or more per calendar year with a rated unit size output greater than or equal to 10 MMBtu/hr or 2.9 MW and less than 100 MMBtu/hr or 10 MW shall not exceed 25 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O₂) when firing on gaseous fuels.
 - The NO_x emissions from any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower that is operated 877 hours or more per calendar year with a rated unit size output greater or equal to 100 MMBtu/hr or 10 MW, without SCR installed, shall not exceed 15 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O₂) when firing on gaseous fuels.
 - The NO_x emissions from any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower that is operated 877 hours or more per calendar year with a rated unit size output greater or equal to 100 MMBtu/hr or 10 MW, with SCR installed, shall not exceed 9 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O₂) when firing on gaseous fuels.



304.2 Emission Limit–Liquid Fuel Firing:

- a. The NO_x emissions from any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower greater than or equal to 10 MMBtu/hr or 2.9 MW operating less than 877 hours per year, shall not exceed 65 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O₂) when firing on liquid fuels.
- b. The NO_x emissions from any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower that is operated 877 hours or more per calendar year with a rated unit size output greater or equal to 100 MMBtu/hr or 10 MW, without SCR installed, shall not exceed 42 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O₂) when firing on liquid fuels.
- c. The NO_x emissions from any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower that is operated 877 hours or more per calendar year with a rated unit size output greater or equal to 100 MMBtu/hr or 10 MW, with SCR installed, shall not exceed 25 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O₂) when firing on liquid fuels.

**TABLE 1: SUMMARY OF EMISSION LIMITATIONS REQUIREMENTS
 IN SECTIONS 304.1, 304.2 AND 304.3 OF THIS RULE**

<u>Rule Reference</u>	<u>Time of Operation (hr/yr)</u>	<u>Unit Size Rating (MW)</u>	<u>NO_x Emission Limit (ppmv)</u>	
			<u>Gaseous Fuel</u>	<u>Liquid Fuel</u>
<u>304.1(a)</u>	<u><877</u>	<u>>2.9</u>	<u>42.0</u>	
<u>304.2(a)</u>	<u><877</u>	<u>≥2.9</u>		<u>65.0</u>
<u>304.1(b)</u>	<u>≥877</u>	<u>≥2.9 to <10</u>	<u>25.0</u>	
<u>304.1(c) And 304.2(b)</u>	<u>≥877</u>	<u>≥10.0 (no SCR)</u>	<u>15.0</u>	<u>42.0</u>
<u>304.1(d) And 304.2(c)</u>	<u>≥877</u>	<u>≥10.0 (w SCR)</u>	<u>9.0</u>	<u>25.0</u>

304.4 The nitrogen oxides concentration shall be measured dry and corrected to 15% oxygen for electric utility steam generating units and cogeneration steam generating units. The nitrogen oxides concentration shall be measured dry and corrected to 15% oxygen for stationary gas turbines.

305 **LIMITATIONS - CARBON MONOXIDE:** ~~No owner or operator~~ An owner and/or operator of any equipment listed in Section 102 of this rule shall not cause to be discharged into the atmosphere carbon monoxide (CO) measured in excess of 400 ppmv at any time. This test result, using EPA Reference Method 10, and performed during steady state compliance source testing shall be based upon the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample time of one hour. The CO concentration shall be measured dry and corrected to 3% oxygen for electric utility steam generating units and cogeneration steam generating units. The CO concentration shall be measured dry and corrected to 15% oxygen for stationary gas turbines.

306 **REQUIREMENTS FOR AIR POLLUTION CONTROL EQUIPMENT AND ECS MONITORING EQUIPMENT:**

306.1 An owner and/or operator of any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower with a rated unit size output of less than 29 MW shall install, operate, and maintain in calibration, equipment approved by the Control Officer that continuously measures and records the following: control system operating parameters and elapsed time of operation.



- 306.2** An owner and/or operator of any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower with a rated unit size output greater or equal to 100 MMBtu/hr or 29 MW and operated for more than 4000 hours in any one calendar year during the three years before November xx, 2016 shall install, operate, and maintain in calibration, equipment approved by the Control Officer that continuously measures and records the following: control system operating parameters, elapsed time of operation, and continuous exhaust gas NO_x concentrations corrected to 15 percent oxygen (O₂) on a dry basis. The NO_x continuous emission monitoring (CEM) system shall meet requirements as specified in 40 CFR Part 60 Appendix B, Specification 2 by November xx, 2018.
- 306.3** An owner and/or operator of any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower subject to any provision of this rule shall install by November xx, 2017, a non-resettable totalizing hour meter on each turbine.
- ~~306.1~~**306.4** ~~Emission Control System Required:~~ For affected operations which may exceed any of the applicable standards set forth in Section 300 of this rule, an ~~owner or operator~~ owner and/or operator may comply by installing and operating an emission control system (ECS).
- ~~306.2~~**306.5** ~~Providing and Maintaining ECS Monitoring Devices:~~ No ~~owner or operator~~ An owner and/or operator required to use an approved ECS pursuant to this rule shall not do so without first properly installing, operating, and maintaining in calibration and in good working order, devices for indicating temperatures, pressures, transfer rates, rates of flow, or other operating conditions necessary to determine if air pollution control equipment is functioning properly and is properly maintained as described in an approved Operation and Maintenance (O&M) Plan.
- ~~306.3~~**306.6** **Operation and Maintenance (O&M) Plan Required For ECS:**
- a. **General Requirements:** An ~~owner or operator~~ owner and/or operator shall provide and maintain an O&M Plan for any ECS, any other emission processing equipment, and any ECS monitoring devices that are used pursuant to this rule or to an air pollution permit.
 - b. **Approval by Control Officer:** An ~~owner or operator~~ owner and/or operator shall submit to the Control Officer for approval the O&M Plans of each ECS and each ECS monitoring device that is used pursuant to this rule.
 - c. **Initial Plans:** An ~~owner or operator that~~ owner and/or operator who is required to have an O&M Plan pursuant to this rule shall comply with all O&M Plans that the ~~owner or operator~~ owner and/or operator has submitted for approval, but which have not yet been approved, unless notified by the Control Officer in writing. Once the initial plan has been approved in writing by the Control Officer, an ~~owner or operator~~ owner and/or operator shall then comply with the approved plan.
 - d. **Revisions to Plan:** If revisions to the initial plan have been approved by the Control Officer in writing, an ~~owner or operator~~ owner and/or operator shall comply with the revisions to the initial plan. If revisions to the plan have not yet been approved by the Control Officer, then an ~~owner or operator~~ owner and/or operator shall comply with the newest recent O&M plan on file at Maricopa County Air Quality Department.
 - e. **Control Officer Modifications to Plan:** After discussion with the ~~owner or operator~~ owner and/or operator, the Control Officer may modify the plan in writing prior to approval of the initial O&M plan. An ~~owner or operator~~ owner and/or operator shall then comply with the plan that has been modified by the Control Officer.
- ~~306.4~~**306.7** **Continuous Emission Monitoring Systems (CEMS):**
- a. An ~~owner or operator~~ owner and/or operator of a ~~combustion unit~~ electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower subject to Section 304 of this rule with a heat input of greater than 250 MMBtu/hr, regardless of fuel type, shall install, calibrate, maintain, and operate a CEMS for measuring nitrogen oxides and recording the output of the system. Where nitrogen oxide emissions are monitored by a CEMS, then a CEMS



shall also be required for the measurement of the oxygen content of the flue gases. All CEMS shall comply with the provisions in 40 CFR Subpart Da, Part 60, 60.47 (a).

- b. ~~An owner or operator~~ owner and/or operator of any affected ~~unit~~ electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower listed above that requires a CEMS for nitrogen oxides that meets and is continuing to meet the requirements of 40 CFR Part 75 may use that CEMS to meet the requirements of ~~subsection 306.4 a~~ Section 306.7(a) of this rule.

307 **EMERGENCY FUEL USE NOTIFICATION:** ~~An owner or operator~~ owner and/or operator of a ~~unit~~ electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower that is fired with emergency fuel but is normally fired with natural gas shall notify the Control Officer verbally no later than 24 hours after declaration of the emergency that necessitates its use in compliance with ~~subsections 104.2 and 212~~ Section 104.2 of this rule. This verbal report shall be followed by a written report within 48 hours of initial emergency fuel usage. The written report shall also include identification of the nature of the emergency, initial dates of usage, and the expected dates of usage.

SECTION 400 - ADMINISTRATIVE REQUIREMENTS ~~(NOT APPLICABLE)~~

401 COMPLIANCE SCHEDULE:

401.1 The owner and/or operator of any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower in existence on November xx, 2015, subject to the emission limits of Sections 304 of this rule, shall comply with these limits effective January xx, 2017 unless air pollution control equipment is required. When air pollution control equipment is required to achieve these limits, the owner and/or operator shall comply with the increments of progress of Section 401.2 of this rule and be in compliance with the emission limits by the date specified in Section 401.2 of this rule. Interim compliance with the limits of Sections 304 of this rule does not exclude the owner and/or operator from final compliance with the limits of Section 304 of this rule and the increments of progress of Section 401.2 of this rule.

401.2 Increments of Progress: The owner and/or operator of any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower subject to the emissions limits of Section 304 of this rule shall comply with the following increments of progress. The following compliance schedule does not apply to units already compliant with these rules as of November xx, 2016:

- a. [Within 2 months of rule adoption]; submit to the Control Officer a compliance plan as specified in Sections 304.2 and 304.3 of this rule.
- b. [Within 10 months of rule adoption]; notify the Control Officer prior to construction for the modifications necessary to meet the limits of Section 402 of this rule.
- c. [Within 18 months of rule adoption]; begin construction.
- d. [Within 24 months of rule adoption]; complete construction.
- e. [Within 26 months of rule adoption]; be fully compliant with the emission limits of Section 304 of this rule. This shall include the submittal to the Control Officer of a complete source test report indicating compliance.

401.3 Removal From Service: The owner and/or operator of any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower in existence on November xx, 2016 that is expected to be removed from service by January xx, 2019 shall comply with the following:

- a. [Within 2 months of rule adoption], submit to the Control Officer a notification requesting an exemption from the requirements of Section 304 of this rule.
- b. [Within 10 months of rule adoption], submit to the Control Officer a complete application for an Authority to Construct for modification of the Permit to Operate.



c. [Within 14 months of rule adoption], discontinue operation of the electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower, disconnect the fuel supply line(s), and notify the Control Officer in writing of the removal from service.

401.4 Operation of any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower beyond [14 months of rule adoption], shall be done in compliance with the applicable NO_x limits in Sections 304.2 and 304.3 of this rule.

401.5 Emergency Standby Units: The owner and/or operator of any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower in existence prior to [date of adoption] shall, [within 2 months of rule adoption], submit to the Control Officer a notification requesting an exemption from the requirements of Section 300 of this rule.

402 COMPLIANCE PLAN: The owner and/or operator of any electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower shall submit, for approval to the Control Officer, a plan for compliance with the provisions of Section 300 of this rule. The plan shall include:

402.1 The following information relative to each electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower subject to this rule: the name of the manufacturer, model number, rated shaft power output (MW), hours of operation, fuel type, and fuel consumption rate (MCF/hr or gal/hr).

402.2 A description of the NO_x control system proposed for each electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower, including type and manufacturer, as well as the measurement and recording equipment required in Section 306 of this rule. Data on the expected performance of the NO_x control system shall also be included.

402.3 A compliance schedule for each electrical utility stationary gas turbines, electric utility steam generating units, or associated cooling tower, including, but not limited to, specific dates for the following events: final engineering, contract award, starting date of construction, completion date of construction, and the date of final compliance.

SECTION 500 - MONITORING AND RECORDS

501 **RECORDKEEPING AND REPORTING:** Any ~~owner or operator~~ owner and/or operator subject to this rule shall comply with the requirements set forth in this section. Any records and data required by this section shall be kept on site at all times in a consistent and complete manner and be made available without delay to the Control Officer or his designee upon request. Records shall consist of the following information:

501.1 **Operations And Maintenance (O&M) Plan Record Requirements:**

- a.** Permit number of each gas turbine.
- b.** Manufacturer, model number and rating in megawatts of each gas turbine.
- c.** Actual startup and shutdown time, daily hours of operation, and cumulative hours of operation to date for the calendar year. In addition, for emergency standby units, hours of operation shall be listed separately for emergencies and for maintenance operations.
- d.** Actual daily fuel usage of each electrical utility stationary gas turbines, electric utility steam generating units.
- e.** Date and results of most recent emission test reported as ppmvat 15% O₂ and pound per unit time.
- f.** A summary of any emissions corrective maintenance taken.

~~501.1~~**501.2** **Equipment Listed In Section 102 of this Rule:** Type of fuel used, amount of fuel used, amount of sulfur in the fuel if using liquid fuel, and the days and hours of operation.

~~501.2~~**501.3** **Cooling Towers:** Monthly gravimetric testing reports for TDS shall be recorded for six months in succession and thereafter quarterly reports shall be recorded. Results of the monthly or yearly visual



inspection of the drift eliminator shall also be recorded. If the drift eliminator cannot be visually inspected monthly, then documentation of the physical configuration of the drift eliminator shall be submitted to the Control Officer to demonstrate that the drift eliminator cannot be inspected monthly.

- ~~501.3~~**501.4** **Emergency Fuel Usage:** Type and amount of emergency fuel used, dates and hours of operation using emergency fuel, nature of the emergency or reason for the use of emergency fuel as stated in ~~subsections 104.2 and 104.3~~ Sections 104.2 and 104.3 of this rule.
- ~~501.4~~**501.5** **Fuel Switching:** Monthly records of fuel switching including stop and start times, monthly records of hours of operation for testing, reliability and maintenance purposes per ~~subsection 104.3~~ Section 104.3 of this rule, and a yearly log total of these hours.
- ~~501.5~~**501.6** **CEMS:** All CEMS measurements, results of CEMS performance evaluations, CEMS calibration checks, and adjustments and maintenance performed on these systems.
- ~~501.6~~**501.7** **Good Combustion Practices:** Measurements of the temperature differential across the burners of turbines per ~~subsection 301.3 a, b, or c~~ Sections 301.3(a), 301.3(b), and 301.3(c) of this rule, results of evaluation and of corrective action taken to reduce the temperature differential or a finding that the temperature differential returned to the range listed in ~~subsection 301.3 a or b~~ Sections 301.3(a) or 301.3(b) of this rule without any action by the ~~owner or operator~~ owner and/or operator.

502 RECORDS RETENTION: Copies of reports, logs, and supporting documentation required by the Control Officer shall be retained for at least 5 years. Records and information required by this rule shall also be retained for at least 5 years.

503 COMPLIANCE DETERMINATION:

503.1 Low Sulfur Oil Verification:

- a. An ~~owner or operator~~ owner and/or operator shall submit fuel oil or liquid fuel receipts from the fuel supplier indicating the sulfur content of the fuel or verification that the oil used to generate electric power meets the 0.05% sulfur limit if requested by the Control Officer; or
- b. If fuel receipts are not available then an ~~owner or operator~~ owner and/or operator shall submit a statement of certification or proof of the sulfur content of the oil or liquid fuel from the supplier to the Control Officer; or
- c. An ~~owner or operator~~ owner and/or operator may elect to test the fuel for sulfur content in lieu of certification from the fuel supplier or fuel receipts using one of the test methods listed in ~~subsections 504.11, 504.12, 504.13 or 504.14~~ Sections 504.11, 504.12, 504.13, or 504.14 of this rule.

503.2 Drift Rate Verification: An ~~owner or operator~~ owner and/or operator shall submit design drift rate verification from the manufacturer of the drift eliminator used in the cooling towers to the Control Officer if proof of the design drift rate is requested by the Control Officer.

504 TEST METHODS INCORPORATED BY REFERENCE: The EPA test methods as they exist in the Code of Federal Regulations (CFR) (July 1, 2004), as listed below, are incorporated by reference in Appendix G of the Maricopa County Air Pollution Control Regulations. Copies of test methods referenced in this section are available at the Maricopa County Air Quality Department, 1001 N. Central Avenue, Suite ~~595~~125, Phoenix, AZ 85004-1942. The Standard Methods listed below (1995) are also incorporated by reference. When more than one test method as listed in ~~subsections 504.11 through 504.14~~Sections 504.11 through 504.14 of this rule is permitted for the same determination, an exceedance of the limits established in this rule determined by any of the applicable test methods constitutes a violation.

504.1 EPA Reference Methods 1 (“Sample and Velocity Traverses for Stationary Sources”), and 1A (“Sample and Velocity Traverses for Stationary Sources with Small Stacks and Ducts”) (40 CFR 60, Appendix A).



- 504.2** EPA Reference 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”) (40 CFR 60, Appendix A).
- 504.3** EPA Reference Methods 3 (“Gas Analysis for the Determination of Dry Molecular Weight”), 3A (“Determination of Oxygen and Carbon Dioxide Concentrations in Emissions From Stationary Sources (Instrumental Analyzer Procedure)”), 3B (“Gas Analysis for the Determination of Emission Rate Correction Factor of Excess Air”), and 3C (“Determination of Carbon Dioxide, Methane, Nitrogen and Oxygen from Stationary Sources”) (40 CFR 60, Appendix A).
- 504.4** EPA Reference Method 4 (“Determination of Moisture Content in Stack Gases”) (40 CFR 60, Appendix A).
- 504.5** EPA Reference Method 5 (“Determination of Particulate Emissions from Stationary Sources”) (40 CFR 60, Appendix A).
- 504.6** EPA Reference Method 202 (“Determination of Condensable Particulate Emissions from Stationary Sources”) (40 CFR 51, Appendix M).
- 504.7** EPA Reference Methods 7 (“Determination of Nitrogen Oxide Emissions from Stationary Sources”), 7A (“Determination of Nitrogen Oxide Emissions from Stationary Sources”), 7B (“Determination of Nitrogen Oxide Emissions from Stationary Sources - Ultraviolet Spectrometry”), 7C (“Determination of Nitrogen Oxide Emissions from Stationary Sources - Alkaline-Permanganate Colorimetric Method”), 7D (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline-Permanganate Chromatographic Method”), and 7E (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Instrumental Analyzer Method”) (40 CFR 60, Appendix A).
- 504.8** EPA Reference Method 9 (“Visual Determination of the Opacity of Emissions from Stationary Sources”) (40 CFR 60, Appendix A).
- 504.9** EPA Reference Method 10 (“Determination of Carbon Monoxide Emissions from Stationary Sources”) (40 CFR 60, Appendix A).
- 504.10** EPA Reference Method 20 (“Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines”) (40 CFR 60, Appendix A).
- 504.11** American Society of Testing Materials, ASTM Method D2622-98, (“Standard Test Method for Sulfur in Petroleum Products by Wavelength Disperse X-Ray Fluorescence Spectrometry”), 1998.
- 504.12** American Society of Testing Materials, ASTM Method D1266-98, (“Standard Test Method for Sulfur in Petroleum Products - Lamp Method”), 1998.
- 504.13** American Society of Testing Materials, ASTM Method D2880-00, (“Standard Specification for Gas Turbine Fuel Oils”), 2000.
- 504.14** American Society of Testing Materials, ASTM Method D4294-90 or 98 (“Standard Test Method for Sulfur in Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry”), 1990 or 1998.
- 504.15** Standard Methods for the Examination of Water and Wastewater, (“Dissolved Solids Dried at 180°C, Method #2540C”), American Public Health Association, 19th edition, 1995.



REGULATION III – CONTROL OF AIR CONTAMINANTS

RULE 323 FUEL BURNING EQUIPMENT FROM INDUSTRIAL /COMMERCIAL/ INSTITUTIONAL (ICI) SOURCES

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~~Adopted 07/03/05~~
~~Revised 10/17/07~~

Adopted 07/03/05; Revised 10/17/07; Revised MM/DD/YY

MARICOPA COUNTY
AIR POLLUTION CONTROL REGULATIONS
REGULATION III-CONTROL OF AIR CONTAMINANTS

RULE 323

FUEL BURNING EQUIPMENT FROM INDUSTRIAL/COMMERCIAL/INSTITUTIONAL (ICI) SOURCES

INDEX

SECTION 100 – GENERAL

- 101 PURPOSE:** To limit the discharge of nitrogen oxides, sulfur oxides, carbon monoxide, and particulate matter emissions into the atmosphere from fuel burning combustion equipment at industrial and/or commercial and/or institutional (ICI) sources.
- 102 APPLICABILITY:** This rule applies to any of the following types of ICI combustion equipment that burns either fossil fuels or alternative fuels:
 - 102.1** Each steam generating unit that has a maximum design rated heat input capacity from fuels combusted in the generating unit of greater than 10 million (MM) Btu/hr (2.9 Megawatts (MW)).
 - 102.2** Each stationary gas turbine with a heat input at peak load equal to or greater than 2.9 megawatts (MW).
 - 102.3** Each cogeneration steam generating unit with a heat input of greater than 10 MMBtu/hr.
 - 102.4** Each indirect-fired process heater with a heat input greater than 10 MMBtu/hr.
 - 102.5** NSPS & NESHAP: In addition to this rule, facilities may be subject to New Source Performance Standards (NSPS) in Rule 360 and/or National Emission Standards for Hazardous Air Pollutants (NESHAP) in Rule 370 of these rules.
- 103 EXEMPTIONS:** This rule shall not apply to the following types of equipment:
 - 103.1** Incinerators, crematories, or burn-off ovens; or
 - 103.2** Dryers, cement and lime kilns; or
 - 103.3** Direct-fired process heaters; or
 - 103.4** Medical waste incinerators; or
 - 103.5** Reciprocating internal combustion equipment; or
 - 103.6** Combustion equipment used in power plant operations for the purpose of supplying greater than one third of the electricity to any utility power distribution system for sale; or
 - 103.7** Combustion equipment associated with nuclear power plant operations; or
 - 103.8** Water heaters used for the sole purpose of heating hot water for comfort or for radiant heat.
- 104 PARTIAL EXEMPTIONS:**
 - 104.1** Stationary gas turbines listed in ~~subsection 102.2~~ Section 102.2 of this rule that are used for any of the following reasons shall be exempt from ~~Sections 304, 305 and subsections 301.1, 301.2, 501.1 and 501.3~~ Sections 301.1, 301.2, 304, 305, 501.1, and 501.3 of this rule:
 - a.** Used for firefighting; or
 - b.** Used for flood control; or



- c. Used at military training facilities other than a garrison facility; or
 - d. Engaged by manufacturers in research and the development of equipment for either gas turbine emission control techniques or gas turbine efficiency improvements; or
 - e. Fired with emergency fuel that is normally fired with natural gas, or
 - f. Testing, reliability, maintenance, training, and readiness purposes for a total of 36 hours per year per unit when firing any emergency fuel.
- 104.2** All steam generating units including cogeneration units and process heaters that are used for any of the following reasons shall be exempt from Sections 301, 304, 305, ~~and subsections 501.1 and 501.3~~ of this rule:
- a. Fired with an emergency fuel that is normally fired with natural gas; or
 - b. Firing any emergency fuel for testing, reliability, and maintenance purposes up to a maximum total of 36 ~~hrs.~~ hours per unit per year.

SECTION 200 – DEFINITIONS: ~~For the purpose of this rule, the following definitions shall apply. See Rule 100 (General Provisions and Definitions) of these rules for definitions of terms that are used but not specifically defined in this rule. 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 ALTERNATIVE FUELS:** Substitutes for traditional oil-derived and fossil-fuel derived motor vehicle fuels including but not limited to biodiesel, propane, ethanol or methanol.
- 202 COGENERATION STEAM GENERATING UNIT:** A steam or hot water generating unit that simultaneously produces both electrical (or mechanical) and thermal energy (such as heat or steam) from the same primary energy source.
- 203 CORRECTIVE ACTION PLAN (CAP):** A methodical procedure that is used to evaluate and correct a turbine operational problem and that includes, at a minimum, improved preventative maintenance procedures, improved ECS operating practices, possible operational amendments, and progress reports.
- 204 DISTILLATE OIL:** A petroleum fraction of fuel oil produced by distillation that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials in ASTM D396-01, “Standard Specification for Fuel Oils.”
- 205 EMERGENCY FUEL:** Fuel fired by a gas combustion unit, normally fueled by natural gas, only during circumstances of unforeseen disruption or interruption in the supply of natural gas to a unit that normally runs on natural gas. The inability to burn natural gas may be one of the following, but is not limited to, natural gas emergency, natural gas curtailment, or a breakdown of the delivery system.
- 206 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.
- 207 FOSSIL FUEL:** Naturally occurring carbonaceous substances from the ground such as natural gas, petroleum, coal, and any form of solid, liquid or gaseous fuel derived from such material for the purpose of creating energy.
- 208 HEAT INPUT:** Heat derived from the combustion of fuel not including the heat input from preheated combustion air, recirculated flue gases, or exhaust gases from other sources, such as gas turbines, internal combustion engines, and kilns.
- 209 LOW SULFUR OIL:** Fuel oil containing less than or equal to 0.05 % by weight of sulfur.
- 210 NATURAL GAS CURTAILMENT:** A shortage in the supply of natural gas, due solely to limitations or restrictions in distribution pipelines by the utility supplying the gas and not due to the cost of natural gas.



- 211 **OPACITY:** A condition of the ambient air, or any part thereof, in which an air contaminant partially or wholly obscures the view of an observer.
- 212 **PARTICULATE MATTER EMISSIONS:** Any and all particulate matter emitted to the ambient air as measured by applicable state and federal test methods.
- 213 **PEAK LOAD:** 100% of the manufacturer’s design capacity of a gas turbine at 288 Kelvin, 60% relative humidity, and 101.3 kilopascals pressure (ISO standard day conditions).
- 214 **PROCESS HEATER:** An enclosed combustion device that uses controlled flame to transfer heat to a process fluid or a process material that is not a fluid or to heat transfer material for use in a process unit (not including the generation of steam). A process heater may be either indirect or direct-fired, dependent upon whether the gases of combustion mix with and exhaust to the same stack or vent (direct-fired) with gases emanating from the process material or not (indirect-fired). Emissions from indirect-fired units consist entirely of products of combustion while emissions from direct-fired units are unique to the given process and may vary widely in any industrial process. A process heater is not an oven or kiln used for drying, curing, baking, cooking, calcining, or vitrifying.
- 215 **RATED HEAT INPUT CAPACITY:** The heat input capacity in million Btu/hr. as specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified so that its maximum heat input is different than the heat input capacity on the nameplate (design heat capacity), the maximum heat input shall be considered as the rated heat input capacity.
- 216 **REGENERATIVE CYCLE GAS TURBINE:** Any stationary gas turbine that recovers thermal energy from the exhaust gases and utilizes the thermal energy to preheat air prior to entering the combustor.
- 217 **RESIDUAL OIL:** The heavier oils that remain after the distillate oils and lighter hydrocarbons are distilled off in refinery operations. This includes crude oil or fuel oil numbers 1 and 2 that have a nitrogen content greater than 0.05% by weight, and all fuel oil numbers 4, 5 and 6, as defined by the American Society of Testing and Materials in ASTM D396-01, “Standard Specifications for Fuel Oils”.
- 218 **SIMPLE CYCLE GAS TURBINE:** Any stationary gas turbine that does not recover heat from the gas turbine exhaust gases to preheat the inlet combustion air to the gas turbine, or that does not recover heat from the gas turbine exhaust gases to heat water or generate steam.
- 219 **STATIONARY GAS TURBINE:** Any simple cycle gas turbine or regenerative gas turbine that is not self-propelled or that is attached to a foundation.
- 220 **STEAM GENERATING UNIT:** An external combustion unit or boiler fired by fossil fuel that is used to generate hot water or steam. The hot water or steam is then used as energy for driving another process or piece of equipment.
- 221 **SULFUR OXIDES (SO_x):** The sum of the oxides of sulfur emitted from the flue gas from a combustion unit that are directly dependent upon the amount of sulfur in the fuel used.
- 222 **UNCOMBINED WATER:** Condensed water containing no more than analytical trace amounts of other chemical elements or compounds.
- 223 **WASTE DERIVED FUEL GAS:** Any gaseous fuel that is generated from the biodegradation of solid or liquid waste including but not limited to, sewage sludge, digester gas, and landfill gas.
- 224 **WATER HEATER:** A closed vessel in which water is heated by combustion of fuel and water is either withdrawn for use external to the vessel (at pressures not exceeding 160 psi with all controls and devices preventing water temperatures from exceeding 210°F) or used for radiant heat. Water heaters are usually no larger than 1 MM Btu/hr as opposed to boilers, do not reach temperatures of 220°F and higher that boilers can reach, and are not manufactured to meet boiler codes.



SECTION 300 – STANDARDS

301 LIMITATIONS – PARTICULATE MATTER:

301.1 Limitation-Liquid Fuels: An ~~owner or operator~~ owner and/or operator shall not discharge, cause or allow the discharge of particulate matter emissions, caused by combustion of non-gaseous liquid fuels or a blend of liquid fuels with other fuels in excess of 0.10 lbs. per MMBtu from any combustion units listed in ~~subsections 102.1, 102.3 and 102.4~~ Sections 102.1, 102.3, and 102.4 of this rule with either a rated heat input capacity or heat input of greater than 100 MM Btu/hr.

301.2 Particulate Matter Testing: A backhalf analysis shall be performed, using Reference Method 202 referenced in ~~subsection 504.6~~ Section 504.6 of this rule, each time a compliance test for particulate matter emissions to meet the standards in ~~subsection 301.1~~ Section 301.1 of this rule is performed using Method 5. (The results of the Method 202 testing shall be used for emissions inventory purposes).

301.3 Good Combustion Practices for Turbines: An ~~owner or operator~~ owner and/or operator of a stationary gas turbine listed in ~~subsection 102.2~~ Section 102.2 of this rule, regardless of fuel type or size, shall use operational practices recommended by the manufacturer and parametric monitoring that ensure good combustion control. One of the following procedures may be used:

- Monitor the maximum temperature differential across the combustion burners or at locations around the back end of the turbine, dependent upon the particular unit, to ensure no more than a 100° F difference using a thermocouple. If a valid maximum temperature differential of greater than 100° F is observed across the burners, investigation and corrective action shall be taken within three hours to either reduce the temperature difference to 100° F or less, or
- If the manufacturer recommends that the maximum numerical temperature differential to ensure good combustion is a temperature that is greater than 100°F, then proof of this maximum alternate temperature shall be submitted to the Control Officer. The procedure to measure the maximum temperature differential listed above in ~~subsection 301.3a~~ Section 301.3(a) of this rule shall then be followed using the alternate recommended maximum temperature differential after approval by the Control Officer.
- If a repetitive pattern of failure to meet the proper temperature differential of 100°F or to meet the alternate temperature differential recommended by the manufacturer indicates that the turbine is not being operated in a manner consistent with good combustion practices, then the Control Officer may require the owner or operator to submit a Corrective Action Plan (CAP).

302 LIMITATIONS – OPACITY: ~~No owner or operator shall~~ An owner and/or operator shall not discharge into the ambient air from any single source of emissions any air contaminant, other than uncombined water, in excess of 20% opacity.

303 LIMITATIONS – SULFUR IN FUEL: An ~~owner or operator~~ owner and/or operator of any applicable equipment listed in Section 102 of this rule that burns liquid fuel oil or a mixture or blend of fuel oil with any other fuels shall use only low sulfur oil. An owner or operator using waste derived fuel gas shall use only waste derived fuel gas with a sulfur content less than or equal to 800 ppm (0.08%).

304 LIMITATIONS – NITROGEN OXIDES:

304.1 An ~~owner or operator~~ owner and/or operator of any combustion equipment listed in Section 102 of this rule, except gas turbines, with a heat input of greater than 10 MMBtu/hr to 100 MMBtu/hr; ~~except gas turbines,~~ shall comply either with (a) or (b) ~~below~~ Sections 304.1(a) or 304.1(b) of this rule. Gas Turbines are subject to both Section 304.1(a) and 304.1(b) of this rule below:

- Establish initial optimal baseline concentrations for NO_x and CO within 90 days of the first usage of the combustion equipment utilizing the initial design burner specifications or manufacturer's recommendations to ensure good combustion practices. Tune the unit annually in accordance with good combustion practices or a manufacturer's procedure, if applicable, that will include the following at a minimum:



- (1) Inspect the burner system and clean and replace any components of the burner as necessary to minimize emissions of NO_x and CO; and
 - (2) Inspect the burner chamber for areas of impingement and remove if necessary; and
 - (3) Inspect the flame pattern and make adjustments as necessary to optimize the flame pattern; and
 - (4) Inspect the system controlling the air-to-fuel ratio and ensure that it is correctly calibrated and functioning properly; and
 - (5) Measure the NO_x and the CO concentration of the effluent stream after each adjustment was made with a handheld portable monitor to ensure optimal baseline concentrations are maintained or
- b. Limit nitrogen oxide emissions to no more than the following amounts:
- ~~(1) 155 ppm calculated as nitrogen dioxide, when burning gaseous fuel. During steady state operations, this test result using EPA Reference Method(s) 7 shall be based upon the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample run time of one hour.~~
 - ~~(2) 230 ppm calculated as nitrogen dioxide, when burning liquid fuel. During steady state operations, this test result using EPA Reference Method(s) 7 shall be based upon the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample run time of one hour.~~
 - (1) **Emission Limits–Gaseous Firing:** An owner and/or operator shall not allow the discharge into the atmosphere, when burning gaseous fuel from any steam generating unit, stationary gas turbine, cogeneration steam generating unit, and indirect- process heater operating less than 877 hours within a calendar year and with an annual heat input rate greater than 10 MMBtu/hr (2.9 MW), oxides of nitrogen (NO_x) emissions in excess of 42 parts per million volume (ppmv) , corrected to 15 percent oxygen (O_2) when firing on gaseous fuels.
 - (2) The NO_x emissions from any steam generating unit, stationary gas turbine, cogeneration steam generating unit, and indirect- process heater operated 877 hours or more per calendar year with a rated unit size output greater or equal to 10 MMBtu/hr (2.9 MW), without SCR installed, shall not exceed 15 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O_2) when firing on gaseous fuels.
 - (3) The NO_x emissions from any steam generating unit, stationary gas turbine, cogeneration steam generating unit, and indirect- process heater operated 877 hours or more per calendar year with a rated unit size output greater or equal to 10 MMBtu/hr (2.9 MW), with SCR installed, shall not exceed 9 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O_2) when firing on gaseous fuels.
 - (4) **Emission Limits-Nongaseous Fuel Firing:** An owner and/or operator shall not allow the discharge into the atmosphere, when burning nongaseous fuel from any steam generating unit, stationary gas turbine, cogeneration steam generating unit, indirect- process heater operating less than 877 hours within a calendar year and with an annual heat input rate greater than 10 MMBtu/hr (2.9 MW), oxides of nitrogen (NO_x) emissions in excess of 65 parts per million volume (ppmv), corrected to 15 percent oxygen (O_2) when firing on liquid fuels.
 - (5) The NO_x emissions from any steam generating unit, stationary gas turbine, cogeneration steam generating unit, and indirect- process heater operated 877 hours or more per calendar year with a rated unit size output greater or equal to 10 MMBtu/hr (2.9 MW), without SCR installed, shall not exceed 42 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O_2) when firing on liquid fuels.
 - (6) The NO_x emissions from any steam generating unit, stationary gas turbine, cogeneration steam generating unit, and indirect- process heater operated 877 hours or more per calendar year with a rated unit size output greater or equal to 10 MMBtu/hr (2.9 MW),



with SCR installed, shall not exceed 25 parts per million by volume on a dry basis, corrected to 15 percent oxygen (O₂) when firing on liquid fuels.

**TABLE 1:
 SUMMARY OF LIMITATION REQUIREMENTS IN SECTION 304.1(B) OF THIS RULE**

Rule Reference	Time of Operation (hr/yr)	Unit Size Rating	NO _x Emission Limit (ppmv)	
		MMBtu/hr	Gaseous Fuel	Liquid Fuel
<u>304.1(b)(1) And 304.1(b)(5)</u>	<u><877</u>	<u>> 10</u>	<u>42</u>	<u>65</u>
<u>304.1(b)(2) And 304.1(b)(6)</u>	<u>≥877</u>	<u>≥10.0 (no SCR)</u>	<u>15</u>	<u>42</u>
<u>304.1(b)(3) And 304.1(b)(7)</u>	<u>≥877</u>	<u>≥10.0 (w SCR)</u>	<u>9</u>	<u>25</u>

- c. For simple gas turbines, the nitrogen oxides shall be measured dry and corrected to 15% oxygen. For all other combustion equipment, the nitrogen oxides shall be measured dry and corrected to 3% oxygen.

304.2 ~~An owner or operator~~ owner and/or operator of any combustion equipment, listed in Section 102 of this rule, with a heat input greater than 100 MMBtu/hr, shall:

- a. Tune the equipment every 6 months with good combustion practices or a manufacturer’s procedure that at a minimum includes the procedures listed in ~~subsection 304.1a~~ Section 304.1(a) of this rule and;
- b. Meet the NO_x emission limits as stated in ~~subsection 304.1b~~ Section 304.1(b) of this rule.

305 **LIMITATIONS-CARBON MONOXIDE:** ~~No owner or operator~~ An owner and/or operator of any equipment listed in Section 102 of this rule with a heat input greater than 100 MM Btu/hr shall not cause to be discharged into the atmosphere, carbon monoxide (CO), measured in excess of 400 ppmv at any time. This test result, using EPA Reference Method 10, shall be based upon the arithmetic mean of the results of three test runs and shall be measured during steady state compliance source testing. Each test run shall have a minimum sample time of one hour. For simple gas turbines, the CO shall be measured dry and corrected to 15% oxygen. For all other combustion equipment, the CO shall be measured dry and corrected to 3% oxygen.

306 **REQUIREMENTS FOR AIR POLLUTION CONTROL EQUIPMENT AND ECS MONITORING EQUIPMENT:**

306.1 Emission Control System Required: For affected operations which may exceed any of the applicable standards set forth in Sections 300 of this rule, an owner or operator may comply by installing and operating an emission control system (ECS).

306.2 Providing and Maintaining ECS Monitoring Devices: ~~No owner or operator~~ An owner and/or operator required to use an approved ECS pursuant to this rule shall not do so without first providing, properly installing, operating, and maintaining in calibration and in good working order, devices for indicating temperatures, pressures, transfer rates, rates of flow, or other operating conditions necessary to determine if air pollution control equipment is functioning properly and is properly maintained as described in an approved O&M Plan.

306.3 Operation and Maintenance (O&M) Plan Required For ECS:

- a. **General Requirements:** ~~An owner or operator~~ owner and/or operator shall provide and maintain an O&M Plan for any ECS, any other emission processing equipment, and any ECS monitoring devices that are used pursuant to this rule or an air pollution permit.
- b. **Approval by Control Officer:** ~~An owner or operator~~ owner and/or operator shall submit to the Control Officer for approval the O&M Plans of each ECS and each ECS monitoring device that is used pursuant to this rule.
- c. **Initial Plans:** ~~An owner or operator~~ owner and/or operator that is required to have an O&M Plan pursuant to this rule shall comply with all O&M Plans that the ~~owner or operator~~ owner and/or operator has submitted for approval, but which have not yet been approved, unless notified by the Control Officer in writing. Once the initial plan has been approved in writing



by the Control Officer, an ~~owner or operator~~ owner and/or operator shall comply with this approved plan.

- d. **Revisions to Plan:** If revisions to the initial plan have been approved by the Control Officer in writing, an ~~owner or operator~~ owner and/or operator shall comply with the revisions to the initial plan. If revisions to the plan have not yet been approved by the Control Officer in writing, then an ~~owner or operator~~ owner and/or operator shall comply with the most recent O&M plan on file at Maricopa County Air Quality Department.
- e. **Control Officer Modifications to Plan:** After discussion with the ~~owner or operator~~ owner and/or operator, the Control Officer may modify the plan in writing prior to approval of the initial O&M plan. An ~~owner or operator~~ owner and/or operator shall then comply with the plan that has been modified by the Control Officer.

SECTION 400 – ADMINISTRATIVE REQUIREMENTS (NOT APPLICABLE)

401 COMPLIANCE SCHEDULE: An owner and/or operator of any steam generating unit, stationary gas turbine, cogeneration steam generating unit, and indirect- process heater subject to Sections 301 or 302 of this rule on or after [date of adoption] shall comply with this rule in accordance with the following schedules.

401.1 Except as provided in Sections 401.2 and 401.3 of this rule, for steam generating units, stationary gas turbines, cogeneration steam generating units, and indirect- process heaters installed prior to [date of adoption] and permit application deemed complete by the Control Officer prior to [date of adoption], or installed after [date of adoption] and permit application deemed complete prior to [date of adoption] shall follow the compliance schedule in Table 2:

TABLE 2:

<u>Number of Units subject to Section 304</u>	<u>Number of these Units required to be in full compliance by [12 months after rule adoption]</u>	<u>Number of these Units required to be in full compliance by [24 months after rule adoption]</u>	<u>Number of these Units required to be in full compliance by [36 months after rule adoption]</u>
<u>1 or 2</u>	<u>1</u>	<u>2</u>	<u>N/A</u>
<u>3</u>	<u>1</u>	<u>2</u>	<u>3</u>
<u>4</u>	<u>2</u>	<u>3</u>	<u>4</u>
<u>5 or 6</u>	<u>2</u>	<u>4</u>	<u>6</u>
<u>More than 6</u>	<u>25% of these units</u>	<u>75% of these units</u>	<u>100% of these units</u>

Note: Full Compliance identifies the date by which the owner shall demonstrate that each steam generating unit, stationary gas turbine, cogeneration steam generating unit, or indirect- process heater is in compliance with this rule.

401.2 For steam generating unit, stationary gas turbine, cogeneration steam generating unit, and indirect-process heater installed after [date of rule adoption] and permit application deemed complete by the Control Officer after [date of rule adoption]: date of installation.

401.3 For steam generating unit, stationary gas turbine, cogeneration steam generating unit, and indirect-process heater installed prior to [date of rule adoption] and permit application deemed complete by the Control Officer after [date of rule adoption]: [12 months after rule adoption].

SECTION 500 – MONITORING AND RECORDS

501 RECORDKEEPING AND REPORTING: An ~~owner or operator~~ owner and/or operator subject to this rule shall comply with the requirements set forth in this section. Any records and data required by this section shall be kept on site at all times in a consistent and complete manner and be made available without delay to the Control Officer or his designee upon request. Records shall consist of the following information:

501.1 Equipment Listed In Section 102 of this Rule: Type of fuel used, amount of fuel used, and amount of sulfur in the fuel if using liquid fuel, and the days and hours of operation.



- 501.2 Emergency Fuel Usage:** Monthly records of: type of emergency fuel used, dates and hours of operation using emergency fuel, and nature of the emergency or purpose for the use of the emergency fuel as stated in ~~subsections 104.1 and 104.2~~ Sections 104.1 and 104.2. Yearly records of the twelve month log of hours of operation in the emergency mode.
- 501.3 Good Combustion Practice:** Measurements of the temperature differential across the burners of turbines per ~~subsection 301.3~~ Section 301.3 of this rule, results of evaluation and corrective action taken to reduce the temperature differential or a finding that the temperature differential returned to the range listed in ~~subsection 301.3 (a) or (b)~~ Sections 301.3(a) or 301.3(b) of this rule without any action by the ~~owner or operator~~ owner and/or operator.
- 501.4 Tuning Procedure:** Date that the procedure was performed on the particular unit and at a minimum: stack gas temperature, flame conditions, nature of the adjustment and results of the nitrogen oxide and carbon monoxide concentrations obtained by using a handheld monitor after each adjustment.
- 502 RECORDS RETENTION:** Copies of reports, logs and supporting documentation required by the Control Officer shall be retained for at least 5 years. Records and information required by this rule shall also be retained for at least 5 years.
- 503 COMPLIANCE DETERMINATION:**
- 503.1 Low Sulfur Oil Verification:**
- An ~~owner or operator~~ owner and/or operator shall submit fuel oil receipts from the fuel supplier indicating the sulfur content of the fuel oil or verification that the fuel oil used meets the 0.05% sulfur limit or the 0.08% limit for landfill or digester gas if requested by the Control Officer, or
 - If fuel receipts are not available, an ~~owner or operator~~ owner and/or operator shall submit a statement of certification or proof of the sulfur content of the fuel oil from the supplier to the Control Officer, or
 - An ~~owner or operator~~ owner and/or operator may elect to test the fuel oil for sulfur content in lieu of certification from the fuel supplier or fuel receipts using one of the test methods incorporated by reference in ~~subsections 504.11, 504.12, 504.14 or 504.15~~ Sections 504.11, 504.12, 504.14, or 504.15 of this rule.
- 503.2 Gaseous Emissions-Source Test:**
- Compliance with the NO_x and CO emission requirements and the stack gas oxygen requirements of Sections 301 through 304 of this rule shall be determined using the test methods specified below. All emissions determinations shall be made during normal operating conditions, except no compliance determination shall be established during unit startup or shutdown. Tests shall be conducted while units are operating at a firing rate that is as close as physically possible to the unit's rated heat input capacity. Tests shall be conducted for three 60 minute runs. Results shall be averaged over the three test periods. Test reports shall include the operational characteristics of all flue-gas NO_x reduction equipment.
 - Oxide of Nitrogen - EPA Method 7E.
 - Carbon Monoxide - EPA Method 10.
 - Stack Gas Oxygen - EPA Method 3A.
 - Carbon Dioxide - EPA Method 3A.
 - A scheduled source test may not be discontinued solely due to the failure of one or more runs to meet applicable standards.
 - In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of one of the following reasons, then compliance may be determined using the average of the other two runs:
 - Forced shutdown; or



- (2) Failure of an irreplaceable portion of the sampling train; or
- (3) Extreme meteorological conditions presenting a hazard to the sampling team; or
- (4) Other circumstances beyond the owner or operators control as determined by the Control Officer.

- d. A source test not conducted pursuant to the source test methods listed in Section 501.1(a) of this rule may be rejected and the test report determined to be invalid.

503.3 Gaseous Emissions-Continuous Emission Monitoring System (CEMS): Compliance with NO_x emission requirements specified in Sections 301 through 304 of this rule may also be determined using CEMS. All emissions determinations shall be made in the as-found operating condition, except no compliance determination shall be established during unit startup or shutdown. Where the unit(s) are equipped with CEMS:

- a. **General:** All CEMS must be installed according to the procedures specified in 40CFR60.13g. All CEMS shall be installed such that a representative measurement of emissions is obtained. Additional procedures for the location of CEMS found in 40CFR60 Appendix B shall be used. The data recorder for CEMS shall be in operation at all times the unit is operated.
- b. **Cycle Time:** An owner and/or operator of any unit using a continuous emission monitoring system (CEM) shall ensure that the CEM system completes a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15 minute period.
- c. **Calibration:** Zero and span shall be checked once every 24 hours. The CEMS shall be calibrated in accordance with the manufacturer's specifications.
- d. **Averaging:** The data recorded during periods of calibration checks, zero and span adjustments shall not be included in averaging for compliance determinations. Compliance shall be determined on an hourly basis using the average of the 3 previous 1 hour average emissions concentrations. The 1-hour average emissions concentration shall be determined from at least two data points recorded by the CEMS.
- e. **Accuracy Testing:** Accuracy testing of Continuous Emission Monitoring Systems shall be conducted using a relative accuracy test audit pursuant to 40CFR60 Appendix F.

504 TEST METHODS ADOPTED BY REFERENCE COMPLIANCE DETERMINATION-TEST

METHODS INCORPORATED BY REFERENCE: The EPA test methods as they exist in the Code of Federal Regulations (CFR) (July 1, 2004), as listed below, are incorporated by reference in Appendix G of the Maricopa County Air Pollution Control Regulations. Copies of test methods referenced in this section are available at the Maricopa County Air Quality Department, 1001 N. Central Avenue, Phoenix, AZ 85004-1942. When more than one test method as listed in ~~subsections 504.11, 504.12, 504.14, or 504.15~~ Sections 504.11, 504.12, 504.14, or 504.15 of this rule is permitted for the same determination, an exceedance of the limits established in this rule determined by any one of the applicable test methods constitutes a violation.

- 504.1** EPA Reference Methods 1 (“Sample and Velocity Traverses for Stationary Sources”), and 1 A (“Sample and Velocity Traverses for Stationary Sources with Small Stacks and Ducts”) (40 CFR 60, Appendix A).
- 504.2** EPA Reference 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”) (40 CFR 60, Appendix A).
- 504.3** EPA Reference Methods 3 (“Gas Analysis for the Determination of Dry Molecular Weight”), 3A (“Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)”), 3B (“Gas Analysis for the Determination of Emission Rate Correction Factor of Excess Air”), and 3C (“Determination of Carbon Dioxide, Methane, Nitrogen and Oxygen from Stationary Sources”) (40 CFR 60, Appendix A).



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- 504.4** EPA Reference Method 4 (“Determination of Moisture Content in Stack Gases”) (40 CFR 60, Appendix A).
 - 504.5** EPA Reference Method 5 (“Determination of Particulate Emissions from Stationary Sources”) (40 CFR 60, Appendix A)
 - 504.6** EPA Reference Method 202 (“Determination of Condensable Particulate Emissions from Stationary Sources”) (40 CFR 51, Appendix M).
 - 504.7** EPA Reference Methods 7 (“Determination of Nitrogen Oxide Emissions from Stationary Sources”), 7A (“Determination of Nitrogen Oxide Emissions form Stationary Sources”), 7B (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Ultraviolet Spectrometry”), 7C (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline-Permanganate Colorimetric Method”), 7D (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline – Permanganate Chromatographic Method”), and 7E (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Instrumental Analyzer Method“), (40 CFR 60, Appendix A).
 - 504.8** EPA Reference Method 9, (“Visual Determination of the Opacity of Emissions from Stationary Sources”) (40 CFR 60, Appendix A).
 - 504.9** EPA Reference Method 10, (“Determination of Carbon Monoxide from Stationary Sources”) (40 CFR 60, Appendix A).
 - 504.10** EPA Reference Method 20, (“Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions From Stationary Gas Turbines”) (40 CFR 60, Appendix A).
 - 504.11** American Society of Testing Materials, ASTM Method D2622-92 or 98, (“Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-Ray Fluorescence Spectrometry”), 1992 or 1998.
 - 504.12** American Society of Testing Materials, ASTM Method D1266-98, (“Standard Test Method for Sulfur in Petroleum Products (Lamp Method)”), 1998.
 - 504.13** American Society of Testing Materials, ASTM Method D2880-00, (“Standard Specification for Gas Turbine Fuel Oils”), 2000.
 - 504.14** American Society of Testing Materials, ASTM Method D4294-90 or 98, (“Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy- Dispersive X-ray Fluorescence Spectrometry”), 1990 or 1998.
 - 504.15** American Society of Testing Materials, ASTM Method D5504-01, (“Standard Test Method for Determination of Sulfur compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence”), 2006.



~~Revised 07/13/88~~
~~Revised 09/21/92~~
~~Revised 06/19/96~~
~~Revised 04/07/99~~
 Revised MM/DD/YY

Revised 07/13/88; Revised 09/21/92; Revised 06/19/96; Revised 04/07/99; Revised MM/DD/YY

**MARICOPA COUNTY
 AIR POLLUTION CONTROL REGULATIONS
 RULE 336**

POLYESTER RESIN AND BOAT MANUFACTURING OPERATIONS, MISCELLANEOUS SURFACE COATING OPERATIONS, INDUSTRIAL ADHESIVES AND PRIMERS,

SECTION 100 – GENERAL

- 101 PURPOSE:** To limit the emission of volatile organic compounds (VOCs) from polyester resin and boat manufacturing operations, surface coating operations, and the application of industrial adhesives and primers.
- 102 APPLICABILITY:** This rule applies to the following types of VOC sources:
- 102.1 Manufacturing and Repair Operations:**
- a. Polyester Resin Operations:** This rule is applicable to the manufacturing, rework, repair, and touch-up of composite products and parts made of resin and gel coats as well as the cleanup, storage, and disposal of solvents used in these operations.
- b. Pleasure Craft and Fiberglass Boat Manufacturing and Repair Operations:** This rule is applicable to all manufacturing, refinishing, repairing, and modification of pleasure craft or fiberglass boat components and structures as well as the cleanup, storage, and disposal of solvents used in these operations.
- 102.2 Surface Coating Operations:** This rule is applicable to surface coating operations listed in Table 4 of this rule that are not more specifically regulated by another rule within Maricopa County Rules 300 to 359; of Regulation III. Examples of The coating operations not regulated by this rule appear in subsection 305.1. are listed in Section 104 of this rule.
- ~~102.1~~ Surface-coating activities regulated under this rule include, but are not limited to, the application of coating, coating preparation/mixing at the facility, and the cleanup of coating application equipment.
- ~~102.2~~ Subsections 305.2 through 305.7 set forth partial or conditional exemptions for certain materials or uses employed by a surface coating operation subject to this rule.
- ~~102.3~~ This rule is not applicable to coatings having a VOC content, minus exempt compounds, of less than 0.15 lb VOC/gal (18g/L) nor to solvents having a VOC content of material less than 0.15 lb VOC/gal.
- 102.3 Industrial Adhesives and/or Adhesive Primers:** This rule is applicable to adhesive and/or adhesive primer usage which includes, but is not limited to, the application of adhesive, adhesive preparation/mixing at the facility, and cleanup of the adhesive application equipment.
- 102.4 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.
- 103 EXEMPTIONS AND BURDEN OF PROOF:** The following are exempt from the VOC limits of this rule (Sections 301 through 303) however an owner and/or operator shall comply with the application methods and



work practices of Sections 305 and 306 respectively as well as the recordkeeping requirements of Section 500 of this rule.

103.1 Exemptions: Polyester Resin and Boat Manufacturing Operations:

a. Polyester Resin Operations:

Exempt-Low VOC Usage: The owner and/or operator of a polyester resin operation can claim a exemption to the VOC limits of this rule if emissions are not more than 1.0 ton VOC /per year, provided the operator keeps the records required to demonstrate exemption status as defined in Section 500 of this rule.

b. Pleasure Craft and Fiberglass Boat Manufacturing and Repair: The following activities are exempt when the requirements described are met:

(1) Life-Saving Craft: Resin productions applied to military vessels, U.S. Coast Guard lifeboats, rescue boats, and other life-saving appliances approved under 46 CFR subchapter Q, or the construction of small passenger vessels regulated by 46 CFR subchapter T are exempt, if applied using non-atomizing application equipment serving as emission control.

(2) Part or Mold Repair and Touch Up: Production and tooling resins, pigmented, clear, and tooling gel coats used for part, mold repair and touch-up are exempt if not exceeding 1 percent by weight of all resin and gel coats used at a facility on a 12-month rolling-average basis.

(3) Pure 100-Percent Vinylester Resin Used for Skin Coats:

Pure, 100-percent resins (blends of vinylester and polyester) used for skin coats are exempt if applied with non-atomizing resin application equipment serving as the emission control and the amount of resin used shall not exceed 5 percent by weight of all resin used at a facility on a 12-month rolling average basis.

103.2 Surface Coating Exemptions: The following surface coating operations are exempt:

a. Exempt VOC Coatings: Coatings having a VOC content, minus exempt compounds, of less than 0.15 lb VOC/gal (18 g/L).

b. ECS Use In Lieu of Equipment or Work Practice: In lieu of meeting an equipment or work practice standard, an owner and/or operator can chose to use an ECS that has a capture efficiency of at least 90% and meets ECS requirements defined in Section 304 of this rule.

c. VOC Coating for Metal Parts: The following coatings are exempt from the provisions of Section 302 of this rule:

Safety-indicating coatings;

Magnetic data storage disk coatings;

Solid-film lubricants;

Electric-insulating and thermal-conducting coatings.

d. VOC Coating for Metal and Plastic Parts: The following coatings are exempt from the provisions of Section 302 of this rule:

Stencil coatings applied on clear or transparent substrates;

Clear or translucent coatings;

Coatings applied at a paint manufacturing facility while conducting performance tests on the coatings;

e. VOC Coating for Plastic or Glass: The following coatings are exempt from the provisions of Section 302 of this rule:



- a. Testing in any research and development, quality assurance, or analytical laboratory; or
- b. Assembly, repair, or manufacture of aerospace or undersea-based weapon systems; or
- c. Medical equipment manufacturing operations; or
- d. Cyanoacrylate adhesive application processes; or
- e. Aerosol adhesive and aerosol adhesive primer application processes; or
- f. Processes supplied to the manufacturer in containers with a net volume of 16 ounces or less, or a net weight of one pound or less; or
- g. Processes using polyester bonding putties to assemble fiberglass parts at fiberglass boat manufacturing facilities and at other reinforced plastic composite manufacturing facilities.

103.4 Bonding Impact Resistant Rubber Lining to Metal: This rule does not apply to bonding sheets/strips of rubber to metal equipment to protect the metal but the sheets shall not have a VOC material content exceeding 850 grams of VOC per liter (7.1 lb/gal) This exception does not apply to any other situations where adhesives are used to bond rubber to metal.

104 TOTAL CATEGORICAL EXEMPTIONS: This rule does not apply to the following operations:

- 104.1 Adhesive Applications for Tire Repair.
- 104.2 Adhesive Applications for Flat Wood Paneling.
- 104.3 Adhesive Applications for Field operations including construction.
- 104.4 Aerospace coating operations (Rule 348).
- 104.5 Architectural coatings including buildings and erected structures (Rule 335).
- 104.6 Cleaning: VOC loss from cleaning or stripping a surface coating (Rule 331).
- 104.7 Printing and graphic arts coating (Rule 337).
- 104.8 Semiconductor manufacturing (Rule 338).
- 104.9 Coating or refinishing a highway vehicle or mobile equipment (Rule 345).
- 104.10 Coating interior or exterior auto parts.
- ~~104.8 Coating automotive and transportation equipment.~~
- ~~104.9 Coating motor vehicle accessories.~~
- 104.11 Coating wood furniture and fixtures (Rule 342).
- 104.12 Coating wood millwork (Rule 346).
- 104.13 Polystyrene Foam Operations (Rule 358).
- 104.14 Rubber Tire Manufacturing.
- 104.15 Marine Vessel exterior refinishing.

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 Definition) 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~~**200.01** **ADHESIVE:** A material used chemical substance that is applied for the primary purpose of bonding two surfaces together other than by mechanical means.

200.02 **ADHESIVE PRIMER:** Any product intended by the manufacturer for application to a substrate, prior to the application of an adhesive, to provide a bonding surface.



- 200.03** **AEROSOL ADHESIVE OR ADHESIVE PRIMER:** An adhesive or adhesive primer packaged as an aerosol product in which the spray mechanism is permanently housed in a non-refillable can designed for handheld application without the need for ancillary hoses or spray equipment.
- ~~202~~ **AEROSOL CAN**—An aerosol coating product which comes in a non-refillable hand held container from which a product is dispensed by means of pressurized propellant packaged within the container.
- 200.04** **AEROSOL CAN-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.
- ~~203~~**200.05** **AIR-DRIED COATING:** A coating which is dried by the use of air or forced warm air at temperatures up to and including 200°F (93.3°C).
- 200.06** **AIRLESS SPRAY:** A system that atomizes principally by hydraulic pressure, including “airless” and “air assisted airless”.
- 200.07** **ATOMIZED RESIN APPLICATION:** Technology that utilizes application equipment that breaks resin into droplets (or aerosol) as it exits application equipment to the surface of the part. Atomized resin application includes, but is not limited to, resin spray guns and resin chopper spray guns.
- ~~204~~**200.08** **BAKED COATING:** A coating that is dried or cured in an oven in which the oven temperature exceeds 200°F (93.3°C).
- 200.09** **BUSINESS MACHINE:** A device that uses electronic or mechanical methods to process information, perform calculations, print or copy information, or convert sound into electrical impulses for transmission, such as:
- (1) Products classified as typewriters under SIC Code 3572;
 - (2) Products classified as electronic computing devices under SIC Code 3573;
 - (3) Products classified as calculating and accounting machines under SIC Code 3574;
 - (4) Products classified as telephone and telegraph equipment under SIC Code 3661;
 - (5) Products classified as office machines, not elsewhere classified, under SIC Code 3579; and
 - (6) Photocopy machines, a subcategory of products classified as photographic equipment under SIC code 3861.
- 200.10** **CAMOUFLAGE COATING:** A coating used, principally by the military, to conceal equipment from detection.
- ~~205~~**200.11** **CAN COATING:** Any coating either used in the production of metal cans-applied to the surface(s) of formed cans or applied at a can making facility to the surface(s) of flat metal sheets or strips that are formed there into cans.
- ~~206~~**200.12** **CAN PRINTING INK:** A fluid or viscous formulation used in can printing that imparts design, pattern, and/or alphanumeric symbols to a can.
- 200.13** **CLEANUP:** The removal of uncured coating from any surface.
- ~~207~~**200.14** **CLEAR COAT:** Any coating which lacks color or opacity or is transparent.
- 200.15** **CLEAR GEL COAT:** Clear (translucent) gel coating used to allow underlying colors or patterns to be visible. Tooling gel coat used to build or repair molds is NOT a clear gel coat.
- 200.16** **CLOSED MOLDING OPERATIONS:** Any molding process in which pressure is used to distribute the resin through the reinforcing fabric placed between two mold surfaces to either saturate the fabric or fill the mold cavity. The pressure may be clamping pressure, fluid pressure, atmospheric pressure, or vacuum pressure used either alone or in combination. The mold surfaces may be rigid or flexible. (Closed molding in fiberglass boat manufacturing is used to make a large



- number of small parts, such as hatches and locker doors, or small numbers of high performance boat hulls.)
- 200.17** **COATING:** A material applied onto or impregnated into a substrate for protective, decorative, or functional purposes.
- 200.18** **COATING APPLICATION EQUIPMENT:** Any spray gun, wand, rollers, brushes or any other means used to apply or cover a surface with a coating for either beauty, protection or other purposes
- 200.19** **COATING LINE:** A coating line is defined as a series of coating applicators, flash-off areas, and any associated curing/drying equipment between one or more unwind/feed stations and one or more rewind/cutting stations.
- ~~208~~**200.20** **COIL COATING:** Any coating applied to the surface(s) of flat metal sheets or strips that are formed into rolls or coils not used to make cans.
- 200.21** **COMPOSITE MATERIALS:** Individual components that, combined, make up the composite product. Composite materials include resins, gel coats, molding compounds, thinners, catalyzing agents, binders, fillers, reinforcement fibers, other reinforcement materials, and any other material added to enhance the properties of the composite product.
- 200.22** **COMPOSITE PRODUCTS:** For the purposes of this Rule, composite products are products that are fabricated from polyester resins and composite materials.
- 200.23** **CONTAINERS:** Containers include but are not limited to drums, buckets, cans, pails, and trays.
- 200.24** **CORROSION-RESISTANT RESIN:** Polyester resin material used to make products for corrosion resistant applications such as, but not limited to, tooling, fuel or chemical tanks, boat hulls, pools and outdoor spas.
- ~~209~~**200.25** **DAY:** A period of 24 consecutive hours beginning at midnight.
- 200.26** **DIP COAT (INCLUDING ELECTRO-DEPOSITION):** A coating application method accomplished by dipping an object into coating.
- 200.27** **DRUM:** A cylindrical metal shipping container larger than 12 gallons capacity but no larger than 110 gallons capacity.
- 200.28** **ELECTRIC DISSIPATING COATING:** A coating that rapidly dissipates a high-voltage electric charge.
- ~~210~~**200.29** **ELECTROSTATIC SPRAY/SYSTEM:** A method of applying atomized paint by electrically charging the coating and the object being coated with opposing charges. A higher proportion of the coating reaches and coats the object than would occur in the absence of a charge.
- ~~211~~**200.30** **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.
- ~~212~~**200.31** **END SEALING COMPOUND:** A compound which is coated onto can ends and functions as a gasket when the end is attached to the can.
- 200.32** **ETCHING FILLER:** A coating that contains less than 23 percent solids by weight and at least ½ percent acid by weight, and is used instead of applying a pretreatment coating followed by a primer.
- ~~213~~**200.33** **EXEMPT EVAPORATING COMPONENTS (EXEMPT COMPOUNDS):** The non-VOC, evaporating portion of a coating formulation; this necessarily includes all non-precursor organic compounds as defined in Rule 100 of these Rules and Regulations, as well as water and other inorganic liquids and gases.
- ~~214~~**200.34** **EXTERIOR CAN BASECOAT:** Any coating applied to the exterior of a can to provide protection for the metal or to provide background for any lithographic or printing operation.



- 200.35** **EXTREME HIGH-GLOSS COATING:** A coating which when tested by the American Society for Testing Material Test Method D-523 adopted in 1980, shows reflectance of 75 or more on a 60° meter.
- ~~215~~**200.36** **EXTREME-PERFORMANCE COATING:** A coating used on a surface where the coated surface in its intended use is at temperatures consistently in excess of 250°F (121°C). Extreme performance coatings include but are not limited to, coatings applied to locomotives, railroads cars, farm machinery, and heavy duty trucks.
- ~~216~~**200.37** **FABRIC:** A textile material. Non-manufactured items from nature are not fabric except for natural threads, fibers, filaments, and similar that have been manufactured into textile fabric.
- ~~217~~**200.38** **FABRIC COATING:** Any decorative or protective coating or reinforcing material applied onto or impregnated into textile fabric.
- 200.39** **FIBERGLASS BOAT MOLDS:** Fiberglass boat manufacturing facilities construct the molds or “tools” that are used to build the separate parts of the fiberglass boat. The production of molds is done using specialized resins and gel coats referred to as tooling resin and gel coat. These differ from production resin and gel coat in that they are harder, more heat resistant, and more dimensionally stable than production materials.
- 200.40** **FIBERGLASS:** A process where the liquid resin is mixed with a catalyst before it is applied to the glass, which causes a cross-linking reaction between the resin molecules. The catalyzed resin hardens to form a rigid shape consisting of the plastic resin reinforced with glass fibers. fiberglass (also known as fiber reinforced plastic or FRP, aluminum, rotationally molded (rotomolded) polyethylene (PLASTIC)).
- 200.41** **FILAMENT APPLICATION:** A method of applying resin to an open mold that involves feeding reinforcement fibers through a resin bath and winding the resin-impregnated fibers on a rotating mandrel.
- 200.42** **FILLER:** A finely divided inert (non-VOC) material, which may be added to the resin to enhance its mechanical properties and extend its volume. Resin fillers include, but are not limited to, silica, carbon black, talc, mica and calcium carbonate.
- 200.43** **FLEXIBLE VINYL:** A non-rigid polyvinyl chloride plastic with at 5 percent by weight plasticizer content.
- 200.44** **FLOW COATING (Flow Coaters):** Flowcoating is a nonatomizing application technique of applying resins and gel coats to an open mold with a fluid nozzle in a fan pattern with no air supplied to the nozzle and the excess coating drains back into the collection system.
- 200.45** **FLUID IMPINGEMENT TECHNOLOGY:** A spray gun that produces an expanding non-misting curtain of liquid by the impingement of low-pressure uninterrupted liquid stream.
- ~~218~~**200.46** **FILM COATING:** Any coating applied in a web coating process on film substrate other than paper or fabric, including, but not limited to, typewriter ribbons, photographic film, magnetic tape, and metal foil gift wrap.
- 200.47** **FINISH PRIMER/SURFACER:** A coating applied with a wet thickness film of 10 mils prior to the application of a topcoat for purposes of providing corrosion resistance, adhesion of subsequent coatings, a moisture barrier, or promotion of a uniform surface necessary for filling in surface imperfections.
- 200.48** **FIRE RETARDANT RESIN:** Polyester resin material used to make products that are resistant to flame or are a low flame spread/low smoke product, as defined in 40 CFR 63.5935.
- 200.49** **FLEXIBLE COATING:** Any coating that is required to comply with engineering specifications for impact resistance, mandrel bend, or elongation as defined by the original equipment manufacturer.
- ~~219~~**200.50** **FLEXIBLE PLASTIC PART OR PRODUCT:** A plastic part or product designed to withstand significant deformation without damaging it for its intended use. Not included are flexible plastic parts that are found on a can, coil, metal furniture, or large appliance, or that are already a part of an



aerospace component, highway vehicle, mobile equipment, architectural building or structure, or a previously coated marine-vessel.

- 200.51 FLOW COATING (FLOW COATERS):** A coating application system, with no air supplied to the nozzle, where paint flows over the part and the excess coating drains back into the collection system.
- 200.52 FLUID IMPINGEMENT TECHNOLOGY:** A spray gun that produces an expanding non-misting curtain of liquid by the impingement of low-pressure uninterrupted liquid stream.
- 200.53 GEL COAT:** A thermosetting polyester resin surface coating, either pigmented or clear, that provides a cosmetic enhancement and improves resistance to degradation from exposure to the elements.
- 200.54 GLOSS REDUCER:** A coating that is applied to a plastic part solely to reduce the shine of the part and is applied at a thickness of less than or equal to 0.5 mils of coating solids.
- 200.55 HEAT-RESISTANT COATING:** A coating that must withstand a temperature of at least 400° during normal use.
- 200.56 HAND APPLICATION METHODS:** Application of coatings by non-mechanical, hand-held equipment including but not limited to paint brushes, hand rollers, caulking guns, trowels, spatulas, syringe daubers, rags, and sponges.
- 200.57 Hand Lay-Up:** Hand Lay-up is a hand application technique of composite materials using a bucket and a paint brush or a paint roller, or other hand held method of application.
- 200.58 HIGH-TEMPERATURE COATING:** A coating that is certified to withstand a temperature of 1000°F for 24 hours.
- 200.59 HIGH-STRENGTH MATERIALS:** These materials are polyester resins which have casting tensile strength 10,000 psi or more and which are used for manufacturing of high performance boats and skis.
- ~~220~~**200.60 HEAT SENSITIVE MATERIAL:** Materials which cannot consistently be exposed to temperatures greater than 203°F (95°C) without materially affecting desired function, performance, or other characteristics.
- HIGH VOLUME-LOW PRESSURE SPRAY EQUIPMENT:** Spray Equipment used to apply coatings which is designed to be operated and is operated between 0.1 and 10.0 pounds per square inch gauge (psig) air pressure measured dynamically at the center of the air cap and at the air horns.
- ~~221~~ **HIGHWAY VEHICLE:** Any vehicle that is physically capable of being driven upon a highway including, but not limited to, cars, pickups, vans, trucks, truck tractors, motor homes, motoreycles, and utility vehicles.
- 200.61 HIGH-VOLUME, LOW-PRESSURE (HVLP) SPRAY:** This is a coating application system which is designed to be operated and which is operated between 0.1 and 10 pounds per square inch gauge (psig) air pressure, measured dynamically at the center of the air cap and the air horns.
- ~~222~~**200.62 INTERIOR BASECOAT:** Any coating applied to the interior of a can to provide a protective lining between the intended contents and the metal shell of the can.
- ~~223~~**200.63 INTERIOR BODY SPRAY:** Any coating sprayed onto the interior of a can to provide a protective film between the intended contents and the metal shell of the can.
- 200.64 IN USE or HANDLED:** In use or handled means actively engaging the materials with activities such as mixing, depositing, brushing, rolling, padding, wiping or removing or transferring material into or out of the container. Immediately after the operation is completed, the container shall be closed.
- 200.65 LAMINATE:** A product made by bonding together two or more layers of material.
- 200.66 LAMINATION RESINS:** Orthophthalate, isophthalate and dicyclopentadiene (DCPD) resins which are used in composite system made of layers of reinforcement fibers and resins, such as in boat fabrication.



- 224200.67 **LARGE APPLIANCE:** A door, case, lid, panel, or interior support part of residential and commercial washers, dryers, ranges, refrigerators, freezers, water heaters, dishwashers, trash compactors, air conditioners, evaporative coolers, and other similar products.
- 225 **LOW PRESSURE SPRAY GUN:** An air atomized spray gun that, by design, functions best at tip pressures below 10 psig (516 mm Hg), measured according to Section 503.1d of this rule, and for which the manufacturer makes no claims to the public that the gun can be used effectively above 12 psig (619 mm Hg).
- 200.68 **LIFE-SAVING CRAFT:** Military vessels, U.S. Coast Guard lifeboats, rescue boats, and other life-saving appliances approved under 46 CFR subchapter Q, or the construction of small passenger vessels regulated by 46 CFR subchapter T.
- 200.69 **MARBLE OR CULTURED RESINS:** Orthophthalate and modified acrylic isophthalate resins used for the fabrication of cast products.
- 200.70 **MARINE VESSEL:** Any tugboat, tanker, freighter, passenger ship, barge, or other boat, ship or watercraft except those used primarily for recreation. This includes both salt water and fresh water vessels.
- 226200.71 **METAL FURNITURE:** Any furniture made of metal or any metal part which will be assembled with other parts made of metal or other material(s) to form a furniture piece.
- 200.72 **METALLIC COATING:** A coating which contains more than 5 grams of metal particles per liter of coating as applied.
- 200.73 **MILITARY SPECIFICATION COATING:** A coating that has a formulation that has been approved by a United States Military Agency for use on military equipment.
- 227200.74 **MINUS EXEMPT COMPOUNDS or MINUS EXEMPT EVAPORATING COMPONENTS:** See VOC Content Minus Exempt Compounds.
- 228200.75 **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 (wheel tractor, plow, pesticide sprayer); hauling equipment (truck trailers, utility bodies, camper shells); and miscellaneous equipment (street cleaners, mopeds, golf carts).
- 200.76 **MOLD-SEAL COATING:** The initial coating applied to a new mold or a repaired mold to provide a smooth surface which, when coated with a mold release coating, prevents products from sticking to the mold.
- 200.77 **MONOMER:** A volatile organic compound that partially combines with itself, or other similar compounds, by a cross-linking reaction to become a part of the cured resin or gel coat. A fraction of each monomer compound evaporates during resin and gel coat application and curing. Styrene and methacrylate (MMA) are the primary monomer VOC we have identified in the resins and gel coats used in fiberglass boat manufacturing.
- The resins contain styrene and the gel coats contain both compounds. In the remainder of this rule the monomers in resins and gel coats are referred to as monomer VOC.
- 200.78 **MONOMER PERCENT BY WEIGHT OF A RESIN:** the weight of the monomer, divided by the weight of the polymer.
- 200.79 **MULTI-COMPONENT COATING:** A coating requiring the addition of one or more separate reactive resins, commonly known as catalysts or hardeners, prior to application to form an acceptable dry film.
- 229200.80 **ORGANIC COMPOUND:** Any compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, carbonates, and metallic carbides. **ONE-COMPONENT COATING:** Any coating that is ready for application as it comes out of its container to form an acceptable dry film. A thinner or reducer, necessary to reduce the viscosity, is not considered a component.



- 200.81** **NON-ATOMIZING SPRAY APPLICATION EQUIPMENT:** Any application technique in which resin flows from the applicator, in a steady and observable coherent flow, without droplets, for a minimum distance of three (3) inches from the applicator orifices. Non-Atomized mechanical application means the use of application tools other than buckets and brushes to apply resin and gel coat. Examples of non-atomized application include flow coaters, pressure-fed rollers, and fluid impingement spray guns which can be a low pressure chopper gun.
- 200.82** **OPEN MOLDING:** Open molding System is a method of fabricating composite parts by applying gel coats, resins, fibers, and other composite materials on an open mold using either hand lay-up or spray-up applications. Boats made from fiberglass are typically manufactured in open molding. Separate molds are typically used for the boat hull, deck, and miscellaneous small fiberglass parts (also known as fiber reinforced plastic or FRP). Examples of FRP parts are fuel tanks, seats, storage lockers, and hatches.
- ~~230~~**200.83** **OTHER METAL PARTS AND PRODUCTS:** Any metal part or product, excluding the following items that are made of metal: can, coil, furniture, large appliance, aerospace component, metal foil, metal textile fabric, semiconductor metal, highway vehicle, mobile equipment, an architectural building or structure, a previously coated marine-vessel.
- ~~234~~**200.84** **OVERVARNISH:** Any coating applied to a can to reduce the coefficient of friction, to provide gloss, or to protect the finish against abrasion and/or corrosion.
- ~~232~~**200.85** **PAPER, FILM, AND FOIL, COATING:** Any coating applied on or impregnated into paper, including, but not limited to, adhesive tapes ~~and labels~~, book covers, post cards, office copier paper, ~~and drafting paper and pressure sensitive tapes~~. For decorative, protective, or functional purposes. Such materials include, but are not limited to, solvent-borne coatings, waterborne coatings, adhesives, wax coatings, wax laminations, extrusion coatings, extrusion laminations, 100 percent solid adhesives, UV cured coatings, electron beam cured coatings, hot melt coatings, and cold seal coatings. Materials used to form unsupported substrates, such as calendaring of vinyl, blown film, cast film, extruded film, and co-extruded film, are not considered coatings.
- 200.86** **PIGMENTED GEL COATS:** Used when a solid color surface is desired. Most gel coats are pigmented. Clear gel coats do not have any pigments and usually have a higher VOC content than pigmented gel coats.
- ~~233~~**200.87** **PLASTIC:** A substrate containing one or more resins and may be solid, porous, flexible, or rigid. Plastics include fiber reinforced plastic composites. Any solid, synthetic: resin, polymer, or elastomer, except rubber. For the purposes of this rule, plastic film is considered film; fabric and paper made of polymeric plastic fibers are considered fabric and paper, respectively.
- 200.88** **PLEASURE CRAFT:** Any marine or fresh-water vessel used by individuals for noncommercial, nonmilitary, and recreational purposes that is less than 20 meters (78.7 feet) in length. A vessel rented exclusively to or chartered by individuals for such purposes shall be considered a pleasure craft as defined in 40 C.F.R. § 63.782.
A definition of ship specifically refers to the use of the vessel for military or commercial activities.
- 200.89** **PLEASURE CRAFT COATING:** Any marine coating, except unsaturated polyester resin (fiberglass) coatings, applied by brush, spray, roller, or other means to a pleasure craft.
- ~~234~~ **POLYESTER AND POLYESTER RESIN:** A complex, polymeric ester containing difunctional acids. Polyester resins can be isophthalic, orthophthalic, halogenated, bisphenol A, vinyl ester, furans, cross-linking agents, catalysts, gel coats, inhibitors, accelerators, promoters and any other material containing VOC used in polyester resin operations.
- ~~235~~**200.90** **POLYESTER COMPOSITE:** Cured material made of polyester resin with reinforcing material imbedded in it, such as glass fibers.
- 200.91** **POLYESTER:** A polymer of ester molecules, which are formulated by the reaction of an acid and an alcohol and linked together by the ester linkages, which is dissolved in a monomer



- 200.92** **POLYESTER RESIN MATERIALS:** Unsaturated polyester resins, such as Isophthalic, orthophthalic, halogenated, bisphenol A, vinyl ester, or furan resins; cross-linking agents; catalysts; gel coats; inhibitors; accelerators; promoters; and any other material containing VOC used in polyester resin operations.
- 200.93** **POLYESTER RESIN PUTTIES:** Fiberglass or fiber reinforced plastic (FRP) parts of the boat assembly are small pieces of woven glass or glass mat and resin, putties, or mechanical fasteners which are used assemble fiberglass parts and to fill gaps between parts. These polyester resins are mixed with fillers to create putty. The putty becomes part of the composite structure. The putties may be applied by hand, or by using mechanically powered equipment similar to a large caulking gun. These polyester resin putties used to assemble fiberglass parts are not considered adhesives.
- 200.94** **POWDER COATING:** Any material applied as a dry (without carrier) finely divided solid which, when melted and fused, adheres to the substrate as a paint film.
PRESSURE-FED ROLLER: This is a fabric roller that is fed with continuous supply of catalyzed resins from a mechanical fluid pump.
- ~~257~~ **PREFABRICATED ARCHITECTURAL COMPONENT COATING:** A coating applied to metal parts and products which are to be used as an architectural structure.
- ~~258~~ **PRESSURE SENSITIVE LABEL:** A flexible strip of paper or other material that is coated on one side with a permanently tacky adhesive which will adhere to a variety of surfaces with light pressure.
- ~~259~~ **PRESSURE SENSITIVE TAPE:** A flexible backing material with a pressure sensitive adhesive coating on one or both sides of the backing such as duct tape, duct insulation tape and medical tape.
- 200.95** **PRETREATMENT COATING:** A coating which contains no more than 12 percent solids by weight, and at least 1/2 percent acid, by weight, is used to provide surface etching, and is applied directly to metal surfaces to provide corrosion resistance, adhesion and ease of stripping.
- ~~236~~**200.96** **PRIMER:** A coating applied directly to substrate for any one or combination of the following purposes: corrosion prevention, protection from the environment, functional fluid resistance, or adhesion of subsequent coatings.
- 200.97** **PULTRUSION:** A process where continuous roving strands are moved through a strand-tensioning device into a resin bath for impregnation and then passed through a heated die for curing.
- ~~237~~**200.98** **QUALITY CLASS Q:** Any system, structure, coating or other component which, if defective or inoperable, could cause or increase the severity of a nuclear incident, thereby imposing undue risk to the health and safety of the public.
- 200.99** **REINFORCED PLASTIC COMPOSITE:** A composite material consisting of plastic reinforced with fibers.
- 200.100** **RUBBER:** Any natural or manmade rubber substrate, including but not limited to, styrene-butadiene rubber, polychloroprene (neoprene), butyl rubber, nitrile rubber, chlorosulfonated polyethylene and ethylene propylenediene terpolymer.
- ~~238~~**200.101** **REFINISHING:** Recoating a used object's surface which arrives at the refinisher with a coating or with a previous coating worn away by use.
- ~~239~~**200.102** **REPAIR COATING:** A coating or coating operation used to recoat the portion of a completed finish that suffered post-production damage at the facility where the finish was applied.
- 200.103** **REPAIR:** Addition of polyester resin to portions of a previously fabricated product in order to mend mechanical damage which occurs after the normal fabrication process.
- 200.104** **RESIN:** Class polymers used to encapsulate and bind together reinforcement fibers in the construction of fiberglass parts or bind together reinforcement fibers and/or fillers in the formulation of composite materials. A resin includes any class of organic polymers of natural or synthetic origin used in these reinforced products and is solid or semi-solid in the cured state.



- 200.105** **RESIN IMPREGNATOR:** A mechanical non-atomizing composite materials application technique in which fiber reinforcement is saturated with resins in a controlled ratio for each specific composite product.
- ~~240~~**200.106** **RESTRICTED SPRAY GUN:** Any air-atomizing spray gun that is not a low pressure spray gun, and any other coating gun that is not on the list in ~~Section 303.4~~Section 302 of this rule.
- 200.107** **ROLL COAT (Resin Rollers):** A coating application method accomplished by rolling a coating only a flat surface using a roll applicator.
- 200.108** **SEALANT:** Any material with adhesive properties that is formulated primarily to fill, seal, or waterproof gaps or joints between two surfaces and includes primer and caulks.
- 200.109** **SHOCK-FREE COATING:** A coating applied to electrical components to protect the user from electric shock. The coating has characteristics of being of low capacitance and high resistance, and having resistance to breaking down under high voltage.
- ~~241~~**200.110** **SILICONE RELEASE COATING:** Any resin coating the major cured portion of which is silicone resin, having as its primary function the release of food products from metal surfaces such as baking pans.
- 200.111** **SKIN COAT:** Layer of resin and fibers applied over gel coat to protect the gel coat from deformation by the subsequent laminate layers.
- ~~242~~**200.112** **SMALL SURFACE COATING SOURCE (SSCS):** A facility from which the total VOC emissions for all surface coating operations that are subject to this rule without, or prior to, any emission control, is less than 15 pounds (6.8 kg) per day and less than 2 tons (1814 kg) per year; as demonstrated by both adequate records of coating and diluent use (~~pursuant~~ according to Section ~~501.2~~ 501.4 of this rule) and a separate tally of the number of days each month that such coating operations occur.
- 200.113** **SOLVENT:** For the purpose of this rule, any liquid or vapor which is used to dissolve, clean, strip, or remove impurities, coatings, contaminants, or films from surfaces or from internal spaces and voids. In addition to VOC-containing solvents, this also includes plain water and mixtures containing water.
- 200.114** **SOLVENT CLEANING:** Removal of loosely held uncured adhesives, uncured inks, uncured coatings, and contaminants which include, but are not limited to, dirt, soil, and grease from parts, products, tools, machinery, equipment, and general work areas. Each distinct method of cleaning in a cleaning process, which consists of a series of cleaning methods, shall constitute a separate solvent cleaning operation.
- 200.115** **SPRAY-APPLIED COATING 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:
- a.** 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;
 - b.** 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.
- 200.116** **STENCIL COATING:** An ink or a coating which is rolled or brushed onto a template or stamp in order to add identifying letters, symbols and/or numbers.
- ~~243~~**200.117** **STRIPPABLE BOOTH COATING:** A temporary coating that is applied to spray booth surfaces to receive the overspray and protect the surfaces, and which is designed to readily be pulled off the substrate in strips or sheets, and disposed of.



- ~~244~~**200.118** **SURFACE COATING:** Any liquid, fluid, or mastic composition which is converted to a solid (or semi-solid) protective, decorative, or adherent film or deposit after application as a thin layer. Surface coating is generally distinct and different from impregnation and from applying adhesive for bonding purposes.
- ~~245~~**200.119** **SURFACE COATING OPERATION:** Preparation, handling, mixing, and application of surface coating, and cleanup of application-equipment and enclosures at a facility where surface coating is applied.
- ~~246~~**200.120** **THREE-PIECE CAN SIDE-SEAM COAT SPRAY COATING:** Any coating sprayed onto the interior and/or exterior of a can body seam on a three-piece can to protect the exposed metal.
- 200.121** **TIRE REPAIR:** A process that includes expanding a hole, tear, fissure or blemish in a tire casing by grinding or gouging, applying adhesive and filling the hole or crevice with rubber.
- 200.122** **TOOLING RESIN:** A resin that is used to produce molds. Tooling resins generally more heat resistant (have higher heat distortion temperatures), low shrinkage, higher hardness, and higher dimensional stability than the production materials or outer surface coatings.
- ~~247~~**200.123** **TOPCOAT:** The final, permanent, coating-formulation that completed the finish on a surface.
- ~~248~~**200.124** **TOTAL VOC VAPOR PRESSURE (VOC COMPOSITE PARTIAL PRESSURE):** The sum of the partial pressures of the compounds defined as VOCs, calculated according to the formula in Section 504 of this rule.
- ~~249~~**200.125** **TOUCH-UP COATING:** A coating used to cover minor coating imperfections after the main coating operation. This includes touch-up coating that accompanies the purchase of an object already coated with that coating.
- 200.126** **TRANSFER EFFICIENCY:** The ratio of the weight of coating solids adhering to the part being coated to the weight of coating solids used in the application process expressed as a percentage.
- ~~250~~**200.127** **TWO-PIECE CAN EXTERIOR END COAT COATING:** Any coating applied to the exterior end of a can to provide protection to the metal.
- 200.128** **TUB/SHOWER RESINS:** Dicyclopentadiene (DCPD) resins, along with orthophthalate and isophthalate resins, are used to fabricate bathware products.
- 200.129** **VACUUM BAGGING:** A partially closed molding technology using techniques similar to open molding but with a modification in the resin curing stage. After resin decks, but it is not feasible to replace open molding with closed molding at all types of boat manufacturing facilities.
- 200.130** **VAPOR PRESSURE:** Pressure exerted at a uniform temperature by the gas of a substance when the gas is in equilibrium with the liquid (or solid) phase of that substance.
- 200.131** **VOC VAPOR PRESSURE (VOC COMPOSITE PARTIAL PRESSURE):** Sum of the partial pressures of the compounds defined as VOCs, calculated according to the formula in Section 504 of this rule.
- ~~251~~**200.132** **VINYL COATING (COATING ON VINYL):** Any decorative or protective coating or reinforcing coating applied over vinyl-coated textile fabric or vinyl sheets
- ~~252~~**200.133** **VOC BORNE COATING:** ~~A coating that contains more VOC than water, by weight.~~ **VOC - CONTAINING MATERIAL:** Any chemical or item that contains an organic compound that participates in atmospheric photochemical reactions, except the non-precursor organic compounds. This includes but is not limited to rags, waste coatings, waste brushes, waste rollers, waste applicators, waste solvents, and their residues that are used for surface preparation, cleanup or removal of surface coatings.
- ~~253~~ **VOC BORNE DILUENT:** ~~A solvent or other diluent that contains more VOC than water, by weight~~
- ~~254~~**200.134** **VOC CONTENT:** The portion of a chemical or substance in the organic compound that participates in atmospheric photochemical reactions, except for the non-precursor organic compounds. Section 504 of this rule instructs how to calculate the VOC content of a substance.



~~256 VOLATILE ORGANIC COMPOUND (VOC) – Any organic compound which participates in atmospheric photochemical reactions, except non-precursor~~

200.135 VAPOR SUPPRESSANT: A wax substance added to resin for the purpose of forming a layer on the surface of the resin while it is curing and minimize the outward diffusion of monomer vapor into the atmosphere.

200.136 VAPOR SUPPRESSED RESIN (VSR): Polyester resin material which contains additives to reduce VOC evaporation loss to less than fifty (50) grams per square meter of surface area as determined and certified by resin manufacturers.

~~SECTION 300 – STANDARDS~~

~~301 SURFACE COATINGS: A person shall comply with one of the following for all applications of surface coatings:~~

~~301.1 Meet the limits in Table 1.~~

~~301.2 Operate an ECS in accordance with subsection 306.1 when applying a coating that exceeds the VOC limits in Table 1.~~

~~301.3 Qualify for an exemption under Section 305.~~

TABLE 1

SURFACE COATING EMISSION LIMITS		
TYPE OF SURFACE COATING	LIMITS AS APPLIED: VOC content minus exempt compounds (see subsection 255.1)	
Column I	Column II	
	lbs/gal	g/liter
Can Coating		
Sheet Basecoat (Exterior and Interior) and Overvarnish	2.8	340
Two Piece Can Exterior (Basecoat and Overvarnish)	2.8	340
Two and Three Piece Can Interior Body Spray	4.2	510
Two Piece Can Exterior End (Spray or Roll Coat)	4.2	510
Three Piece Can Side Seam Spray	5.5	660
End Sealing Compound	3.7	440
Can Printing Ink	2.5	300
Coil Coating (any coat)	2.6	310
Metal Furniture Coating	3.0	360
Large Appliance Coating	2.8	340
OTHER METAL PARTS AND PRODUCTS COATING (As defined in Section 231)		
The following includes Non-adhesive Coating, Adhesive, Adhesive Primer, Caulking, and Beaded Sealants:		
Air-Dried Coating	3.5	420
Baked Coating [above 200°F (93°C)]	3.0	360
Silicone Release Coating: Baked or Air Dried	3.5	420
Fabric Coating	2.9	350
Film Coating	2.9	350
COATING PLASTIC PARTS AND PRODUCTS THAT ARE NOT DEFINED AS FLEXIBLE	3.5	420
COATING FLEXIBLE PLASTIC PARTS AND PRODUCTS		
Primer	4.1	490
Color Topcoat	3.8	450
Basecoat/Clear Coat (Combined System) – Limit for either coat	4.5	540
Paper Coating, including Adhesives	2.9	350
Vinyl Coating (Coating on Vinyl)	3.8	450



STRIPPABLE BOOTH COATINGS	2.0	240
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- 302 ~~APPLICATION METHODS FOR SURFACE COATINGS: A person shall employ one of the following for all applications of surface coating containing more than 2 pounds of VOC per gallon (240 g/L) minus exempt compounds:~~
- 302.1 ~~A low pressure spray gun; or~~
 - 302.2 ~~An electrostatic system; or~~
 - 302.3 ~~A system that atomizes principally by hydraulic pressure, including “airless” and “air assisted airless”; or~~
 - 302.4 ~~Non atomizing or non spraying application methods, such as but not limited to dipping, rolling, or brushing; or~~
 - 302.5 ~~Any method which is approved by the Administrator of the Federal EPA and the Control Officer as having a transfer efficiency of 65% or greater.~~
- 303 ~~CLEANUP OF APPLICATION EQUIPMENT: A person shall comply with the following when using VOC containing material to clean application equipment:~~
- 303.1 ~~Disassemble any spray gun and other application equipment and clean it in:~~
 - a. ~~A container which remains covered at all times, except when the application equipment is being handled in the container, or transferred into or out of the container; or~~
 - a. ~~A commercially sold gun cleaning machine which shall be operated and maintained as stipulated in the Air Pollution Permit’s Operation and Maintenance (O&M) Plan, or in the absence of its mention in the O&M Plan, according to manufacturer’s or distributor’s instructions.~~
 - 303.2 ~~Vapor Pressure Limits: Any person subject to this rule using VOC solvent to clean coating application equipment shall use only solvent which, as used, has a VOC vapor pressure below 35 mm Hg at 20° C (68° F), except for sprayless equipment exempted pursuant to subsection 305.6.~~
- 304 ~~HANDLING AND DISPOSAL OF VOC:~~
- 304.1 ~~Use And Storage: A person shall cover and keep covered each VOC containing material which is not currently in use. A person shall store finishing and cleaning materials in closed or covered leak free containers.~~
 - 304.2 ~~Disposal Of VOC And VOC Containing Material: A person shall store all VOC containing materials intended for disposal including, but not limited to, rags, waste coatings, waste brushes, waste rollers, waste applicators, waste solvents, and their residues, in closed, leakfree containers which are legibly labeled with their contents and which remain covered when not in use.~~
- 305 ~~EXEMPTIONS:~~
- 305.1 ~~Categorical Exemptions: This rule does not apply to the following operations:~~
 - a. ~~Aerospace coating operations (Rule 348).~~
 - b. ~~Architectural coating, including buildings and erected structures (Rule 335).~~
 - e. ~~Cleaning: VOC loss from cleaning or stripping a surface for coating or other purpose is regulated by Rule 331.~~
 - d. ~~Marine vessel exterior refinishing.~~
 - e. ~~Polyester coatings applied to polyester composites.~~
 - f. ~~Printing and graphic arts coating (Rule 337).~~
 - g. ~~Semiconductor manufacturing (Rule 338).~~



- h. ~~Coating a highway vehicle or mobile equipment (Rule 345).~~
 - i. ~~Wood: Coating Wood Furniture (Rule 342); Coating Wood Millwork (Rule 346).~~
- 305.2 ~~Exemptions for Qualified Materials: Rule 336 does not apply to the following materials that meet the specific qualification(s) and limitation(s) set forth herein:~~
- a. ~~Leak Preventing Materials: Sealants, adhesives, caulking, and similar materials used on the following substrates for the primary purpose of leak prevention are exempt from this rule:~~
 - (1) ~~Non-metallic substrates; and~~
 - (2) ~~Used substrates, post manufacture, such as, but not limited to, old joints and seals on pipe and valve assemblies.~~
 - b. ~~Adhesive Use:~~
 - (1) ~~Adhesive and adhesive primer applications are exempt from this rule, except for the 2 categories that appear in Table 1, namely adhesive materials applied to other metal parts and products (as defined in Section 231), and adhesives used in paper coating (as defined in Section 233).~~
 - (2) ~~Any adhesive exempted by this Rule 336 and to which no other rule in Regulation III specifically applies shall comply with the provisions of Rule 330 (Volatile Organic Compounds) of these Rules & Regulations.~~
 - a. ~~Certain Joint Fillers: Caulking and beaded sealants used to fill gaps or to fill joints between surfaces are exempt from this rule, except those used in manufacturing other metal parts and products as defined in Section 231 of this rule, or in the manufacturing of cans.~~
 - d. ~~Extreme Performance Coatings: Extreme performance coatings are exempt from the VOC limits of Table 1 when used under the following conditions:~~
 - (1) ~~Used on internal combustion engine components that are normally above 250°F (121°C) during use; or~~
 - (2) ~~Used at temperatures above 250°F (121°C) on items that are both included under SIC (Standard Industrial Classification, 1987) codes 3661, 3663, 3669, 3677, 3678, 3679, or 3769 and are electronic products in space vehicles and/or are communications equipment. The US Government Printing Office “Standard Industrial Classification Manual, 1987” (and no future editions) is incorporated by reference and is on file at the Maricopa County Air Quality Department, 1001 N. Central Ave., Phoenix, Arizona 85004.~~
- 305.3 ~~ECS Use In Lieu Of Equipment/Practice: In lieu of meeting an equipment or work practice standard within Sections 302, 303, or 304, an owner or operator is allowed to instead use an ECS that has a capture efficiency not less than 90% and meets all ECS requirements in Section 306.~~
- 305.4 ~~Spray Gun And VOC Limit Exemptions: The following are exempt from subsection 301.1, subsection 301.2, and Section 302 of this rule:~~
- a. ~~Coating with an aerosol can.~~
 - b. ~~Touch up or repair coating operations as defined in Sections 250 and 240.~~
 - c. ~~Low usage coatings which in aggregate of all formulations do not exceed 55 gallons (208 liters) per year facility wide if the operator updates usage records of these coatings on each day of their use, pursuant to subsection 501.2.~~
 - d. ~~A small surface coating source (SSCS) as defined in Section 243. However, once a small surface coating source exceeds either the 15 lb per day or the 2 tons per year limits that are required to maintain SSCS status that facility is permanently subject to the limits of subsection 301.1, subsection 301.2, and Section 302, with the following exception:~~
 - (1) ~~For such a facility that does not have either a 15 lb/day or a 2 ton/year VOC emission limit in an Air Pollution Permit for processes regulated by this rule, an owner or operator~~



may retain the exemption if s/he agrees in writing to enforceable permit conditions that establish these or stricter limits.

(2) However, a facility that violates its permit limit of either 15 lbs VOC/day or 2 tons VOC/yr. for coating process regulated by this Rule 336 is permanently subject to the limits of subsections 301.1 and 301.2, and Section 302.

- a. A Quality Class Q protective coating that is used on equipment, structures, and/or components within a containment facility of a nuclear power plant and is approved in accordance with either ANSI standards N101.2 and N101.4 or with ASTM Standards D3911 and D3843.
- a. A tactical military equipment coating that is approved in a Maricopa County Air Pollution Permit subsequent to a sufficient demonstration by the user that no compliant substitute exists.

305.5 Special Facilities/Operations:

- a. ~~Silicone Release Coatings: Silicone release coating operations controlled by an ECS pursuant to subsection 301.2 are exempt from the 85 percent overall control efficiency requirement if the ECS demonstrates at least 70 percent overall control and the coating is applied with a liquid seal air spray system.~~
- b. ~~Bonding Impact Resistant Rubber Lining To Metal: An adhesive and an adhesive primer are exempt from Table 1 limits, but shall not have a VOC content of material exceeding 850 grams of VOC per liter (7.1 lb/gal), if such adhesive is used to bond sheets/strips of rubber to metal equipment so that such rubber sheathing directly contacts material received by the metal and so protects the metal. This exception does not apply to any other situations where adhesives are used to bond rubber to metal.~~

305.6 ~~Exemption Of Coating Applicator Cleanup: A person is allowed to use solvent that has at 20° C (68° F) a total VOC vapor pressure above 35 mm Hg for cleaning coating application equipment, but only if such application equipment does not use spray devices and the same principal solvent is used for cleaning as is used in the coating.~~

305.7 ~~Low Usage Allowance for Restricted Guns: A person may employ spray guns otherwise prohibited by Section 302 for use with coatings over 2 lb VOC /gal under the following limited conditions:~~

- a. ~~If VOC emissions from the finishing application station, are captured and directed to an ECS complying with the provisions of Section 306.~~
- b. ~~To coat the inside of pipes and tubes with a wand style applicator.~~
- e. ~~Using an airbrush or other small gun that has a reservoir capacity not exceeding 250 cc (8.8 fluid ounces) and is used solely for detailing, lettering, touchup, and/or repair.~~

306 REQUIREMENTS FOR AIR POLLUTION CONTROL EQUIPMENT AND ECS MONITORING EQUIPMENT:

306.1 ~~ECS Control Efficiencies: To meet the requirements pursuant to subsection 301.2, subsection 305.3, or subsection 305.7, an ECS shall be operated as follows:~~

- a. ~~Overall ECS Efficiency: Overall, the ECS shall prevent at least 85% of the mass of the VOC emitted by each coating or process so controlled from entering the atmosphere except as successfully controlled pursuant to the alternative in subsection 306.1c(2).~~
- b. ~~Capture Efficiencies:~~
 - (1) ~~For an ECS used pursuant to subsection 301.2 and/or subsection 305.7, capture shall be at least 87%.~~
 - (2) ~~For an ECS used pursuant to subsection 305.3, capture shall be at least 90%.~~



- e. **Control Efficiency Of The Emissions Processing Subsystem:**
 - (1) The emissions processing subsystem of the ECS shall reduce the mass of VOC entering it by at least 90 percent; or
 - (2) Alternative for Very Dilute Input: For VOC input concentrations of less than 100 ppm (as carbon) at the inlet of the ECS emissions processing subsystem, an ECS' VOC processing subsystem also satisfies the processor efficiency requirements of this rule if:
 - (a) The VOC output is consistently less than 20 mg VOC/M3 (as carbon) adjusted to standard conditions; and
 - (b) The ECS consistently shows an overall control efficiency of at least 85% when tested pursuant to subsection 503.3 at VOC input concentrations exceeding 100 ppm (as carbon).
- d. Coating that exceeds the applicable VOC limits in Table 1 shall be clearly identified such that coating operators are informed an ECS must be used.

306.2 **Operation And Maintenance (O&M) Plan Required for ECS:**

- a. An owner or operator shall provide and maintain (an) O&M Plan(s) for any ECS, any other emission processing equipment, and any ECS monitoring devices that are used pursuant to this Rule 336 or to an air pollution control permit.
- b. The owner or operator shall submit to the Control Officer for approval the O&M Plans of each ECS and each ECS monitoring device that is used pursuant to this Rule 336.
- c. The owner or operator shall comply with all the identified actions and schedules provided in each O&M Plan

306.3 **Providing And Maintaining ECS Monitoring Devices:** Any person 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. Records shall be kept pursuant to Section 502 which demonstrate that the ECS meets the overall control standard required by subsection 306.1.

306.4 **O&M Plan Responsibility:** An owner or operator of a facility that is required to have an O&M Plan pursuant to subsection 306.2 must fully comply with all O&M Plans that the owner or operator has submitted for approval, but which have not yet been approved, unless notified otherwise by the Control Officer in writing.

SECTION 300 – STANDARDS

301 MANUFACTURING AND REPAIR OPERATIONS:

301.1 Polyester Resin Operation Requirements: An owner and/or operator shall comply with one of the following for all applications of polyester resins:

- a. **Open Molding Process:** An owner or operator using an open molding system (Section 200.70 of this rule), shall use materials that comply with the weighted average monomer VOC content limits listed in Table 336-1 of this rule; or
- b. **Closed-Mold System:** Use a closed-mold system (section 200.12 of this rule); or
- c. **Use of Emission Control System (ECS):** Install and operate a VOC emissions control system (Section 304 of this rule) that has 90% control efficiency and control emissions to a limit equivalent to the level achieved by the limits in Table 336-1 of this rule.
- d. **Additional Polyester Resin Operation Requirements**



- (1) In addition to complying with Table 336-1, the non-monomer VOC content of each resin and gel coat shall not contain more than 5 percent by weight of the resin or gel coat.
- (2) Use resin containing a vapor suppressant, such that the weight loss from the VOC emissions does not exceed 50 grams per square meter of exposed surface during resin polymerization;

TABLE 336-1: VOC CONTENT LIMITS FOR OPEN MOLDING RESIN AND GEL COAT

<u>Gel Coats and Resins</u>	<u>Weight Percent Limit</u>
<u>Gel Coats</u>	
<u>Clear Gel Coats</u>	
Marble Resin Gel Coats	40
Other Tooling Gel Coats	40
All Other Clear Gel Coats	44
<u>Pigmented Gel Coats</u>	
White and Off-White Gel Coats	30
Other Non-White Gel Coats	37
Primer Gel Coats	28
<u>Speciality Gel Coats</u>	48
<u>Resins</u>	
Marble resins	10% with fillers or 32% without fillers*
Solid Surface Resins	17
Tub/Shower Resins	24% with fillers or 35% without fillers
Lamination Resins	31% with fillers or 35% without fillers
<u>Fire Retardant Resins</u>	38
<u>Corrosion Resistant, High Strength and Tooling Resins</u>	
Non-atomizing Mechanical Application	46**
Filament Application	42**
Manual Application	40**
<u>Other Resins</u>	35

Monomer percent by weight includes the addition of any VOC-containing materials.

*An owner or operator of a polyester resin operation may meet the monomer content limits by adding filler to a resin to reduce the monomer content to the applicable limit or by using resin with a monomer content that complies with the applicable limit without the addition of fillers.

**If the owner or operator manufactures a composite product by using more than one technology to apply corrosion-resistant, high strength or tooling resins, the highest permissible resin monomer content is the applicable limit.

301.2 Pleasure craft and Fiberglass Boat Manufacturing and Repair Operations:

- a. **Pleasure Craft VOC Coating Limits:** An owner and/or operator of a pleasure craft manufacturing or repair operation shall use coatings that comply VOC limits specified in Table 336-2 of this rule.

TABLE 336-2: PLEASURE CRAFT SURFACE COATING VOC CONTENTS LIMITS:

<u>Coating category</u>	<u>g. VOC/l. coating</u>	<u>lbs VOC/gal.coating</u>
Extreme High Gloss Topcoat	490	4.1
High Gloss Topcoat	420	3.5
Pretreatment Wash Primers	780	6.5
Finish Primer/Surfacer	420	
High Build Primer Surfacer	340	2.8
Aluminum Substrate Anti-foulant Coating	560	4.7
Other Substrate Anti-foulant Coating	330	2.8
All other Pleasure craft surface coatings for metal or plastic	420	
Antifouling Sealer/Tie Coat (new category)	420	3.5



b. Fiberglass Boat Manufacturing Operations: The non-monomer VOC content shall be limited to 5 percent by weight of the total resin and gel coats and an owner and an owner and/or operator shall comply with at least one of the following process or control requirements for all fiberglass boat manufacturing:

- (1) Open Molding Process:** An owner or operator using an open molding system (Section 200. of this rule) for fiberglass boat manufacturing or repair shall use materials that comply with the weighted average monomer VOC content limits listed in Table 336-3 of this rule; or
- (2) Closed-mold system (Section 200.12 of this rule):** An owner and/or operator shall not operate a closed molding system, unless the weight loss of polyester resin materials during polymerization is less than four (4.0) percent.
- (3) Install and operate a VOC emissions control system (section 305 of this rule)** that has at least a 90 percent control efficiency (by weight) or controls emissions equivalent to the level achieved by the limits in Table 336-3 of this rule. Emissions shall be continuously averaged over a rolling 24 hour period.

TABLE 336-3: COMPLIANT MATERIALS MONOMER VOC CONTENT FOR OPEN MOLDING RESIN AND GEL COATS

<u>For this Material</u>	<u>This application method</u>	<u>This weighted average monomer VOC content (weight %) limit is required:</u>
<u>Production Resin</u>	<u>Atomized (Spray)</u>	<u>28</u>
<u>Production Resin</u>	<u>Non-atomized</u>	<u>35</u>
<u>Pigmented gel coat</u>	<u>Any Method</u>	<u>33</u>
<u>Clear Gel Coat</u>	<u>Any Method</u>	<u>48</u>
<u>Tooling Resin</u>	<u>Atomized</u>	<u>30</u>
<u>Tooling Resin</u>	<u>Non-atomized</u>	<u>39</u>
<u>Tooling Gel Coat</u>	<u>Any Method</u>	<u>40</u>

302 SURFACE COATING OPERATIONS: An owner and/or operator shall comply with one of the following for all applications of surface coatings:

302.1 Low-VOC Content Coatings (less water and exempt compounds): Meet the limits in Tables 336- 4 through 336-8 when using low-VOC content coatings (less water and exempt compounds, as applied) and the application methods listed in Section 305 of this rule;

Table 336 -4 (Metal Part coatings);

Table 336-5 (Can and Coil Coatings);

Table 336-6 (Plastic Part coatings);

Table 336-7 (Business Machines Coatings) of this rule;

Table 336-8 (Metal Furniture and Large Appliance Coatings).

302.2 Low-VOC Content Coatings (VOC per Volume Solid): Meet the limits in Tables 336- 9 through 336-12 when using low-VOC content coatings (VOC per Volume Solid), the application methods listed in Section 305 of this rule, and add-on control equipment listed in Section 304 of this rule; (assume VOC density of 7.36 pounds per gallon);

Table 336 -9 (Metal Part coatings);

Table 336-10 (Plastic Part coatings);

Table 336-11 (Business Machines Coatings);

Table 336-12 (Metal Furniture and Large Appliance Coatings).



302.3 Use of Emission Control System: Use an emission capture system and add-on control device (Section 304 of this rule) to achieve an overall VOC control efficiency of at least 90 percent for owners and/or operators that chose to use add-on controls in lieu of low-VOC content coatings and specified application methods. These add-on controls shall control emissions equivalent to the levels achieved in Sections 302.1 and 302.2 of this rule.

302.4 Paper, Film and Foil Coatings: Coatings used in paper, film and foil surface coating (Section 200.74 of this rule) shall attain a 90 percent VOC control efficiency for each coating line. (Section 200.14 of this rule) The options to attain the 90% control efficiency are use of:

- a. Use of low -VOC content materials (Table 336-13); or
- b. Use of low-VOC materials and controls (Section 305 of this rule).

Table 336-4: Metal Parts and Products VOC Content Limits(less water and exempt compounds)

Coating Category	Air Dried		Baked	
	g VOC/l	lb VOC/gal	g VOC/l	lb VOC/gal
General One Component	340	2.8	280	2.3
General Multi Component	340	2.8	280	2.3
Camouflage	420	3.5	420	3.5
Electric-Insulating Varnish	420	3.5	420	3.5
Etching Filler	420	3.5	420	3.5
Extreme High-Gloss	420	3.5	360	3.0
Extreme Performance	420	3.5	360	3.0
Heat-Resistant	420	3.5	360	3.0
High Performance Architectural	740	6.2	740	6.2
High Temperature	420	3.5	420	3.5
Metallic	420	3.5	420	3.5
Military Specification	340	2.8	280	2.3
Mold-Seal	420	3.5	420	3.5
Pan Backing	420	3.5	420	3.5
Prefabricated Architectural Multi- Component	420	3.5	280	2.3
Prefabricated Architectural One- Component	0.42	3.5	280	2.3
Pretreatment Coatings	420	3.5	420	3.5
Repair and Touch Up	420	3.5	360	3.0
Silicone Release	420	3.5	420	3.5
Solar-Absorbent	420	3.5	360	3.0
Vacuum-Metalizing	420	3.5	420	3.5
Drum Coating, New, Exterior	340	2.8	0.34	2.8
Drum Coating, New, Interior	420	3.5	420	3.5
Drum Coating, Reconditioned, Exterior	420	3.5	420	3.5
Drum Coating, Reconditioned, Interior	500	4.2	500	4.2

TABLE 336-5: Can and Coil Coating Limits (VOC content minus water and exempt compounds)		
COATING CATEGORY	LIMITS AS APPLIED:	
	lbs/gal	g/liter
Can Coating		
Sheet Basecoat (Exterior and Interior) and Overvarnish	2.8	340
Two-Piece Can Exterior (Basecoat and Overvarnish)	2.8	340
Two and Three-Piece Can Interior Body Spray	4.2	510
Two-Piece Can Exterior End (Spray or Roll Coat)	4.2	510
Three-Piece Can Side-Seam Spray	5.5	660
End Sealing Compound	3.7	440



Can Printing Ink	2.5	300
Coil Coating (any coat)	2.6	310
Fabric Coating	2.9	350
Film Coating	2.9	350

Table 336-6: Plastic Parts and Products VOC Content Limits(less water and exempt compounds)

Coating Category	g VOC/liter	lbs VOC/gal
General One Component	280	2.3
General Multi Component	420	3.5
Electric Dissipating Coatings and Shock-Free Coatings	800	6.7
Extreme Performance	420 (2-pack coatings)	3.5 (2-pack coatings)
Metallic	420	3.5
Military Specification	340 (1 pack) 420 (2 pack)	2.8 (1 pack) 3.5 (2 pack)
Mold-Seal	760	6.3
Multi-colored Coatings	680	5.7
Optical Coatings	800	6.7
Vacuum-Metalizing	800	6.7

Table 336-7: Business Machine Coatings (VOC Content less water and exempt compounds)

	g VOC/liter	lbs. VOC/ gal.
I. Primers	350	2.9
II. Topcoat	350	2.9
III. Texture Coat	350	2.9
IV. Fog Coat	260	2.2
V. Touchup and repair	350	2.9

Table 336 – 8: Metal Furniture and Large Appliance Coatings (VOC content less water and exempt compounds)

Coating Type	Baked		Air Dried	
	g/l	lb/gal	g/l	lb/gal
General, One Component/ Large Appliances	275	2.3	275	2.3
General, Multi-Component	275	2.3	340	2.8
Extreme High Gloss	360	3.0	340	2.8
Extreme Performance	360	3.0	420	3.5
Heat Resistant	360	3.0	420	3.5
Metallic	420	3.5	420	3.5
Pretreatment Coatings	420	3.5	420	3.5
Solar Absorbent	360	3.0	420	3.5

Table 336- 9: Metal Parts and Products (VOC per volume solids)

Coating Category	Air Dried		Baked	
	g VOC/l solids	lb VOC/gal solids	g VOC/l solids	lb VOC/gal solids
General One Component	540	4.52	400	3.35
General Multi Component	540	4.52	400	3.35
Camouflage	800	6.67	800	6.67
Electric-Insulating Varnish	800	6.67	800	6.67
Etching Filler	800	6.67	800	6.67
Extreme High-Gloss	800	6.67	610	5.06



Extreme Performance	800	6.67	610	5.06
Heat-Resistant	800	6.67	610	5.06
High Performance Architectural	4560	38.0	4560	38.0
High Temperature	800	6.67	800	6.67
Metallic	800	6.67	800	6.67
Military Specification	540	4.52	400	3.35
Mold-Seal	800	6.67	800	6.67
Pan Backing	800	6.67	800	6.67
Prefabricated Architectural Multi-Component	800	6.67	400	3.35
Prefabricated Architectural One-Component	800	6.67	400	3.35
Pretreatment Coatings	800	6.67	800	6.67
Silicone Release	800	6.67	800	6.67
Solar-Absorbent	800	6.67	610	5.06
Vacuum-Metalizing	800	6.67	800	6.67
Drum Coating, New, Exterior	540	4.52	540	4.52
Drum Coating, New, Interior	800	6.67	800	6.67
Drum Coating, Reconditioned, Exterior	800	6.67	800	6.67
Drum Coating, Reconditioned, Interior	1170	9.78	1170	9.78

Table 336-10: Plastic Parts and Products VOC Emission Rate Limits (VOC per Volume Solids)

Coating Category	g VOC/liter solids	lbs VOC/gal solids
General One Component	400	3.35
General Multi Component	800	6.67
Electric Dissipating Coatings and Shock-Free Coatings	8960	74.7
Extreme Performance	800	6.67
	(2-pack coatings)	(2-pack coatings)
Metallic	800	6.67
Military Specification	540 (1 pack)	4.52 (1 pack)
	800 (2 pack)	6.67 (2 pack)
Mold-Seal	5240	43.7
Multi-colored Coatings	3040	25.3
Optical Coatings	8960	74.7
Vacuum-Metalizing	8960	74.7

Table 336-11: Business Machine Coatings (VOC per volume solids)

	g/liter lbs.	VOC./gal solids
I. Primers	570	4.80
II. Topcoat	570	4.80
III. Texture Coat	570	4.80
IV. Fog Coat	380	3.14
V. Touchup and repair	570	4.80

Table 336 – 12: Metal Furniture and Large Appliance Coating (mass of VOC per volume of coating solids)

Coating Type	Baked		Air Dried	
	g/l	lb/gal	g/l	lb/gal
General, One Component/ Large Appliances	400	3.3	400	3.3
General, Multi-Component	400	3.3	550	4.5
Extreme High Gloss	610	5.1	550	4.5
Extreme Performance	610	5.1	800	6.7
Heat Resistant	610	5.1	800	6.7
Metallic	800	6.7	800	6.7



Pretreatment Coatings	800	6.7	800	6.7
Solar Absorbent	610	5.1	800	6.7

Table 336-13: VOC limits for Paper, Film, and Foil Surface Coating

Units	RACT Limits	
	Pressure Sensitive Tape and Label Surface Coating	Paper, Film, and Foil Surface Coating (Not including Pressure Sensitive Tape and Label)
Emission Reduction (%)	90	90
kg VOC/kg solids (lb VOC/lb solids)	0.20	0.40
kg VOC/kg coating (lb VOC/lb solids)	0.067	0.08

303 INDUSTRIAL ADHESIVES & ADHESIVE PRIMERS

303.1 APPLICATION OF ADHESIVES: A person shall comply with one of the following for all applications of adhesives:

- a. Meet the limits in Section 303.1; Table 336-14 of this rule; or
- b. Operate an ECS in accordance with Section 304 when applying a coating that exceeds the VOC limits in this rule; or
- c. Qualify for an exemption under Sections 103 of this rule.

TABLE 336-14: INDUSTRIAL ADHESIVES

INDUSTRIAL ADHESIVE EMISSION LIMITS		
	LIMITS AS APPLIED: VOC content minus exempt compounds (see subsection 240.1) *	
	lbs/gal	g/liter
GENERAL ADHESIVE APPLICATION PROCESSES		
Reinforced Plastic Composite	1.7	200
Flexible Vinyl	2.1	250
Metal	0.3	30
Porous Metal (except wood)	1.0	120
Rubber	2.1	250
Wood	0.3	30
Other Substrates	2.1	250
SPECIALTY ADHESIVE APPLICATION PROCESSES		
Ceramic Tile Installation	1.1	130
Contact Adhesive	2.1	250
Cove Base Installation	1.3	150
Floor Covering Installation (Indoor)	1.3	150
Floor Covering Installation (Outdoor)	2.1	250
Floor Covering Installation (Perimeter Bonded Sheet Vinyl)	5.5	660
Metal to Urethane/Rubber Molding or Casting	7.1	850
Multipurpose Construction	1.7	200
Plastic Solvent Welding (ABS)	3.3	400
Plastic Solvent Welding (Except ABS)	4.2	500
Sheet Rubber Lining Installation	7.1	850
Single-Ply Roof Membrane Installation/Repair (Except EPDM)	2.1	250
Structural Glazing	0.8	100
Thin Metal Laminating	6.5	780
Waterproof Resorcinol Glue	1.4	170
ADHESIVE PRIMER APPLICATION PROCESSES		



Plastic Solvent Welding Adhesive Primer	5.4	650
Single-Ply Roof Membrane Adhesive Primer	2.1	250
Other Adhesive Primer	2.1	250
Motor Vehicle Glass Bond Primer	7.5	900

*If an adhesive is used to bond dissimilar substances together, then the applicable substrate category with the highest VOC emission limit is recommended as the limit for such application.

304 EMISSION CONTROL SYSTEM (ECS):

304.1 Emission Control System (ECS) Efficiency: The VOC limits of Sections 304 through 307 of this rule do not apply when emissions to the atmosphere are controlled by an ECS that maintains the following conditions:

- a. **Identify Use of ECS:** Shall clearly inform facility-operators that exceeding the applicable VOC-limits in these sections requires an ECS must be used.
- b. **Coatings or Adhesives:** Overall VOC control efficiency of 90 percent for facilities that choose to use add-on controls instead of low-VOC content coatings or adhesives.
- c. **Polyester Resin or Fiberglass:** Overall control efficiency of at least 90 percent, on a mass basis for facilities that choose to use add-on controls to reduce VOC emissions.
- d. **Operation and Maintenance (O&M) Plan:** An owner and/or operator subject to this rule must provide (an) O&M Plan(s) for any ECS and any ECS monitoring devices that are used according to this Rule 336 or an air pollution control permit as defined in Section 301.2 of this rule.

304.2 Operation And Maintenance (O&M) Plan Requirements: An owner and/or operator of a facility that is required to have an O&M Plan-according to Section 301.1 of this rule shall comply with the following:

- a. **Approval by Control Officer:** Submit to the Control Officer for *approval, the* O&M Plan(s) for any ECS including any ECS monitoring device that is used under this rule or required under an air pollution control permit. The approved O& M plan must be readily available on-site at all times to the Control Officer.
- b. **Provide and Maintain ECS Monitoring Devices:** Must install, maintain, and accurately calibrate monitoring devices described in the O&M Plan(s) including, but not limited to, monitoring devices that measure pressure differentials and other operating conditions necessary to determine if control devices are functioning properly.
- c. **Compliance with Plan:** Shall fully comply with all the identified actions and schedules provided in each O&M Plan. Once the initial plan has been approved in writing by the Control Officer
- d. **Information Required in Plan:** Include the following information for any ECS monitoring devices:
 - (1) ECS equipment manufacturer,
 - (2) ECS equipment model,
 - (3) ECS equipment identification number or identifier that owner, operator, or person subject to this rule assigns to such ECS equipment when the manufacturer’s equipment identification number is unknown, and
- e. **RecordKeeping:** Information required in Section 500 of this rule.

304.3 Deficient Plan: An owner and/or operator subject to this rule, who receives a written notice from the Control Officer that the O&M Plan is deficient or inadequate, must make written revisions to the O&M Plan for any ECS including any ECS monitoring devices. They must submit such revised O &M Plan to the Control Officer within five working days of receipt of the Control Officer’s written notice, unless such time period is extended by the Control Officer, upon written



request, for good cause. During the time that such owner and/or operator subject to this rule is preparing revisions to the O&M Plan, such owner, operator, or person must still comply with all requirements of this rule.

305 APPLICATION METHODS

305.1 Surface Coatings: An owner and/or operator shall use one of the following methods for all Surface Coating applications subject to this rule, containing more than 2 pounds of VOC per gallon (240 g/L) minus exempt compounds:

- a.** A low pressure spray gun; or
- b.** Electrostatic application, or
- c.** Non-atomizing or non-spraying application methods, such as but not limited to dipping, rolling, or brushing; or
- d.** A system that atomizes principally by hydraulic pressure, including “airless” and “air assisted airless”; or
- e.** Hand Application Methods, or
- f.** A high-volume low pressure (HVLP) spray-gun that meets the definition of HVLP in this rule (Section) and that meets the spray-gun tip pressure measurement test described in Section 503.1(d) of this rule;
- g.** An Alternative Application Method: Any method approved by the Control Officer which achieves either an HVLP equivalent or transfer efficiency greater than or equal to 65%, as demonstrated with the following:
 - (1)** In accordance with the provisions of Section 503.1(d) of this rule; or
 - (2)** As stamped on the gun by the manufacturer; or
 - (3)** From testing documentation of the HVLP spray-gun status provided by the manufacturer.
- h.** Low Usage Allowance for Restricted Guns: Spray guns otherwise prohibited by Section 305 of this rule may be used under the following conditions:
 - (1)** If VOC emissions are captured and directed to an ECS complying with the provisions of Section 304 of this rule; or
 - (2)** To coat the inside of pipes and tubes with a wand-style applicator; or
 - (3)** Using an airbrush or other small gun that has a reservoir capacity not exceeding 250 cc (8.8 fluid ounces) and is used solely for detailing, lettering, touchup, and/or repair

305.2 Polyester Resin Operations: An owner and/or operator shall use the following methods for these specific Polyester Resin Applications subject to this rule:

- a.** Tub/Shower Polyester Resin Materials: An owner or operator shall not apply to an open molding system any tub/shower polyester resin material unless all the applied resin material is vapor suppressed.
- b.** Resin Material Application (Excluding Gel Coats): An owner and/or operator shall not apply any resin materials to an open mold surface unless one of the following non-atomizing application techniques are used and operated according to the operating procedure specified by the equipment manufacturer:
 - (1)** Pressure-fed resin rollers (Section 200.97); or
 - (2)** Resin Impregnators (Section 200.95); or
 - (3)** Flow Coaters (Section 200.42); or
 - (4)** Fluid impingement technology (Section 200.43); or



- (5) Hand Lay-up applications (Section 200.47); or
- (6) Other non-atomizing application techniques which are approved in writing by the Control Officer and U.S. EPA, as having similar emission reduction efficiencies.

c. Gel Coat Application: An owner and/or operator shall not apply gel coat materials to an open molding surface unless one of the following application techniques is used and operated according to the operating procedure specified by the equipment manufacturer:

- (1) Any nonatomizing application technique listed under Section 305.2(b) of this rule;
- (2) Air-Assisted Airless Spray;
- (3) Electrostatic Attraction; or
- (4) High-Volume, Low-Pressure (HVLP)

d. Pultrusion Operations: An owner or operator shall not perform pultrusion operations, unless wet-out tubs baths are covered except for 18 inches from the exit of the bath to the die. The weight loss of polyester resin materials during polymerization shall be less than three (3) percent in a pultrusion operation.

e. Alternative Compliance Option: An owner or operator may use alternative application processes and materials to those listed in Section 303 of this rule provided they result in equivalent VOC emissions and are approved in writing by the Control Officer and U.S. EPA.

305.3 Pleasure-craft: Extreme High Gloss Coatings: Extreme High Gloss Coatings shall not be applied with the use of the application methods listed in Section 306.1 although the remaining provisions of this rule apply.

306 CLEANUP ACTIVITIES AND WORK PRACTICES (STORAGE, HANDLING, AND DISPOSAL):

306.1 CLEANUP ACTIVITIES:

a. Clean-Up for Surface Coating, Pleasure Craft, Polyester Resin Operations:

VOC content limits of solvents used for removing coating residue, unwanted materials from equipment, transfer lines (e.g., tubing or piping), tanks, and the interior of spray booths shall not exceed those limits listed in Table 336-15 below. Spray-gun cleaning requirements are found in section 306.1 (c) of this rule below.

TABLE 336-15

<u>VOC CONTENT LIMITS FOR SOLVENTS</u> Type of Solvent Cleaning Operation	VOC Content Limit Grams of VOC/liter of material (lb/gal)
Product Cleaning During Manufacturing Process or Surface Preparation for Coating Application	25 (0.21)
Repair and Maintenance Cleaning	25 (0.21)
Cleaning of Polyester Resin Application Equipment	25 (0.21)

b. Clean-Up for Surface Coatings, Pleasure-Craft, and Adhesive Application Equipment: VOC-solvents used to clean coating application equipment shall use only solvent which, as used, have a VOC-vapor pressure below 35 mm Hg at 20° C (68° F), except for spray-less equipment exempted pursuant to Section 103.2(j)(2) of this rule.

c. Clean-Up for Fiberglass Boat Manufacturing: VOC cleaning solvents used for routine cleaning of application equipment, tools, machinery, equipment, and general working areas shall:

- (i) Contain no more than 5 percent VOC, by weight; or
- (ii) Have a composite vapor pressure of no more than 0.50 mm Hg at 68 °F.



- d. Clean-Up for Adhesive Use:** VOC content of solvents used to clean adhesive application equipment shall be less than 70 g/l with the exception of a solvent used for single-ply roofing. For single-ply roofing an owner or operator must use a solvent with a composite vapor pressure, minus water and exempt compounds, of less than 45 mm of Hg at 20°C (68°F).
- e. Spray-Gun Cleaning Requirements for Surface Coating and Adhesive Application Operations:**
- (1) An owner and/or operator subject to this rule shall clean spray-guns without spraying or atomizing a solvent cleaner with the gun.
- (2) **Spray-Gun Cleaning Machine:** An owner and/or operator subject to this rule shall use a spray-gun cleaning machine to clean spray-guns if the operation is required to have an Air Pollution Control Permit, as per Rule 200 of these Rules unless they comply with all the conditions in Section 306.1(c) (2)(b) of these rules.
- (a) Spray-Gun Cleaning Machine-General Requirements:** The spray-gun cleaning machine shall meet all of the following requirements:
- (i) Be designed to clean spray-guns.
- (ii) Have at least one pump which drives solvent cleaner through and over the spray-gun.
- (iii) Have a basin which permits containment of the solvent cleaner.
- (iv) Be kept in proper repair and free from liquid leaks.
- (v) Shall be fitted with a cover.
- (vi) Be located on-site where the spray application occurs.
- (vii) Shall be a commercially-sold gun cleaning machine which shall be operated and maintained as stipulated in the Maintenance Plan (O&M Plan), or in the absence of its mention in the O&M Plan, according to manufacturer's or distributor's instructions.
- (b) Manual Spray-Gun Cleaning Requirements:** Manual cleaning of spray-guns shall comply with the following requirements:
- (i) Disassembled spray-guns must be cleaned by hand; or
- (ii) Disassembled spray-guns must be soaked in a vat that is closed, except when the application equipment is being handled in the container, or transferred into or out of the container; or
- (iii) Solvent cleaners shall be less than 10 percent VOC (excluding water and non-precursor organic compounds) or shall contain less than 8.0 percent VOC by weight (including water and non-precursor organic compounds) and calculated pursuant to Section 503.5 of this rule.
- (iv) Solvent cleaner has a VOC-vapor pressure below 35 mm Hg at 20°C (68°F).

306.2 WORK PRACTICES: STORAGE AND HANDLING OF VOC-CONTAINING MATERIAL:

- a. Labeling:** All containers that are 1 gallon or larger used for collection of VOC-containing material shall be legibly labeled with their contents.
- b. Storage, Mixing, and Use of VOC Containing Materials:** All VOC-containing material and VOC-containing cleaning materials shall be stored in closed or covered leak-free containers. The containers shall be closed at all times except when the material is being handled such as when mixing, depositing, removing or transferring material into or out of the container.



- c. **Spills:** Procedures to minimize spills of VOC-containing material during the handling, transfer to and from containers or enclosed systems, waste receptacles or other equipment including small containers, shall be implemented.
- d. **Conveyance of VOC-Containing Materials and VOC-Containing Cleaning Materials:** An owner or operator shall ensure that all VOC-containing materials and VOC-containing cleaning materials shall be conveyed from one location to another in labeled and closed containers and pipes.
- e. **Fiberglass Resin, and Gel Coat Mixing Operations:**
Mixing containers with a capacity equal to or greater than 55 gallons (208 liters), including those used for on-site mixing of putties and poly-putties, shall have a cover with no visible gaps in place at all times. This shall not apply when the material is being manually added to or removed from a container, or when mixing or pumping equipment is being placed in or removed from a container.

306.3 DISPOSAL

Waste Materials: An owner or operator shall store all VOC-containing coatings, thinners, and coating-related waste materials intended for disposal, but not limited to, rags, waste coatings, waste brushes, waste rollers, waste applicators, waste solvents, and their residues, in closed or covered, leak-free containers which are legibly labeled with their contents and which remain covered at all times when not in use.

SECTION 400 – ADMINISTRATIVE REQUIREMENTS

401 COMPLIANCE SCHEDULE:

401.1 ECS Schedule: By August 1, 1999: (6 months after rule adoption)

- a. All new recordkeeping provisions shall be in effect, including subsections 501.1c and 501.2a. Any owner and/or operator intending to install an Emission Control System (ECS) in a facility shall comply with requirements of subsection 501.4 Section 304 of this rule and shall announce the intention to use an ECS to the Control Officer in writing within 30 days if:
 - ~~(1)a.~~ The ECS is used as an alternative to meeting the spray-gun provisions of Section 305; or
 - ~~(2)b.~~ The ECS is used as an alternative to meeting the gun cleaning machine provisions of Section 306.1(d) of this rule.
- b. The intention to use an Emission Control System (ECS) shall be announced to the Control Officer in writing if:
 - ~~(1)~~ The ECS is used as an alternative to meeting the spray gun provisions of Section 302; or
 - ~~(2)~~ The ECS is used as an alternative to meeting the gun cleaning machine provisions of Section 303.

401.2 By November 1, 1999, the following shall be in continuing use:

- a. Spray guns required pursuant to Section 302;
- b. Cleaning solvent(s) having the required vapor pressure pursuant to Section 303, and the data sheet(s) confirming the vapor pressure.

~~401.3~~401.2 By May 1, 2000- (6 months after the rule adoption), the ECS announced pursuant to subsection 401.1b Section 401.1 of this rule shall be in ~~continuing~~ continuous use.

401.3 O&M Plan:

- 402.1a.** The owner and/or operator of an existing facility shall update or submit an O&M Plans by (3 months after DATE OF RULE ADOPTION) or within three (3) months of becoming subject to



the rule and submit it to the Control Officer for approval. The plan shall describe the method(s) used to achieve full compliance with the rule and dates for completing increments of progress, such as the contractual arrival date of new control equipment. The Control Officer may require an owner and/or operator submitting the compliance plan to also submit subsequent reports on progress in achieving compliance; and.

- 402.2b.** The Control Officer shall take final action on an O&M Plan revision/update to address the newly amended provisions of this rule within 30 calendar days of the filing of the complete O&M Plan revision/update. The Control Officer shall notify the applicant in writing of his approval or denial; and
- c.** **Compliance Date:** Attain full compliance with all of the standards in this rule by (12 months after DATE OF RULE ADOPTION) or within twelve (12) months of becoming subject to the rule.

SECTION 500

501 RECORDKEEPING AND REPORTING: ~~Any person~~ An owner and/or operator subject to this rule shall comply with the following requirements of subsections 501.1 and 501.2 that apply to materials regulated by this Rule 336. Records shall be retained for five 5- (5) years and shall be made available to the Control Officer upon request. Records can consist of but are not limited to purchase orders, invoices, receipts, usage records, MSDS, and hazardous wastes manifests. . Records may be kept in either electronic or paper format.

501.1 Current Lists: Operational information required by this rule shall be kept in a complete and consistent manner on-site and be made available without delay to the Control Officer upon request.

501.2 Records of the following process and operational information, as applicable, are required. Express VOC content in 1 of 3 forms: pounds VOC per gallon, grams VOC per liter, or the percent VOC by weight along with the specific gravity or density, (2 numbers are required).

- a. General Data:** Daily records shall be kept for all days that a facility is actively operating. Records shall include all of the following:

- (1) Hours of operation;
- (2) Type of operation;
- (3) Mixing Ratio: The mix ratio of the VOC-containing materials.

b. Surface Coatings, Fiberglass and Adhesives Used:

- a-** Maintain a current list of surface coatings, adhesives, reducers, thinners, gun-cleaning materials, additives, fiberglass coatings and any other VOC-containing materials regulated by this rule; ~~give~~ List the VOC content of material for each as received (before thinning). A complete, neat assemblage of this data meets the requirements for a list. Express VOC content in 1 of 3 forms: pounds VOC per gallon, grams VOC per liter, or the percent VOC by weight along with the specific gravity or density, (2 numbers are required). The VOC content of each coating as received, minus exempt compounds. (This figure is sometimes called the "EPA Method 24" VOC content on manufacturer's data sheets). If the coating is a multi-part coating, list the VOC content which the manufacturer states the coating will have once all the necessary parts are mixed together in the proportions specified by the manufacturer.

- b-c. Less Stringent Recordkeeping for Consistently Low Users:** An owner and/or operator of a facility that always uses less than 2 gallons per day total of thinner and coating (listed in Table 4336-1 through 336-3), meets the listing and recording requirements of subsections 501.1a, Sections 501.2 (a) (b) if:

- (1) All purchase receipts/invoices of VOC-containing material that ~~is~~ are regulated by this rule for the most recent 12 months are kept together; and



- (2) Current data sheets show the VOC content of material for every VOC containing substance currently used that is regulated by this rule.

e.d. Facilities That Are Not Small Surface-Coating Sources: Facilities that are not small surface-coating sources shall do the following:

- (1) **Coatings:** For all coatings (except those recorded under the ~~subsection 305.4e~~ low usage allowance provisions (Section 501.2 (c) of this rule), make the following listings for coatings, manufacturing materials, and adhesives that have VOC limits in Table 4 336-1 through 336-7:
 - (a) **VOC Before Reducing:** The VOC content of each coating as received, minus exempt compounds. (This figure is sometimes called the “EPA Method 24” VOC content on manufacturer’s data sheets). If the coating is a multi-part coating, list the VOC content which the manufacturer states the coating will have once you have mixed all the necessary parts together in the proportions specified by the manufacturer.
 - (b) **List Maximum VOC Content of Coating as Applied:** For each coating that you thin/reduce or add any additive to, record in a permanent log either of the following:
 - (i) The maximum number of fluid ounces thinner/reducer that you ever add to a gallon of unreduced coating (or maximum g/liter), and the maximum fluid ounces of every other additive you mix into a gallon of the coating; or
 - (ii) The VOC content of the coating, after adding the maximum amount of thinner/reducer and other additives that you would ever add, as determined by the formula in ~~subsection 255.1~~ Section 500 of this rule.

e. Polyester Resin Operations:

- (1) **Applications:** The type of nonatomizing application, or other in the case of gel coat, application techniques(s) used, manufacturer’s names, and the records of the fluid tip, pressure calibration as specified by the manufacturer; and
- (2) **Materials and VOC Content:** The manufacturer’s name, the type and amount of each of the polyester resin basic raw materials used, delivered and the weight (in percent) of monomer for all polyester resin materials and filler(s). If VOC-containing materials are added to the polyester resin, the amount of VOC-containing materials, in grams, and the VOC content in grams per liter, of VOC-containing materials; and
- (3) **Tub/Shower Resins:** Certification of analysis from the resin manufacture(s) to verify that all the applied tub/shower resin materials are vapor suppressed; and
- (4) **Pultrusion systems:** For pultrusion systems, the weight loss (in percent) of polyester resins materials for each application; and

501.3 Applicator Cleanup Solvent: Have a hardcopy of the VOC vapor pressure (VP) at 20°C (68°F) of solvent(s) used to clean spray guns, hoses, reservoirs, and any other coating application equipment. Any one of the following ways of providing the VP data is sufficient:

- ~~(a.)~~ A current manufacturer’s technical data sheet;
- ~~(b.)~~ A current manufacturer’s safety data sheet (MSDS);
- ~~(c.)~~ Actual test results; or
- ~~(d.)~~ A letter signed by an official or lab manager of the supplying facility.

501.2501.4 Frequency of Updating Usage Records: Update your records, showing the type and amount used of each VOC-containing coating, manufacturing materials, or adhesive which is regulated by name or type in ~~Table 4~~ the Tables 336-1 through 336 -7 of these rules, and update each VOC-containing material, ~~related to surface coating~~, that is not addressed by ~~Table 4~~ in the Tables found



in Rule 336 of these rules. This includes, but is not limited to, thinners, surfacers, and diluents. Maintain records according to the following schedule:

- a. **Small Surface-Coating Sources:** Small surface-coating sources shall update each month's records of coating use by the end of the following month.
- b. **All Other Sources:** For a source that does not meet the definition of small surface-coating source:
 - (1) **Monthly:** Monthly update records of each coating or manufacturing material or adhesive used that complies with the VOC limits in ~~Table 1~~ this Rule 336. Complete a month's update by the end of the following month.
 - (2) **Daily:** ~~Daily update the usage of each coating that exceeds its limits in Table 1, including coating exempted by subsection 305.4c.~~

501.3501.5 Grouping by VOC Content: For purposes of recording usage, coatings, manufacturing materials, and adhesives that are in the same category ~~in Table 1~~, and have similar VOC content, may be recorded under a name that includes the category name. The highest VOC content among the members of that grouping shall be assigned to that grouping, rounded to the nearest 10th of a pound. To identify what products belong within each group, after each group name and the group's VOC content of material must appear the name of each product in the group and its VOC content of material.

For example: For flexible plastic parts, you use 20 gallons of primer that has 3.04 lb VOC/gal., 30 gallons of primer having 3.14 lb VOC/gal., and 40 gallons of primer having 2.89 lb VOC/gal. You may record usage as 90 gallons of flexible plastic primer containing 3.1 lb VOC/gal. If grams VOC per liter is used to record VOC content, round off to the nearest whole number of grams.

502 ECS RECORDING REQUIREMENTS:

- 502.1** On each day an ECS is used at a facility pursuant to this rule, an owner or operator of the facility shall:
- a. Record the amount and VOC content of coating, the amount of catalyst/hardener, and the amounts of solvent, reducer, and diluent used that were subject to ECS control pursuant to this Rule 336; and
 - b. Make a permanent record of the operating parameters of the key systems as required by the O&M Plan; and
 - c. Make a permanent record of the maintenance actions taken, within 24 hours of the action's completion, for each day or period in which the O&M Plan requires that maintenance be done.
- 502.2.** An explanation shall be entered for scheduled maintenance that is not performed during the period designated for it in the O&M Plan.

503 COMPLIANCE DETERMINATION AND TEST METHODS: ~~When more than one test method is permitted for a determination, an exceedance of the limits established in the rule determined by any of the applicable test methods constitutes a violation of this rule.~~

An exceedance of the limits established in this rule determined by any of the applicable test methods constitutes a violation of this rule. The EPA and the American Society for Testing and Materials (ASTM) test methods 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. These documents are available Maricopa County Air Quality Department, 1001 N. Central Ave., Phoenix, AZ 85004; or by calling (602) 506-0169 for information. ASTM methods are also available from the American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, or from its website at www.astm.org.

503.1 Compliance Determination: The following means shall be used to determine compliance with this rule:



- a. Measurement of VOC content of materials subject to ~~Section~~ Sections 301 or Section 302 through 304 of this rule shall be conducted and reported using one of the following means:
- (1) BAAQMD Method 31, 503.2f or 503.2g, [April 15, 1992]; or (SCAQMD Method 313-91, 503.2g [April 1997]).: VOC content of coatings, solvents, and other substances having less than 5% solids ~~will be determined by the test method in subsection 503.2f or 503.2g (BAAQMD Method 31 [April 15, 1992]) or 503.2g (SCAQMD Method 313-91 [April 1997]).~~
 - (2) EPA Method 24, 503.2c; (BAAQMD Method 31, 503.2f [April 15, 1992]); or 503.2g (SCAQMD Method 313-91 [April 1997]). The VOC content of coatings or other materials having 5% or more solids. ~~will be determined by the test method in subsection 503.2c (EPA Method 24), 503.2f (BAAQMD Method 31 [April 15, 1992]) or 503.2g (SCAQMD Method 313-91 [April 1997]).~~
 - (3) Plastisols, powder coatings, and radiation-cured coatings shall be cured according to the procedures actually used in the coating process being tested before final VOC-emission determinations are made.
 - (4) In the case of multi-component, polymerizing coatings tested according to 503.1a, Method 24 shall be modified to eliminate the post-mixing dilution-step (that employs toluene or other solvent). Instead, the mixture shall be spread by appropriate technique to form a thin layer, occupying the entire bottom of the foil pan. Techniques included in the method referenced in 503.1b can be used as a guide for such spreading.
- b. EPA Method 18 referred to in subsection 503.2b, or EPA Method 25 and its submethod, referred to in subsection 503.2d. The VOC content of gaseous emissions entering and exiting an ECS. ~~shall be determined by either EPA Method 18 referred to in subsection 503.2b, or EPA Method 25 and its submethod, referred to in subsection 503.2d.~~
- c. EPA Method 204 (503.2e) and its submethods, or by using mass balance calculation methods in concert with the methods in 503.2a (EPA Methods 2, 2a, 2c, and 2d).

Capture efficiency of an ECS. ~~shall be determined either by the methods in 503.2e (EPA Method 204 and its submethods), or by using mass balance calculation methods in concert with the methods in 503.2a (EPA Methods 2, 2a, 2c, and 2d).~~
- d. **Spray-Gun Tip Pressure Measurement:** Upon request by the Control Officer, the measurement of air pressure of an air atomized spray-gun shall be demonstrated by any of the following methods:
- (1) Operating the air atomized spray-gun using an air pressure tip gauge supplied by the manufacturer of the spray-gun. This gauge is an attachable device that is in proper working order and supplied by the gun's manufacturer for performing such a measurement. The measurement of the air pressure shall be made dynamically at the center of the air cap and at the air horns.
 - (2) Identifying a permanent mark on the spray-gun provided by the manufacturer that confirms the maximum inlet air pressure of the spray-gun.
 - (3) Providing the maximum inlet air pressure of the spray-gun in writing from the manufacturer of the spray-gun on their letterhead and documented with manufacturer's technical literature.
- e. Temperature measurements shall be done with an instrument with an accuracy and precision of less than one-half degree Fahrenheit (0.25°C) for temperatures up to 480°F (250°C).
- f. **SCAQMD Method 312-91, Determination of Percent Monomer in Polyester Resins and Gel Coat materials, revised April 1996. Alternatively, the manufacturer's formulation of data may be accepted as an alternative to this method. If there is a disagreement between manufacturer's formulation data and the results of a subsequent test, the facility should use the**



test method results unless the facility can make a demonstration that the manufacturer's formulation data is correct.

503.2 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 503 are available at the Maricopa County Air Quality Department, 1001 N. Central Ave., Phoenix, AZ, 85004.

- 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 Non-methane 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).
- f. 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.”
- g. California’s South Coast Air Quality Management District (SCAQMD) Method 313-91 (April 1997).

503.3 Test Methods for ECS: For coatings/adhesives controlled pursuant to Section 305 of this rule.

- a. Measurements of VOC emissions from an ECS shall be conducted in accordance with EPA Methods 18 or its submethods, or by Method 25 or its submethods (40 CFR 60, Appendix A).
- b. Capture efficiency of an ECS shall be determined by mass balance in combination with ventilation/draft rate determinations done in accordance with subsection 503.3c or with US EPA Test Methods 204, 204a, 204b, 204c, 204d, 204e, and 204f (Appendix M, 40 CFR 51).
- c. Ventilation/draft rates shall be determined by EPA Methods 2, 2a, 2c, and 2d (40 CFR 60, Appendix A).

503.4 Test Methods for ECS: For Polyester Resin Operations controlled pursuant to section 305 of this rule.

- a. “Guidelines for Determining Capture Efficiency”, January 9, 1995, Candace Sorrell, Source Characterization Group A, Office of Air Quality Planning and Standards, US EPA; or
- b. EPA Reference Method 204 – Criteria for and Verification of a Permanent or Temporary Total Enclosure, 40 CFR 51, Appendix M; or applicable Subparts 204A, 204B, 204C, 204D, 204E, or 204F; or
- c. EPA Reference Method 18 – Measurement of Gaseous Organic Compound Emissions by Gas Chromatography, 40 CFR 60, Appendix A; or
- d. EPA Reference Method 25 – Determination of Total Gaseous Nonmethane Organic Emissions as Carbon, 40 CFR 60, Appendix A; or applicable Subparts 25A or 25B.



504 FORMULA FOR TOTAL VOC VAPOR PRESSURE/VOC COMPOSITE PARTIAL PRESSURE:

$$PP_c = \frac{\sum_{i=1}^n (W_i)(VP_i)/MW_i}{\frac{W_w}{18} + \sum_{j=1}^m \frac{W_{ej}}{MW_{ej}} + \sum_{i=1}^n \frac{W_i}{MW_i}}$$

- W_i = Weight of the “i”th VOC compound in grams
- W_w = Weight of water in grams
- W_{ej} = Weight of the “j”th non-precursor compound in grams
- MW_i = Molecular weight of the “i”th VOC compound in grams per gram mole, e.g., one gram-mole of isopropyl alcohol weighs 60 grams
- MW_{ej} = Molecular weight of the “j”th non-precursor compound, e.g., 1 gram-mole of acetone weighs 58 grams
- PP_c = VOC composite partial pressure at 20°C in mm mercury (Hg)
- VP_i = Vapor pressure of the “i”th VOC compound at 20°C in mm Hg
- 18 = Weight of one gram-mole of water

505 VOC CONTENT: VOC content is determined by one of the following two formulas:

505.1 VOC CONTENT MINUS EXEMPT COMPOUNDS (VOC CONTENT MINUS EXEMPT EVAPORATING COMPONENTS or “EPA METHOD 24 VOC CONTENT” on manufacturer’s data sheets.)

$$\text{VOC Content Minus Exempt Compounds} = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

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

505.2 VOC CONTENT OF MATERIAL (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)