3. Warehousing, or

4. Boiler or mechanical equipment rooms.

(d) The piping is a temporary installation for buildings under construction.

2.5.2 Liquefied Petroleum Gas Systems. The operating pressure for undiluted LP-Gas systems shall not exceed 20 psig (140 kPa gauge). Buildings having systems designed to operate below -5°F (-21°C) or with butane or a propane-butane mix shall be designed to either accommodate liquid LP-Gas or prevent LP-Gas vapor from condensing back into a liquid.

Exception: Buildings, or separate areas of buildings, constructed in accordance with Chapter 7 of Standard for the Storage and Handling of Liquefied Petroleum Gases, NFPA 58, and used exclusively to house industrial processes, research and experimental laboratories, or equipment or processing having similar hazards.

2.6 Acceptable Piping Materials and Joining Methods.

2.6.1 General.

(a) *Material Application.* Materials and components conforming to standards or specifications listed herein or acceptable to the authority having jurisdiction shall be permitted to be used for appropriate applications, as prescribed and limited by this *Code*.

(b) *Used Materials.* Pipe, fittings, valves, or other materials shall not be used again unless they are free of foreign materials and have been ascertained to be adequate for the service intended.

(c) *Other Materials.* Material not covered by the standards specifications listed herein shall be investigated and tested to determine that it is safe and suitable for the proposed service, and, in addition, shall be recommended for that service by the manufacturer and shall be acceptable to the authority having jurisdiction.

2.6.2 Metallic Pipe.

(a) Cast-iron pipe shall not be used.

(b) Steel and wrought-iron pipe shall be at least of standard weight (Schedule 40) and shall comply with one of the following standards:

1. *Standard for Welded and Seamless Wrought-Steel Pipe*, ANSI/ASME B36.10;

2. *Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless*, ASTM A 53; or

3. *Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service*, ASTM A 106.

(c) Nodular (ductile) iron pipe shall comply with one of the following standards:

1. *Standard for Ductile-Iron Pipe, Centrifugally Cast, in Metal Molds or Sand-Lined Molds, for Gas*, ANSI A21.52; or

2. *Specification for Ductile Iron Pressure Pipe*, ASTM A 377.

Such pipe shall be not less than 3-in. size, shall not be welded, and shall be used only underground outside building foundation boundaries, or aboveground, provided that joints are properly restrained against movement and separation.

(d)* Copper and brass pipe shall not be used if the gas contains more than an average of 0.3 grains of hydrogen sulfide per 100 standard cu ft of gas (0.7 milligrams per 100 L).

Threaded copper, brass, or aluminum alloy pipe in iron pipe sizes shall be permitted to be used with gases not corrosive to such material.

(e) Aluminum alloy pipe shall comply with *Specification for Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube*, ASTM B 241 (except that the use of alloy 5456 is prohibited), and shall be marked at each end of each length indicating compliance. Aluminum alloy pipe shall be coated to protect against external corrosion where it is in contact with masonry, plaster, or insulation, or is subject to repeated wettings by such liquids as water, detergents, or sewage.

Aluminum alloy pipe shall not be used in exterior locations or underground.

2.6.3 Metallic Tubing. Seamless copper, aluminum alloy, or steel tubing shall be permitted to be used with gases not corrosive to such material.

(a) Steel tubing shall comply with *Standard Specification for Electric Resistance-Welded Coiled Steel Tubing for Gas and Fuel Oil Lines*, ASTM A 539, or *Standard Specification for Copper Brazed Steel Tubing*, ASTM A 254.

(b)* Copper tubing shall comply with standard Type K or L of *Specification for Seamless Copper Water Tube*, ASTM B 88; or *Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service*, ASTM B 280.

(c) Aluminum alloy tubing shall comply with *Specification for Aluminum-Alloy Drawn Seamless Tubes*, ASTM B 210, or *Specification for Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube*, ASTM B 241. Aluminum-alloy tubing shall be coated to protect against external corrosion where it is in contact with masonry, plaster, or insulation, or is subject to repeated wettings by such liquids as water, detergent, or sewage.

Aluminum-alloy tubing shall not be used in exterior locations or underground.

(d) Corrugated stainless steel tubing shall be tested and listed in compliance with the construction, installation, and performance requirements of *Standard for Fuel Piping Systems Using Corrugated Stainless Steel Tubing*, ANSI/AGA LC 1.

2.6.4 Plastic Pipe, Tubing, and Fittings. Plastic pipe, tubing, and fittings shall be used outside underground only and shall conform with *Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings*, ASTM D 2513. Pipe to be used shall be marked "gas" and "ASTM D 2513."

Anodeless risers shall comply with the following:

(a) Factory-assembled anodeless risers shall be recommended by the manufacturer for the gas used and shall be leak tested by the manufacturer in accordance with written procedures.

(b) Service head adapters and field-assembled anodeless risers incorporating service head adapters shall be recommended by the manufacturer for the gas used by the manufacturer and shall be design certified to meet the requirements of Category I of ASTM D 2513, and U.S. Department of Transportation, *Code of Federal Regulations*, Title 49, Part 192.281(e). The manufacturer shall provide the user qualified installation instructions as prescribed by U.S. Department of Transportation, *Code of Federal Regulations*, Title 49, Part 192.283(b).

The use of plastic pipe, tubing, and fittings in undiluted liquefied petroleum gas piping systems shall be in accordance with *Standard for the Storage and Handling of Liquefied Petroleum Gases*, NFPA 58.