

WAC 296-24-33007 Piping, valves, and fittings. (1) General.

(a) **Design.** The design (including selection of materials) fabrication, assembly, test, and inspection of piping systems containing flammable liquids must be suitable for the expected working pressures and structural stresses. Conformity with the applicable provisions of Pressure Piping, ANSI B31-1967 series and the provisions of this section, must be considered prima facie evidence of compliance with the foregoing provisions.

(b) **Exceptions.** This section does not apply to any of the following:

(i) Tubing or casing on any oil or gas wells and any piping connected directly thereto.

(ii) Motor vehicle, aircraft, boat, or portable or stationary engines.

(iii) Piping within the scope of any applicable boiler and pressures vessel code.

(c) **Definitions.** As used in this section, piping systems consist of pipe, tubing flanges, bolting, gaskets, valves, fittings, the pressure containing parts of other components such as expansion joints and strainers, and devices which serve such purposes as mixing, separating, snubbing, distributing, metering, or controlling flow.

(2) **Materials for piping, valves, and fittings.**

(a) **Required materials.** Materials for piping, valves, or fittings must be steel, nodular iron or malleable iron, except as provided in (b), (c), and (d) of this subsection.

(b) **Exceptions.** Materials other than steel, nodular iron, or malleable iron may be used underground, or if required by the properties of the flammable liquid handled. Material other than steel, nodular iron, or malleable iron must be designed to specifications embodying principles recognized as good engineering practices for the material used.

(c) **Linings.** Piping, valves, and fittings may have combustible or noncombustible linings.

(d) **Low-melting materials.** When low-melting point materials such as aluminum and brass or materials that soften on fire exposure such as plastics, or nonductile materials such as cast iron, are necessary, you must give special consideration to their behavior on fire exposure. If such materials are used in aboveground piping systems or inside buildings, they must be suitably protected against fire exposure or so located that any spill resulting from the failure of these materials could not unduly expose persons, important buildings or structures or can be readily controlled by remote valves.

(3) **Pipe joints.** You must make joints liquid tight. You must use welded or screwed joints or approved connectors. You must make up threaded joints and connections tight with a suitable lubricant or piping compound. You must not use pipe joints dependent upon the friction characteristics of combustible materials for mechanical continuity of piping inside buildings. You may use them outside of buildings above or below ground. If used aboveground, you must either secure the piping to prevent disengagement at the fitting or you must design the piping system so that any spill resulting from such disengagement could not unduly expose persons, important buildings or structures, and could be readily controlled by remote valves.

(4) **Supports.** Piping systems shall be substantially supported and protected against physical damage and excessive stresses arising from settlement, vibration, expansion, or contraction.

(5) **Protection against corrosion.** All piping for flammable liquids, both aboveground and underground, where subject to external corrosion, must be painted or otherwise protected.

(6) **Valves.** Piping systems must contain a sufficient number of valves to operate the system properly and to protect the plant. Piping systems in connection with pumps must contain a sufficient number of valves to control properly the flow of liquid in normal operation and in the event of physical damage. You must provide each connection to pipelines, by which equipment such as tankcars or tank vehicles discharge liquids by means of pumps into storage tanks, with a check valve for automatic protection against backflow if the piping arrangement is such that backflow from the system is possible.

(7) **Testing.** You must hydrostatically test all piping before being covered, enclosed, or placed in use to 150% of the maximum anticipated pressure of the system, or pneumatically tested to 110% of the maximum anticipated pressure of the system, but not less than five pounds per square inch gage at the highest point of the system. You must maintain this test for a sufficient time to complete visual inspection of all joints and connections, but for at least ten minutes.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 15-24-100, § 296-24-33007, filed 12/1/15, effective 1/5/16. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1910 Subpart Z. WSR 14-07-086, § 296-24-33007, filed 3/18/14, effective 5/1/14; Order 76-6, § 296-24-33007, filed 3/1/76; Order 73-5, § 296-24-33007, filed 5/9/73 and Order 73-4, § 296-24-33007, filed 5/7/73.]