

Service Piping Systems
New Rules
3-22-12

(13) Materials and designs of service piping systems (d)(1).

(a) Service piping systems must use:

(A) Piping and fittings that comply with section 2, Industrial Gas and Air Piping Systems, of the American National Standard Code for Pressure Piping ANSI B31.1 1967. 253(d)(1)(i) [We need additional research on this standard.](#)

Comment [cnw1]: Check if most current

(B) At least Schedule 40 pipe and use fittings that are at least standard weight in sizes up to and including 6-inch nominal. 253(d)(1)(i)(A)(1)

(C) Copper tubing that is Type K or L and complies with the Standard Specification for Seamless Copper Water Tube, ASTM B88-66a. 253(d)(1)(i)(A)(2)

(D) Steel, wrought iron, brass or copper pipe, or seamless copper, brass or stainless steel tubing, except when stated otherwise . 253(d)(1)(i)(B)

(E) Stainless steel or copper alloys for oxygen piping and fittings when pressures exceed 700 psi. 253(d)(1)(ii)(A)

(F) Hose connections and hose may be used to connect the outlet of a manifold pressure regulator to piping, providing that the working pressure of the piping is 250 psi or less and that complies with the rules for hose and hose connections found in paragraphs (10) (a)(A), (10) (a)(K), (10) (b)(G), (10)(c)(A), (10) (c)(B). 253(d)(1)(ii)(B)

(G) Hose(s) that do not exceed 5 feet in length to connect manifold pressure regulators to piping. 253(d)(1)(ii)(B)

(H) Hose that has a minimum bursting pressure of 1,000 psig (6.8 MPa). 253(d)(1)(ii)(B)

(I) A piping system having a minimum design pressure of 250 psig when oxygen is supplied to a service piping system from a low-pressure oxygen manifold without an intervening pressure regulating device. 253(d)(1)(ii)(C)

(J) Pressure regulating devices at each station outlet when the connected equipment is for use at pressures less than 250 psig (1.7 MPa). 253(d)(1)(ii)(C)

(K) Steel or wrought iron piping for acetylene or acetylenic compounds. 253(d)(1)(iii)(A)

(L) Unalloyed copper for acetylene or acetylenic compounds **only** with equipment listed as appropriate for its use. 253(d)(1)(iii)(B).

(b) Piping joints must be treated as follows. You must:

(A) Weld, thread or flange joints in steel or wrought iron piping. 253(d)(2)(i)

NOTE: Fittings, such as ells, tees, couplings, and unions, may be rolled, forged or cast steel, malleable iron or nodular iron.

(B) Weld, braze, thread, or flange brass or copper pipe joints. 253(d)(2)(ii)

(C) Braze socket type joints with silver-brazing alloy or similar high melting point (not less than 800° F (427° C)) filler metal. 253(d)(2)(ii)

(D) Braze joints or use approved gas tubing fittings in seamless copper, brass, or stainless steel tubing. 253(d)(2)(iii)

(E) Braze socket type joints with silver-brazing alloy or similar high melting point (not less than 800° F (427° C)) filler metal. 253(d)(2)(iii)

(F) Prohibit the use of gray or white cast iron fittings on piping joints. 253(d)(2)(i)

(c) When installing piping systems you must: (d)(3)

(A) Internally examine and remove scale and dirt from fittings and lengths of pipe before assembly. 253(d)(3)(vii)

(B) Wash out oxygen pipe and fittings with a suitable solution which will effectively remove grease and dirt but will not react with oxygen. 253(d)(3)(vii)

NOTE: Hot water solutions of caustic soda or trisodium phosphate are effective cleaning agents for this purpose.

(C) Install and maintain distribution lines in a safe operating condition. 253(d)(3)(i)

(D) Run all piping as directly as practicable. 253(d)(3)(ii)

(E) Protect piping against physical damage. 253(d)(3)(ii)

(F) Make allowances for piping expansion, contraction, jarring and vibration. 253(d)(3)(ii)

(G) Locate pipe laid underground below the frost line. 253(d)(3)(ii)

(H) Protect against corrosion. 253(d)(3)(ii)

(I) Weld or braze piping that is installed in tunnels, trenches or ducts. 253(d)(3)(iii)

(J) Install shutoff valves outside of tunnels, trenches or ducts. 253(d)(3)(iii)

(K) Provide good natural or forced ventilation when oxygen piping is installed in the same tunnel, trench or duct with fuel-gas pipelines. 253(d)(3)(iii)

(L) Drain low points in piping that carries moist gas into drip pots, constructed to permit pumping or draining out the condensate, at necessary intervals. 253(d)(3)(iv)

(M) Install drain valves having outlets normally closed with screw caps or plugs for draining low points in piping systems. 253(d)(3)(iv)

(N) Case or jacket pipes leading to the surface of the ground where necessary to prevent loosening or breaking. 253(d)(3)(iv)

(O) Install gas cocks or valves for all buildings at points where they will be readily accessible for shutting off the gas supply to these buildings in an emergency. 253(d)(3)(v)

(P) Install a shutoff valve in the discharge line from the generator, gas holder, manifold or other source of supply. 253(d)(3)(v)

(Q) Thoroughly blow out assembled piping with air, nitrogen or carbon dioxide. 253(d)(3)(ii)

(R) Use oil-free air, oil-free nitrogen, or oil-free carbon dioxide to blow out oxygen piping. : 253(d)(3)(ii)

NOTE: Air or inert gas may be used with other piping. 253(d)(3)(viii)

(S) When purging oxygen lines, use oil-free air, oil-free nitrogen, or oil-free carbon dioxide. 253(d)(3)(x)

(d) When installing piping systems you must not:

(A) Install shutoff valves in safety relief lines in such a manner that the safety relief device can be rendered ineffective. 253(d)(3)(vi)

(B) Have uncapped openings of flammable gas lines or other parts of equipment being purged of air or gas near open lights or other sources of ignition. 253(d)(3)(ix)

(C) Use open end valves or petcocks except when drips are located outdoors, underground, and not readily accessible. 253(d)(3)(iv)

(D) Use valves outdoors, underground or in areas not readily accessible unless they are equipped with a means to secure them in the closed position. 253(d)(3)(iv)

(E) Weld or cut an acetylene or oxygen pipeline, including the attachment of hangers or supports, until the line has been purged. 253(d)(3)(x)

(e) When painting and marking piping systems you must ensure that: (d)(4):

(A) Underground pipe and tubing and outdoor ferrous pipe and tubing is covered or painted with a suitable material for protection against corrosion. 253(d)(4)(i)

(B) Aboveground piping systems are marked in accordance with the American National Standard Scheme for the Identification of Piping Systems, ANSI A13.1 1956. 253(d)(4)(ii)

(C) Station outlets are marked with the name of the gas. 253(d)(4)(iii)

(f) When testing piping systems you must: 253(d)(5)(i)

(A) Test and prove they are gas-tight at 1-1/2 times their maximum operating pressure. 253(d)(5)(i)

(B) Thoroughly purge them of air before placing them in service. 253(d)(5)(i)

(C) Use oil free and noncombustible material to test oxygen lines. 253(d)(5)(i)

(g) When testing piping systems you must not:

(A) Use flames to detect leaks. 253(d)(5)(i)

(B) Purge flammable gas lines or other parts of equipment of air or gas when uncapped openings are near sources of ignition. 253(d)(5)(ii)