

Equipment type	Rule Requirement (BARCT) - Rule No.	BACT Requirement
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Fugitive Components		
Valves in Gas/vapor/light liquid service/heavy liquid service	See leak rates below	Leakless valves (e.g., leakless bellow seal - current commercially availability is up to 14 inches size valves)
Pump in Light liquid service	See leak rates below	<ul style="list-style-type: none"> Sealles type 500 ppm, Double/tandem mechanical seal with barrier fluid & closed vent system
Pump in Heavy liquid service	100 ppm/24 hr with threshold* – R1173 See also leak rates below	500 ppm, Single mechanical seal with flush cooling
Compressors	See leak rates below	500 ppm, Vent to VRS
Flanges	See leak rates below	500 ppm
Pressure Relief Valves (PRV)	200 ppm/24 hr with threshold* – R1173 See also leak rates below	Rupture disc & vent to VRS (applied to process vessel) 500 ppm, Rupture disc if applicable (applied to pressure vessel)
Process Drains	See leak rates below	500 ppm, P-trap or seal pot
Open-ended lines & valves located at the end lines	Seals except during operation requirements – R1173	
Leak rates Light liquid Light liquid/gas/vapor Heavy liq Light liq/gas/vapor	3 drops/min – R1173 50,000 ppm – R1173 500 ppm – R1173 10,000 ppm/24 hr with threshold* – R1173	

*Table 1 of R1173 - Leak Thresholds

Component Type	Table 1. Leak Thresholds	
	Max. No. of Leaks of 200 or less Components inspected	Max. No. of Leaks for > 200 components inspected
Valves	1	0.5% of number inspected
Pumps	2	1% of number inspected
Compressors	1	1
Atmospheric PRDs	1	1
Threaded Pipe Connectors	1	0.5% of number inspected
Other components	1	1

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Sumps & waste water separators		
Wastewater separators and sumps.	1176(e)(2): Provided with one of the following types of covers or approved equivalent: (i) - floating cover equipped with seals that meet specified gap requirements. (ii) - fixed cover with perimeter seal, equipped with a closed vent system connected to an air pollution control (APC) device. VOC Limit: 500 ppmv (includes cover, closed vent system, etc.)	Same
APC Device (APCD) on Closed Vent Systems	APCD for compliance with 1176(e)(2)(ii) shall achieve a VOC control efficiency of 95% (i.e. thermal oxidizer) or outlet VOC emissions shall be less than 500 ppmv (i.e. carbon adsorbers).	Carbon Adsorbers: VOC Limit of 50 ppmv. Thermal oxidizer: VOC control efficiency of 99%.
Sewer Lines	1176(e)(3): Sewer lines to be completely enclosed with no openings in the manhole cover. Cover only opened for maintenance, etc. VOC Limit: 500 ppmv	Same
Process Drains	1176(e)(4): New drains equipped with water seal controls or approved equivalent. VOC Limit: 500 ppmv	Same
Junction boxes	1176(e)(4): Totally enclosed with a solid gasketed fixed cover or manhole cover. Allowances for vent openings. Cover only opened for maintenance, etc. VOC Limit: 500 ppmv (cover, etc.)	Same
Drain System Components (DSCs): process drains, manhole cover, junction box vent or other wastewater system vent, excluding closed vent systems.	Installation of controls for all DSCs or repeat emitting DSCs (depending on option selected). Controls include water seal controls, APC devices, hardpiping, or complete capping, plugging, or source elimination. VOC: 500 ppmv limit	Same

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Storage Tanks		
External Floating Roof Tank	<p>R1178: by 7/1/03 for VOC < 3 psia, specific detailed requirements + covers for hatches, wells, guidepoles, .. and gaskets for rim vents + mechanical shoe/liquid mounted primary seal, and rim mounted secondary seal</p> <p>R463: * pontoon/double deck type cover or domed: double seals</p>	Dome cover and Rule 1178 compliance for any tank with emission increases above BACT threshold.
Domed External Floating Roof Tank	<p>R1178: by Jan 1,08, for VOC ≥ 3 psia: • installing dome roofs on all tanks, or having an alternative plan • 30% Lower Explosive Limit</p>	Rule 1178 compliance.
Internal Floating Roof Tank	<p>Rule 1178: by Jan 1, 07: • installed specific covers in all support columns and wells, and seals on rims For installation prior 6/1/84, 30% LEL. For installation alter 6/1/84, 50% LEL</p> <p>Rule 463: * On or before 6/1/84: approved Internal Floating Type cover * After 6/1/84: Internal Floating type cover with single liquid mounted primary seal, or double seals. * 50% LEL for installation prior 6/1/84, 30% LEL for installation alter 6/1/84</p>	Rule 1178 compliance
Fixed roof tank	<p>Rule 1178: by Jan 1, 07, for VOC ≥ 0.1 psia: • Vapor Recovery System w/ ≥ 95% efficiency • Vapor tight cover: 500 ppm</p> <p>Rule 463 – Vapor Recovery System w/ ≥ 95% efficiency and vapor tight cover: 1000 ppm</p>	Vapor recovery system with ≥ 95% efficiency and Rule 1178 compliance for any tank with emission increases above the BACT thresholds.

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Baker tank with carbon adsorbers, vapor pressure from 0.1 to 0.5 psia stored material	500 ppm at the outlet of adsorber – R1178	50 ppm at the outlet of adsorbers during tank filling operations
Pressure vessels, PRV		500 ppm Rupture disc if applicable

Loading Tank Truck, Railroad Tank Car, Trailer		
Loading, Class A Facility – loading 20,000 gallons/day or more of organic liquid	0.08 lbVOC /1000 gallons loaded – R462 CARB certified or District-approved vapor recovery or disposal unit (not applicable if vented to adjacent refinery flare/combustion device)– R462 Continuous Monitoring System (not applicable if vented to adjacent refinery flare or combustion device)– R462 Bottom loading of product, only – R462 18 “ W.C. backpressure in vapor recovery or disposal system – R462	99% VOC control efficiency Rule 462 compliance
Loading, Class B Facility – loading 4,000 to 20,000 gallons/day, or not more than 4,000 gallons/day, but more than 500,000 gallons/year of gasoline	CARB certified or District-approved vapor recovery or disposal unit – R462 90% recovery of displaced vapors – R462 Bottom loading of product, only – R462 18 “ W.C. backpressure in vapor recovery or disposal system – R462	99% VOC control efficiency Rule 462 compliance
Loading, Class C Facility – loading not more than 4,000 gallons/day and not more than 500,000 gallon/year of gasoline	Submerged fill or bottom fill loading only – R462	99% VOC control efficiency Rule 462 compliance
Vapor leak (except from transport vessels)	3,000 ppm VOC, as methane, measured by EPA Method 21– R462	See fugitive components, if applicable
Vapor leak (transport vessel)	Exceeding 100% LEL, measured by CARB TP-204.3 - R462	Rule 462 compliance
Liquid leak (except liquid fill line & vapor line of disconnect operations)	3 drop liquid per minute – R462	See fugitive components if applicable
Liquid leak from disconnect operation	2 milliliters per disconnect, from top loading operations – R462 10 milliliters per disconnect, from bottom loading operations – R462	Rule 462 compliance

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Loading, Marine Tank Vessels Operations		
Loading, lightering, ballasting, or housekeeping operations	Control volatile organic emissions (VOCs) from each operation to either: (1) meet the limit of 2 pounds VOCs per 1000 barrels of liquid loaded; or (2) achieve at least 95 percent by weight reduction from uncontrolled level. (AQMD Rule 1142)	(same as BARCT)
Gaseous leaks from hatches, pressure relief valves, connections, gauging ports and vents, and other equipment associated with loading, lightering, ballasting, or housekeeping operations.	No leak condition—defined as reading on a portable hydrocarbon less than or equal 1,000 parts per million, expressed as methane, above background. (AQMD Rule 1142)	Compliance with BACT for fugitive components if applicable.
Liquid leaks from hatches, pressure relief valves, connections, gauging ports and vents, and other equipment associated with loading, lightering, ballasting, or housekeeping operations.	No leak condition—which is defined a leak of less than or equal three drops per minute of organic liquid. (AQMD Rule 1142)	Compliance with BACT for fugitive components if applicable.

Hydrogen plant		
Process vents Existing New/resconstruction	2.5 lb VOC per 1 million cubic feet H2 produced – R1189 0.5 lb VOC per 1 million cubic feet H2 produced – R1189	Route the process vents to the H2 furnace

ICE > 50 bhp, gas/liquid fueled		
Stationary Portable, except emergency standby	250 ppm, 15% O2 - R1110.2 240 ppm, 15% O2 – R1110.2	