

SELECTING APPLICABLE B31 PIPING CODE SECTIONS

OWNER'S RESPONSIBILITY

It is the owner's responsibility to select the Code Section(s) that apply to a proposed piping installation. Factors to be considered by the owner include: scopes of the Code Sections; jurisdictional requirements; and the applicability of other codes and standards. Each B31 Code Section is intended to be applied as a whole to a given piping system; however, for some installations, more than one Code Section may apply to different parts of a piping system or to different parts of the installation, and the Owner shall clearly identify where any transition points occur. The owner is also responsible for imposing requirements supplementary to those of the Code if necessary to assure safe piping for the proposed installation. This document provides guidance in the form of descriptions of the ASME B31 Code Section scopes to assist the owner in making an appropriate selection.

ASME B31 CODE SECTION DESCRIPTIONS

The ASME B31 Code for Pressure Piping consists of a number of individually published Sections. The rules contained in each Section reflect the kinds of piping installations that the responsible subcommittee had in mind during development of that Section. The kinds of piping system to which a Section is intended to apply is found in the beginning of each Section under the heading of "Scope." Following are abbreviated scopes of all Sections to assist in the Owner in selection of the appropriate Section.

B31.1 Power Piping: piping typically found in electric power generating stations, in industrial and institutional plants, geothermal heating systems, and central and district heating and cooling systems. B31.1 is intended to be applied to:

- Piping for steam, water, oil, gas, air and other services
- Metallic and nonmetallic piping
- All pressures
- All temperatures meeting minimum toughness criteria

B31.1 is mandatory for piping that is attached directly to an ASME Section I boiler up to the first isolation valve, except in the case of multiple boiler installations where it is mandatory up to the second isolation valve.

B31.3 Process Piping: piping typically found in process facilities such as petroleum refineries; onshore and offshore petroleum and natural gas production facilities; food and beverage processing facilities; chemical, pharmaceutical, textile, paper, ore processing, semiconductor, cryogenic plants, and related processing plants and terminals. It is intended to be applied to:

- Piping for all fluid services
- Metallic and nonmetallic piping
- All pressures
- All temperatures

The owner is also responsible for designating when certain fluid services, i.e., Category M (toxic), High Purity, High Pressure, High Temperature and Category D (nonflammable, nontoxic fluids at low pressure and temperature) are applicable to specific systems and for designating if a Quality System is to be imposed.

B31.4 Pipeline Transportation Systems for Liquids and Slurries: piping transporting products which are predominately liquids or aqueous slurries between wells, plants, and terminals, and within terminals, pumping, regulating, and metering stations. B31.4 is intended to be applied to:

- Piping transporting liquids such as crude oil, condensate, natural gasoline, natural gas liquids, liquefied petroleum gas, carbon dioxide, liquid alcohol, liquid anhydrous ammonia, and liquid petroleum products
- Piping transporting aqueous slurries of nonhazardous materials;
- Piping at pipeline terminals (marine, rail, and truck), tank farms, pump stations, pressure reducing stations, and metering stations, including scraper traps, strainers, and prover loops;
- All pressures;
- Temperatures from -29 to 121°C (-20 to 250°F) inclusive;

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B31.4 covers the design, construction, operation, and maintenance of these piping systems, B31.4 does not have requirements for auxiliary piping, such as water, air, steam, and lubricating oil.

B31.5 Refrigeration Piping and Heat Transfer Components: piping and heat transfer components containing refrigerants and secondary coolants including water when water is used as a secondary coolant. B31.5 is intended to be applied to:

- Refrigerant and secondary coolant piping
- Heat transfer components such as condensers and evaporators
- All pressures
- Temperatures at and above -320°F (-196°C)

B31.8 Gas Transportation and Distribution Piping Systems: piping transporting products which are predominately natural gas between sources and end-use services. B31.8 is intended to be applied to:

- Onshore and offshore pipeline facilities used for the transport of gas
- Gas gathering pipelines
- Gas distribution systems
- Piping at compressor, regulating, and metering stations
- All pressures

Temperatures from -29 to 232°C (-20 to 450°F) inclusive, except that lower temperatures are permitted when specified toughness requirements are met.

B31.8 covers the design, construction, operation, and maintenance of these piping systems, but it does not have requirements for auxiliary piping, such as water, air, steam, or lubricating oil.

B31.9 Building Services Piping: piping typically found in industrial, institutional, commercial, and public buildings, and in multi-unit residences. B31.9 is intended to be applied to:

- Piping for water and anti-freeze solutions for heating and cooling, steam and steam condensate, air, combustible liquids and other nontoxic, nonflammable fluids contained in piping not exceeding the following
- Dimensional limits
 - Carbon steel: NPS 48 (DN 1200) and 0.500 in. (12.7 mm) wall
 - Stainless steel: NPS 24 (DN 600) and 0.500 in. (12.7 mm) wall
 - Aluminum: NPS 12 (DN 300)
 - Brass and copper NPS 12 (DN 300), 12.125 in. (308 mm) for copper tube.
 - Thermoplastics: NPS 24 (DN 600)
 - Ductile Iron: NPS 48 (DN 1200)
 - Reinforced Thermosetting Resin: NPS 24 (DN 600)
- Pressure and temperature limits, inclusive:
 - Compressed air, steam and steam condensate to 150 psi (1035 kPa) gage
 - Steam and steam condensate from ambient to 366°F (186°C)
 - Other gases from ambient to 0 to 200°F (-18 to 93°C)
 - Liquids to 2415 kPa (350 psi) gage and from 0 to 250°F (-18 to 121°C)
 - Vacuum to 14.7 psi (1 Bar).
 - Minimum Service Temperature 0°F (-18°C)
- Piping connected directly to ASME Section IV Heating Boilers.

B31.12 Hydrogen Piping and Pipelines: piping in gaseous and liquid hydrogen service and pipelines in gaseous hydrogen service. This Code is applicable up to and including the joint connecting the piping to associated pressure vessels and equipment. B31.12 is intended to be applied to:

- Metallic piping
- Pipeline systems pressures below 3,000 psi gage and from -80 to 450°F
- Industrial piping below pressures designated by the owner as High Pressure Fluid Service and meeting B31.3 requirements. Elevated Temperature Fluid Service is excluded.

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OTHER PIPING CODES

Certain piping within a facility should be recognized as normally subject to other codes and standards, including but not limited to:

ASME Section III, Nuclear Components;

NFPA 54/ANSI Z223.1 *National Fuel Gas Code*: piping for fuel gas from the point of delivery to the connection of each fuel utilization device;

NFPA 13, Fire Protection Standards: fire protection systems using water, carbon dioxide, halon, foam, dry chemical, and wet chemicals;

NFPA 99 Health Care Facilities: medical and laboratory gas systems;

NFPA 85 Boiler and Combustion Systems Hazards; fuel (pulverized coal, gas or oil) transport piping from coal mills or supply source to the burners;

Building and plumbing codes, as applicable, published by the International Association of Plumbing and Mechanical Officials (IAPMO) and by the International Code Council (ICC) for hydronic piping and for potable hot and cold water, and for sewer and drain systems