steel, carbon-manganese-alloy steel, manganese-vanadium-alloy steel, and carbon-silicon steel may convert to graphite.

(b) (Reproduces 124.2.B.) Upon prolonged exposure to temperatures above 875 °F (468 °C), the carbide phase of alloy steels, such as carbon-molybdenum, manganese-molybdenum-vanadium, manganese-chromium-vanadium, and chromium-vanadium, may convert to graphite.

(c) [Reserved]

d) The design temperature of a piping system employing one or more of the materials listed in paragraphs (a), (b), and (c) of this section shall not exceed the lowest graphitization temperature specified for materials used.

§ 56.60–15 Ductile iron.

(a) Ductile cast iron components made of material conforming to ASTM A 395 (incorporated by reference, see 46 CFR 56.01–2) may be used within the service restrictions and pressure-temperature limitations of UCD–3 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 56.01–2).

(b) Ductile iron castings conforming to ASTM A 395 (incorporated by reference, see § 56.01–2) may be used in hydraulic systems at pressures in excess of 7500 kilopascals (1000 pounds per square inch) gage, provided the following:

(1) The castings receive a ferritizing anneal when the as-cast thickness does not exceed one inch;

(2) Large castings for components, such as hydraulic cylinders, are examined as specified for a casting quality factor of 90 percent in accordance with UG–24 of section VIII of the ASME Boiler and Pressure Vessel Code; and

(3) The castings are not welded, brazed, plugged, or otherwise repaired.

(c) After machining, ductile iron castings must be hydrostatically tested to twice their maximum allowable working pressure and must show no leaks.

(d) Ductile iron castings exhibiting less than 12 percent elongation in 50 millimeters (2 inches) when subjected
§ 56.60–20 Nonferrous materials.

Nonferrous materials listed in this subpart may be used in piping systems under the following conditions (see also § 56.10–5(c)):

(a) The low melting points of many nonferrous metals and alloys, such as aluminum and aluminum alloys, must be recognized. These types of heat sensitive materials must not be used to conduct flammable, combustible, or dangerous fluids, or for vital systems unless approved by the Marine Safety Center.

(b) The possibility of galvanic corrosion due to the relative solution potentials of copper and aluminum and their alloys should be considered when used in conjunction with each other or with steel or with other metals and their alloys when an electrolyte is present.

(c) A suitable thread compound must be used in making up threaded joints in aluminum pipe to prevent seizing which might cause leakage and perhaps prevent disassembly. Pipe in the annealed temper should not be threaded.

(d) The corrosion resistance of copper bearing aluminum alloys in a marine atmosphere is poor and alloys with copper contents exceeding 0.6 percent should not be used. Refer to Table 56.60–2(a) of this part for further guidance.

§ 56.60–25 Nonmetallic materials.

(a) Plastic pipe installations shall be in accordance with IMO Resolution A.753(18) (incorporated by reference; see 46 CFR 56.01–2) and the following supplemental requirements:

(1) Materials used in the fabrication of plastic pipe shall comply with the appropriate standards listed in § 56.01–2 of this chapter.

(2) Plastic pipe is not permitted in a concealed space in an accommodation or service area, such as behind ceilings or linings or between double bulkheads, unless—

(i) Each trunk or duct containing such piping is completely surrounded by “A” class divisions; or

(ii) An approved smoke-detection system is fitted in the concealed space and each penetration of a bulkhead or deck and each installation of a draft stop is made in accordance with IMO resolution A.753(18) to maintain the integrity of fire divisions.

(3) Plastic pipe used outboard of the required metallic shell valve in any piping system penetrating the vessel’s shell (see § 56.50–95(f)) shall have the same fire endurance as the metallic shell valve. Where the shell valve and the plastic pipe are in the same unmanned space, the valve shall be operable from above the freeboard deck.

(4) Pipe that is to be used for potable water shall bear the seal of approval or NSF mark of the National Sanitation Foundation Testing Laboratory, Incorporated, School of Public Health, University of Michigan, Ann Arbor, MI 48103.

(b) Nonmetallic flexible hose. (1) Nonmetallic flexible hose must be in accordance with SAE J1942 (incorporated by reference; see 46 CFR 56.01–2) and may be installed only in vital and nonvital fresh and salt water systems, nonvital pneumatic systems, lube oil and fuel systems, and fluid power systems.

(2) Nonmetallic flexible hose may be used in vital fresh and salt water systems at a maximum service pressure of 1,034 kPa (150 psi). Nonmetallic flexible hose may be used in lengths not exceeding 76 cm (30 inches) where flexibility is required, subject to the limits in paragraphs (a)(1) through (4) of this section. Nonmetallic flexible hose may be used for plastic pipe in duplicate installations in accordance with this paragraph (b).

(3) Nonmetallic flexible hose may be used for plastic pipe in non-vital fresh and salt water systems and non-vital...