

RULE 2.21
ORGANIC LIQUID STORAGE AND TRANSFER

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100 GENERAL

- 101 **PURPOSE:** To limit emissions of volatile organic compounds from the storage and transfer of organic liquids.
- 102 **APPLICABILITY:** This rule applies to any above ground stationary storage tank with a capacity of greater than 250 gallons, any gasoline bulk plant, any terminal, or any transport vessel that stores or transfers an organic liquid with a true vapor pressure of 0.5 psia or greater. For the purposes of this rule, the organic liquid's true vapor pressure may be obtained from Table 1, provided that the actual storage temperature of the organic liquid does not exceed the corresponding maximum temperature specified, or may be determined according to the test method specified in Section 602, under actual storage conditions.
- 110 **EXEMPTION - SMALL CAPACITY STORAGE TANKS:** The provisions of this rule do not apply to stationary storage tanks having a capacity of equal to or less than 250 gallons.
- 111 **LIMITED EXEMPTION - PREVENTATIVE MAINTENANCE:** The provisions of sections 302, 303, 304, 305, 306, and 307 shall not apply to tanks undergoing preventative maintenance provided all of the following conditions are met:
- 111.1 The operator shall notify the APCO prior to performing preventative maintenance. In this notification, the operator shall identify the affected tank, list the requirement(s) the operator wishes to exempt, explain how the maintenance will prevent compliance with the requirement(s), specify the expected duration of maintenance, describe the measure(s) the operator will take to minimize emissions as much as practicable during maintenance, and explain the anticipated effect of not performing the maintenance.
- 111.2 The tank is in compliance with all District regulations prior to undergoing preventative maintenance.
- 111.3 Replacement of any tank seal section must comply with the applicable provisions of this rule and the District must receive written notification of the tank permit number and seal type at least three days prior to installation. Replacement of seal sections having a cumulative length greater than 20% of the tank circumference would be subject to the permitting provisions in Rule 3.1.
- 111.4 The tanks shall not receive or empty product while undergoing preventative maintenance.

- 111.5 Emissions shall be minimized to the maximum extent practicable during preventative maintenance. Any mitigation measure(s) shall be implemented immediately.
- 111.6 All preventative maintenance shall be accomplished as expeditiously as practicable and in no case exceed 72 hours per event. The time allowed under this exemption shall not exceed 12 days annually per tank.
- 111.7 Records of the preventative maintenance shall be kept in accordance with Sections 503.4, and 504 of this rule.
- 112 **EXEMPTION – SUBMERGED FILL PIPE:** Storage tanks having a vapor control system as specified in Sections 302 or 303 are exempt from the requirement for a submerged fill pipe.
- 113 **EXEMPTION – PHARMACEUTICAL MANUFACTURING OPERATIONS:** The provisions of this rule shall not apply to pharmaceutical manufacturing operations subject to Rule 2.35.
- 114 **EXEMPTION – GASOLINE DISPENSING FACILITIES:** The provisions of this rule shall not apply to storage tanks at gasoline dispensing facilities subject to Rule 2.22, unless the storage tank is located at a gasoline bulk plant that dispenses fuel to motor vehicles.

200 DEFINITIONS

- 201 **DECK FITTING:** Any functional or operational device attached to an external or internal floating roof including but not limited to an access hatch, fixed roof support column and well, gauge float, gauge hatch, sample well, guidepole, ladder and well, rim vent, roof drain, roof leg, or vacuum breaker.
- 202 **EXTERNAL FLOATING ROOF TANK:** A storage tank equipped with a floating roof exposed to the atmosphere that floats on the surface of the stored liquid. The floating roof is equipped with deck fittings, a primary seal, and a secondary seal.
- 203 **FIXED ROOF TANK:** A storage tank with a roof that is permanently affixed to the shell of the storage tank.
- 204 **GAS LEAK:** A reading in excess of 1,000 ppmv, above background, on a portable hydrocarbon analyzer that is calibrated with methane as determined in accordance with the test method specified in Section 605.
- 205 **GAS TIGHT:** A condition without a gas leak.

- 206 **GASOLINE:** Any petroleum distillate or petroleum distillate/alcohol blend having a Reid vapor pressure of 4.0 pounds per square inch or greater, determined in accordance with the test method specified in Section 601, and used as a motor vehicle fuel or any fuel which is commonly or commercially known or sold as gasoline.
- 207 **GASOLINE BULK PLANT:** Any gasoline loading facility where primary delivery of gasoline to a storage tank is other than by pipeline.
- 208 **GASOLINE DISPENSING FACILITY:** Any stationary facility which receives gasoline from transport vessels and dispenses gasoline directly into the fuel tanks of motor vehicles.
- 209 **GAUGE FLOAT:** A device to indicate the level of the liquid within a storage tank. The float rests on the liquid surface inside a gauge well in the storage tank.
- 210 **GAUGE HATCH/SAMPLE WELL (PORTS):** Consists of a pipe sleeve equipped with a self-closing gasketed cover and allows hand-gauging or sampling of the stored liquid. The gauge hatch/sample port is usually located beneath the gauger's platform, which is mounted on top of the tank shell. A cord may be attached to the self-closing gasketed cover so that the cover can be opened from the platform.
- 211 **GUIDEPOLE:** An anti-rotational device that is fixed to the top and bottom of a storage tank, passing through a well in a floating roof. A guidepole may be solid or be equipped with slots or holes for gauging purposes.
- 212 **INTERNAL FLOATING ROOF TANK:** A storage tank equipped with a fixed roof and a floating roof that floats on the surface of the liquid being contained (but not necessarily in complete contact with it). The floating roof is equipped with deck fittings, a primary seal, and a secondary seal.
- 213 **LEAK FREE:** A liquid leak of less than three drops per minute from any single leak source other than the liquid fill line and vapor line disconnect operations.
- 214 **LOADING FACILITY:** Any organic liquid or gasoline loading rack or set of such racks that load organic liquid or gasoline into transport vessels, which are located on one or more contiguous properties within the District, in actual physical contact or separated solely by a public roadway or other public right-of-way, and are owned or operated by the same person or persons under common control.
- 215 **MECHANICAL SHOE SEAL:** A metallic sheet (the shoe) that is held vertically against the vertical tank wall. The shoe is connected by braces to the floating roof and is held tightly against the wall by springs or weighted levers. A flexible

coated fabric (envelope) is suspended from the shoe seal to the floating roof to form a vapor barrier over the annular space between the roof and the primary seal.

- 216 **ORGANIC LIQUID:** Any liquid which contains any volatile organic compound or mixtures of volatile organic compounds with a true vapor pressure of 0.5 psia or greater under actual storage or loading conditions except liquefied petroleum gases.
- 217 **PRESSURE TANK:** A storage tank that maintains working pressures sufficient at all times to prevent organic vapor or gas loss to the atmosphere, except under emergency conditions.
- 218 **PRESSURE-VACUUM VALVE:** A valve for relieving any pressure or vacuum exceeding acceptable limits.
- 219 **PREVENTATIVE MAINTENANCE:** Tightening, adjusting, repairing, or replacing a component of a vapor control device, tank roof, roof fitting, or tank seal that has become worn due to normal use. The purpose of preventative maintenance is to prevent equipment breakdowns and to minimize emissions, as much as practicable, over the useful life of the component.
- 220 **REID VAPOR PRESSURE:** The absolute vapor pressure of an organic liquid except liquefied petroleum gases, as determined in accordance with the test method specified in Section 601.
- 221 **RIM VENT:** Rim vents are used on storage tanks equipped with a seal design that creates a vapor pocket in the seal and rim area, such as a mechanical shoe seal. The vent is used to release excess pressure or vacuum that is present in the vapor space bounded by the primary-seal shoe, the floating roof rim, the primary seal fabric, and the liquid level. Rim vents usually consist of weighted pallets that rest on a gasketed cover.
- 222 **ROOF DRAIN:** A drain on the roof of an external floating roof tank that is used to remove rainwater from the floating roof. A closed roof drain removes the rainwater from the surface of the roof through a flexible hose through the stored liquid prior to exiting the tank. With a closed roof drain, the rainwater does not come in contact with the liquid stored in the tank. An open roof drain is any drain other than the closed roof drain. An open roof drain is typically used only during an emergency.
- 223 **ROOF LEG:** An adjustable or fixed leg that is attached to the floating roof deck to support or hold the floating roof deck at a predetermined distance off the storage tank bottom to prevent damage to the fittings located underneath the deck and to allow for storage tank cleaning or repair. For adjustable legs, the load-carrying element passes through a well or sleeve in the deck.

- 224 **STORAGE TANK:** Any container designed and equipped for storage of an organic liquid.
- 225 **SUBMERGED FILL PIPE:** Any discharge pipe or nozzle which meets either of the following conditions:
- 225.1 Where the tank is filled from the top, the end of the discharge pipe or nozzle is totally submerged when the liquid level is 6 inches from the bottom of the tank.
- 225.2 Where the tank is filled from the side, the end of the discharge pipe or nozzle is totally submerged when the liquid level is 24 inches from the bottom of the tank.
- 226 **SWITCH LOADING:** Loading diesel fuel into a delivery vessel or storage tank whose previous load was gasoline; or loading any organic liquid not subject to this rule into a delivery vessel or storage tank whose previous load was an organic liquid subject to this rule.
- 227 **TERMINAL:** Any loading facility where delivery of an organic liquid to a storage tank is primarily by pipeline. In the event the pipeline is not operational, delivery of an organic liquid to the storage tanks may be by transport vessel. If other organic liquids are added to the stock organic liquid, such additives are primarily delivered by transport vessel.
- 228 **TRANSFER EQUIPMENT:** All components of the liquid loading line between the liquid pump and the transporting vessel, and the vapor return line from the transporting vessel to the storage tank, or to and including the vapor recovery system.
- 229 **TRANSPORT VESSEL:** Any cargo tank, tank truck, trailer, or railroad tank car that is designed and equipped to receive and transport organic liquid.
- 230 **TRUE VAPOR PRESSURE:** The equilibrium partial pressure exerted by an organic liquid as determined in accordance with the test method specified in Section 602.
- 231 **VACUUM BREAKER:** A device that equalizes the pressure of the vapor space across the floating roof deck as the deck is either being landed on or off its legs. A vacuum breaker consists of a well with a cover. Attached to the underside of the cover is a guided leg long enough to contact the tank bottom as the floating deck approaches. When in contact with the tank bottom, the guide leg mechanically opens the breaker by lifting the cover off the well; otherwise the cover closes the well. Because the purpose of the vacuum breaker is to allow for the free exchange of air and/or vapor, the well does not extend appreciably below the deck.

- 232 **VAPOR RECOVERY SYSTEM:** Any vapor gathering system which is capable of collecting and returning discharged VOC vapors and gases during loading of organic liquids into cargo tanks or transport vessels, back to a stationary storage tank, or into an enclosed process system.
- 233 **VIEWPORT:** An accessible opening in the fixed roof of an internal floating roof tank that measures at least 30 inches on each side or at least 30 inches in diameter.
- 234 **VISIBLE GAP:** An opening which exceeds 1/8 inch.
- 235 **VOLATILE ORGANIC COMPOUND (VOC):** For the purposes of this rule, has the same meaning as in Rule 1.1, General Provisions and Definitions.

300 STANDARDS

- 301 **STORAGE TANK GREATER THAN 40,000 GALLONS CAPACITY:** A person shall not store organic liquid in any stationary storage tank of more than 40,000 gallons capacity, unless such storage tank is a pressure tank or is designed and equipped with one of the vapor loss control devices specified in Sections 302, 303, or 304. The owner or operator of any storage tank subject to the requirements of Sections 302 or 303 shall meet the following requirements:
- 301.1 The true vapor pressure of the organic liquid stored in the tank is less than 11.0 psia under actual storage conditions as determined in accordance with the test method specified in Section 602.
- 301.2 The organic liquid is not visible above the floating roof.
- 301.3 The floating roof is in contact with the liquid contents (but not necessarily in complete contact with it) at all times except when the storage tank is completely emptied, and subsequently refilled. During this period, emptying or refilling shall be a continuous process.
- 301.4 Written notification shall be provided to the APCO at least 7 days prior to landing a floating roof on its legs.
- 301.5 Replacement or installation of a new primary seal shall be allowed only if the seal is a mechanical shoe seal.
- 302 **EXTERNAL FLOATING ROOF TANK:** If the vapor loss control device used to comply with Section 301 is an external floating roof tank, the closure device shall consist of two seals, one above the other; the one below shall be referred to as the primary seal, and the one above shall be referred to as the secondary seal. The primary and secondary seal shall comply with the requirements specified in

Section 306. Deck fittings shall comply with the requirements specified in Section 305.

303 **INTERNAL FLOATING ROOF TANK:** If the vapor loss control device used to comply with Section 301 is an internal floating roof tank, the closure device shall meet the following requirements:

303.1 Consist of two seals, one above the other; the one below shall be referred to as the primary seal, and the one above shall be referred to as the secondary seal. The primary and secondary seal shall comply with the requirements specified in Section 306. Deck fittings shall comply with the requirements specified in Section 305.

303.2 Vapor concentrations above an internal floating roof shall not exceed 30% of its lower explosive limit (LEL).

303.3 All internal floating roof tanks subject to the provisions of this rule that have been degassed shall be equipped with at least 3 viewing ports. The viewports shall be evenly spaced and installed on the fixed roof in such a manner so that each viewport provides an unobstructed view of the tank wall and roof seal. An alternate number or size of viewports may be approved at the discretion of the APCO.

304 **VAPOR RECOVERY SYSTEM:** If the vapor loss control device used to comply with Section 301 is a vapor recovery system, such system shall collect and process all organic vapors and gases and meet the following requirements:

304.1 The system shall have an abatement efficiency of at least 95% by weight as determined annually in accordance with the test methods specified in Section 603, 604, and 606, as applicable.

304.2 Any tank gauging or sampling device on a tank vented to the vapor recovery system shall be equipped with a gas-tight cover which shall be closed at all times, except during gauging or sampling.

304.3 All piping, fittings, and pressure-vacuum relief valves associated with the fixed roof tank and the vapor recovery system shall be constructed and maintained in a gas-tight condition unless the pressure within the fixed roof tank exceeds the valve setting pressure.

305 **DECK FITTING REQUIREMENTS:**

305.1 Internal Floating Roof Tanks

a. Fixed roof support columns and wells shall be equipped with a sliding gasketed cover or with a flexible fabric sleeve.

- b. Ladder wells shall be equipped with a gasketed cover. The cover shall be closed at all times, with no visible gaps, except when the well must be opened for access.

305.2 External Floating Roof Tanks

- a. Each roof drain that is an open-type roof drain shall be equipped with a slotted membrane fabric cover that covers at least 90% of the area opening. The fabric cover must be impermeable if the liquid is drained into the contents of the tank.
- b. External floating roof legs shall be equipped with vapor socks or vapor barriers and be maintained in a gas-tight condition.
- c. Each opening in a floating roof except for vacuum breakers and rim vents shall provide a projection below the liquid surface.
- d. Slotted guidepoles – the well shall be equipped with one of the following:
 - (i) A sliding cover, a well gasket, a pole sleeve, a pole wiper, and an internal float and float wiper designed to minimize the gap between the float and the well. The gap shall not exceed one-eighth (1/8) inch; or
 - (ii) A well gasket, a zero gap pole wiper seal and a pole sleeve that project below the liquid surface.
- e. All other openings in the roof shall be equipped with a gasketed cover, seal, or lid that shall be maintained in a closed position at all times, with no visible gaps, except when the device is in actual use.

305.3 Internal and External Floating Roof Tanks

- a. Guidepoles – sampling or gauging wells and similar fixed projections (such as an anti-rotational pipe) through a floating roof shall meet the following requirements:
 - (i) The well shall provide a projection below the liquid surface
 - (ii) The gap between the pole wiper and the guidepole shall be added to the gaps measured to determine compliance with the secondary seal requirement, and in no case shall the gap exceed one-half (1/2) inch, and

- (iii) Solid guidepoles shall be equipped with a pole wiper and a gasketed cover, seal or lid which shall be in a closed position at all times (i.e. no visible gap) except when the well is in use.
- b. Vacuum breakers shall be equipped with a gasket, with no visible gaps, and shall be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.
- c. Rim vents shall be equipped with a gasket, with no visible gaps, and shall be set to open only when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.
- d. Each access hatch and gauge float well shall be equipped with a cover that is gasketed and bolted. The cover shall be closed at all times, with no visible gaps, except when the hatch or well must be opened for access.

306 **PRIMARY AND SECONDARY SEAL REQUIREMENTS:** Any storage tank that is equipped with primary and/or secondary seals shall meet the following requirements:

- 306.1 There shall be no holes, tears, or openings which allow the emission of organic vapors through the secondary seal. There shall be no holes, tears, or openings in the primary seal envelope surrounding the annular vapor space enclosed by the roof edge, stored liquid surface, shoe, and seal fabric.
- 306.2 For external floating roof tanks a mechanical shoe seal shall be installed so that one end of the shoe extends into the stored liquid and the other end extends a minimum vertical distance of 24 inches above the stored liquid surface.
- 306.3 The geometry of the shoe shall be such that the gap between the shoe and the tank shell shall not exceed twice the seal gap criteria for a vertical length greater than 18 inches.
- 306.4 No gap between the tank shell and the primary seal shall exceed:
 - a. 1-1/2 inch.
 - b. 1/2 inch for a cumulative length greater than 10% of the circumference of the tank.
 - c. 1/8 inch for a continuous length of more than 10% of the circumference of the tank.

- d. 1/8 inch for a cumulative length greater than 30% of the circumference of the tank.
- 306.5 Any secondary seal shall extend from the floating roof to the storage tank shell and shall not be attached to the primary seal.
- 306.6 No gap between the tank shell and the secondary seal shall exceed:
- a. 0.06 inch.
 - b. 0.02 inch for a cumulative length greater than 5% of the circumference of the tank excluding gaps less than 1.79 inches from vertical weld seams.
- 306.7 The secondary seal shall allow easy insertion of probes up to 1-1/2 inch in width in order to measure gaps in the primary seal.
- 307 **TERMINAL LOADING:** The owner or operator of any terminal shall not transfer or permit to be transferred organic liquid into any transport vessel unless such terminal is equipped with a California Air Resources Board (CARB) certified vapor recovery system pursuant to Section 41954 of the California Health and Safety Code that is operated and maintained in compliance with the requirements of such certification or, shall be a District-approved vapor recovery system only when such system does not require CARB certification pursuant to Section 41954 of the California Health and Safety Code.
- 307.1 A person shall not transfer or permit to be transferred organic liquid into any transport vessel unless the VOC emissions to the atmosphere do not exceed 0.08 pounds per 1,000 gallons of organic liquid transferred.
- 307.2 All organic liquid loading equipment shall be maintained to be leak free, gas tight, and in good working order.
- 307.3 During transfer operations, the allowed drainage during disconnect of any transport vessels shall be no more than ten milliliters liquid, averaged over three disconnects.
- 307.4 All transport vessel loading operations shall be accomplished by bottom loading.
- 308 **GASOLINE BULK PLANT LOADING:** The owner or operator of any gasoline bulk plant shall not transfer or permit to be transferred organic liquid into any transport vessel unless such gasoline bulk plant is equipped with a CARB certified vapor recovery system pursuant to Section 41954 of the California Health and Safety Code that is operated and maintained in compliance with the

requirements of such certification or, shall be a District-approved vapor recovery system only when such system does not require CARB certification pursuant to Section 41954 of the California Health and Safety Code.

308.1 All loading facilities transferring organic liquid into transport vessels shall be equipped with a certified vapor recovery system which prevents at least 95% by weight of VOC vapors displaced from entering the atmosphere.

308.2 All organic liquid transfer equipment shall be maintained leak free, gas tight, and in good working order.

308.3 All transport vessel loading shall be accomplished by bottom loading.

309 **TRANSPORT VESSEL:** No person shall use or operate any transport vessel required to be licensed for use on any street or highway unless such transport vessel has a valid CARB certification pursuant to Section 41962 of the California Health and Safety Code. Each transport vessel shall be operated and maintained in compliance with the requirements of such certification and shall be connected to the loading facility vapor recovery system before organic liquid is transferred.

310 **OTHER ORGANIC LIQUID LOADING:** Except for equipment subject to Sections 307 or 308, no person shall transfer or permit the transfer of organic liquid with a true vapor pressure greater than 1.5 psia into any storage tank with a capacity of more than 250 gallons and equal to or less than 40,000 gallons unless the following conditions are met:

310.1 Such transfer is made employing a vapor control system that prevents the release to the atmosphere of not less than 95% by weight of the organic vapors displaced; and

310.2 Such transfer is made employing a submerged fill pipe.

311 **SWITCH LOADING:** Switch loading shall be subject to the requirements of Sections 307, 308, 309, and 310, as applicable.

312 **OPERATING PRACTICES:** Organic liquids subject to this rule shall not be discarded to public sewers, stored in open containers, or handled in any other manner that would result in evaporation to the atmosphere.

313 **STORAGE TANK CLEANING:** The emissions of organic compounds resulting from degassing a storage tank subject to the requirements of Section 301 of this rule shall be controlled by a system which collects and processes all organic vapors and gases and has an abatement efficiency of at least 90% by weight. The system shall be operated until the concentration of volatile organic compounds in the tank is less than 10,000 ppm expressed as methane as determined in accordance with the test method specified in Section 605.

500 MAINTENANCE, MONITORING, REPORTING, AND RECORD KEEPING

- 501 **MAINTENANCE:** The owner or operator of tanks subject to Section 301, shall submit a maintenance plan to the APCO at least 7 days prior to performing maintenance on any equipment subject to the requirements of this rule. The plan shall state the equipment Permit to Operate number, a detailed description of the maintenance to be performed, the expected duration of the maintenance, the reason that the maintenance is necessary, emission control measures that will be employed, and the effect of not performing the maintenance.
- 502 **MONITORING:** The owner or operator shall submit written notification to the APCO at least 7 days prior to performing monitoring on equipment subject to the requirements of this rule and meet the following:
- 502.1 To demonstrate compliance with Section 302, the owner or operator shall conduct the following in accordance with the District-approved report format:
- a. Perform complete gap measurements of the primary and secondary seals every 12 months and each time the tank is emptied and degassed.
 - b. Perform complete gap measurements of all deck fittings every 12 months and each time the tank is emptied and degassed.
- 502.2 To demonstrate compliance with Section 303, the owner or operator shall conduct the following in accordance with the District-approved report format:
- a. Visually inspect the secondary seal, floating roof, and deck fittings. Use an explosimeter that is calibrated in accordance with the manufacturer's specifications to measure the lower explosive limit (LEL). Compliance shall be verified every 3 months at a distance of no less than 4 feet from the viewport or access hatch.
 - b. Perform complete gap measurements of the primary and secondary seals every 10 years and each time the tank is emptied and degassed.
 - c. Perform complete gap measurements of all deck fittings every 10 years and each time the tank is emptied and degassed.
- 502.3 To demonstrate compliance with Section 308, the owner or operator shall conduct the following in accordance with the District-approved report format:

- a. Measure the vapor recovery system emission rate at least once every 12 months in accordance with the test method specified in Section 607 and the terminal operating conditions shall correspond to those established during the testing conducted for the initial certification criterion.

503 **REPORTING:** The owner or operator subject to the requirements of this rule shall meet the following requirements:

503.1 All reports specified in Section 502 shall include sufficient detail to verify compliance with all applicable rule requirements and shall be submitted to the APCO within 45 calendar days after the monitoring work is completed.

503.2 All source tests performed shall be documented in a report in accordance with the test methods and procedures specified in Section 600. The report shall include sufficient detail to verify compliance with all applicable rule requirements and shall be submitted to the APCO within 45 calendar days after the completion of the test. The source test report shall include the date of test and names and titles of personnel performing the test.

503.3 For storage tanks, gasoline bulk plants, and terminals, submit throughput reports to the APCO no later than March 31 for the previous calendar year. Storage tank throughput reports shall include the actual quarterly volume of organic liquid transferred into each tank. Gasoline bulk plant and terminal throughput reports shall include the actual quarterly volume of organic liquid transferred.

503.4 All sources claiming the exemption in Section 111 for preventative maintenance shall send to the District a report including an identification of the tank the maintenance was performed on, a description of the maintenance performed, the day(s) the maintenance was performed, and exact time the exemption was claimed.

504 **RECORD KEEPING:** The owner or operator subject to the requirements of this rule shall maintain accurate records to demonstrate compliance in accordance with the requirements of Sections 501, 502, and 503 on site for a period of at least 5 years and make such records available to the APCO upon request.

600 TEST METHODS: A result by any of the test methods or test procedures listed below, or any amendments and successors thereto, which shows non-compliance with any provision of this rule shall constitute a violation of this rule.

601 **ASTM METHOD D-323-99a:** Reid vapor pressure shall be determined in accordance with American Society of Testing and Materials D-323-99a, Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method).

- 602 **ASTM METHOD D-2879-97(2002)(e1):** True vapor pressure shall be determined in accordance with American Society of Testing and Materials D-2879-97(2002)(e1), Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope.
- 603 **EPA METHODS 2A OR 2B:** The gas flow rate shall be determined in accordance with EPA Method 2A, Direct Measurement of Gas Volume Through Pipes and Small Ducts; or EPA Method 2B, Determination of Exhaust Gas volume flow rate From Gasoline Vapor Incinerators, as applicable.
- 604 **EPA METHOD 18:** Exempt compounds shall be determined in accordance with EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography.
- 605 **EPA METHOD 21:** The gas tight condition shall be determined in accordance with EPA Method 21, Determination of Volatile Organic Compound Leaks, using a portable analyzer calibrated with methane gas.
- 606 **EPA METHODS 25A OR 25B:** VOC emissions shall be determined in accordance with EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Nondispersive Infrared Analyzer, calibrated with methane gas; or EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer, calibrated with methane gas, as applicable.
- 607 **CARB TEST PROCEDURE TP-203.1:** The terminal vapor recovery system efficiency shall be determined in accordance with CARB Vapor Recovery Test Procedure TP-203.1, Determination of Emission Factor of Vapor Recovery Systems of Terminals.
- 608 **CARB TEST PROCEDURES TP-201.1B, TP-201.1C, TP-201.1D, TP-201.1E, TP-201.3, TP-201.3B:** The vapor recovery system efficiency shall be determined in accordance with any of the CARB Vapor Recovery Test Procedures listed above, or the most current CARB Executive Orders as listed on the Permit to Operate.
- 609 **ALTERNATIVE TEST METHODS:** Other test methods demonstrated to provide results that are acceptable for determining Reid or true vapor pressure for purposes of demonstrating compliance with Rule 2.21, after review and approval in writing by the District, the ARB, and the U.S. EPA, may also be used.
- 610 **MULTIPLE TEST METHODS:** When more than one test method is specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of this rule.

TABLE 1. STORAGE TEMPERATURE VERSUS PRODUCT TRUE VAPOR PRESSURE

Organic Liquid	Reference Properties			Not to Exceed Max. Temperature F	
	Density	Gravity	Initial Boiling	0.5	1.5
	lb/gal	°API	Point F	psia	psia
Kerosene	---	42.5	350	195	250
Diesel	---	36.4	372	230	290
Gas Oil	---	26.2	390	249	310
Stove Oil	---	23.0	421	275	340
Jet Fuel JP-1	---	43.1	330	165	230
Jet Fuel JP-3	---	54.7	110	---	25
Jet Fuel JP-4	---	51.5	150	20	68
Jet Fuel JP-5	---	39.6	355	205	260
Jet Fuel JP-7	---	44-50	360	205	260
Fuel Oil No. 1	---	42.5	350	195	250
Fuel Oil No. 2	---	36.4	372	230	290
Fuel Oil No. 3	---	26.2	390	249	310
Fuel Oil No. 4	---	23.0	421	275	340
Fuel Oil No. 5	---	19.9	560	380	465
Residual Fuel Oil	---	19-27	---	405	---
Fuel Oil No. 6	---	16.2	625	450	---
Asphalt 60-100 pen.	---	---	---	490	550
Asphalt 120-150 pen.	---	---	---	450	500
Asphalt 200-300 pen.	---	---	---	360	420
Acrylonitrile	6.8	41.8	173	30	62
Benzene	7.4	27.7	176	34	70
Carbon Disulfide	10.6	22.1	116	---	10
Carbon Tetrachloride	13.4	---	170	20	63
Chloroform	12.5	---	142	---	40
Cyclohexane	6.5	49.7	177	30	65
1,2 Dichloroethane	10.5	---	180	35	75
Ethyl Acetate	7.5	23.6	171	38	70
Ethyl Alcohol	6.6	47.0	173	55	85
Isopropyl Alcohol	6.6	47.0	181	62	95
Methyl Alcohol	6.6	47.0	148	30	62
Methyl Ethyl Ketone	6.7	44.3	175	30	70
Toluene	7.3	30.0	231	75	120
Vinyl Acetate	7.8	19.6	163	30	65