

PART

3

International Fuel Gas Code

Chapters 1 through 8

- **Chapter 1** Scope and Administration
- **Chapter 2** Definitions
(No changes addressed.)
- **Chapter 3** General Regulations
(No changes addressed.)
- **Chapter 4** Gas Piping Installations
- **Chapter 5** Chimneys and Vents
(No changes addressed.)
- **Chapter 6** Specific Appliances
(No changes addressed.)
- **Chapter 7** Gaseous Hydrogen Systems
(No changes addressed.)
- **Chapter 8** Referenced Standards
(No changes addressed.)

The *International Fuel Gas Code*® (IFGC®) applies to the installation of fuel gas piping systems, fuel gas utilization equipment, gaseous hydrogen systems and related accessories. Chapter 1 provides for the administration and enforcement of the code, assigning responsibility and authority to the code official. Chapter 2 contains definitions of terms specific to their use throughout the code. The general requirement provisions of Chapter 3 govern the approval and installation of all equipment and appliances regulated by the code. Requirements for the design and installation of gas piping systems are set out in Chapter 4 and include provisions for materials, components, fabrication, testing, inspection, operation and maintenance of such systems. The scope of Chapter 5 includes factory-built chimneys, liners, vents, connectors and utilization of masonry chimneys serving gas-fired appliances. Reference is made to the *International Mechanical Code*® (IMC®) for chimneys serving appliances using other fuels and to the *International Building Code*® (IBC®) for the construction requirements of masonry chimneys. Approval, design and installation of specific appliances such as furnaces, boilers, water heaters, fireplaces, decorative appliances, room heaters and clothes dryers are covered in Chapter 6. Chapter 7 covers the developing technology of gaseous hydrogen systems, including hydrogen generation and refueling operations, and provides reference to the applicable provisions of the *International Fire Code*® (IFC®). Chapter 8 provides a complete list of standards referenced in various sections of the code. ■



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Code Official Duties

403.11.3

Piping Materials

406.5.1

Leak Detection

406.7.3.1

Inspection, Testing and Purging

407.2

Piping Support

CHANGE TYPE: Modification

CHANGE SUMMARY: Included in an overall reformat of Section 104 regulating duties of the code official, the approach for reviewing for code compliance has been significantly updated to reflect the current manner in which alternate materials, designs and methods are evaluated.

2024 CODE TEXT:

(See Plumbing Significant Change for Section 104.)

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Code Official Duties



The Steiner Tunnel Test referred to in ASTM E84 measures a material's flame spread and smoke-developed indexes. *(Photo courtesy of Underwriters Laboratories, Northbrook, IL)*

403.11.3

Piping Materials

CHANGE TYPE: Modification

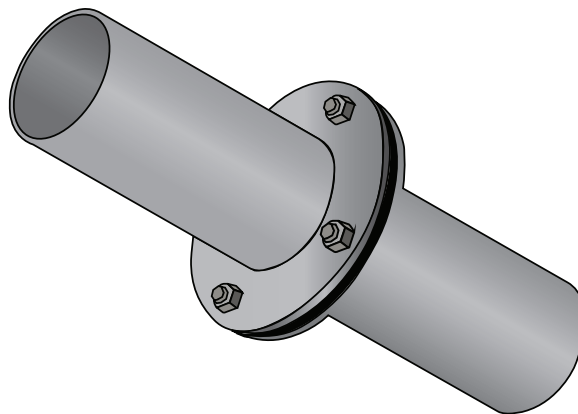
CHANGE SUMMARY: A reference is added for aluminum flanges.

2024 CODE TEXT: 403.11.3 Nonferrous. Nonferrous flanges shall be in accordance with ASME B16.24 except listed components using aluminum flange connections constructed in accordance with the dimensional specifications of ANSI/ASME B16.5.

CHANGE SIGNIFICANCE: Flanges serve the same function as a union and are used for large piping at locations where it is necessary to disassemble and reassemble piping connections to valves, meters, regulators and other sections of piping. A flange consists of two mating fittings that bolt together to form a butt joint.

Aluminum pipe is not commonly used for gas service. Because aluminum is a fairly reactive metal, it corrodes readily when exposed to a variety of materials and the environment. The use of aluminum flange connections for listed components are permitted when they are constructed in accordance with the dimensional specifications of ANSI/ASME B16.5, *Pipe Flanges and Flanged Fittings, NPS 1/2 through NPS 24*. Prior to the change, nonferrous flanges had to be in accordance with ASME B16.24—2021, *Cast Copper Alloy Pipe Flanges and Flanged Fittings: Classes 150, 300, 600, 900, 1500 and 2500*.

ANSI/ASME B16.5 covers pressure-temperature ratings, materials, dimensions, tolerances, marking, testing and methods of designating openings for pipe flanges and flanged fittings. B16.5 is limited to flanges and flanged fittings made from cast or forged materials, and blind flanges and certain reducing flanges made from cast, forged or plate materials. Also included in this Standard are requirements and recommendations regarding flange bolting, flange gaskets and flange joints.



Aluminum flange connections must meet ASME B16.5.

CHANGE TYPE: Modification

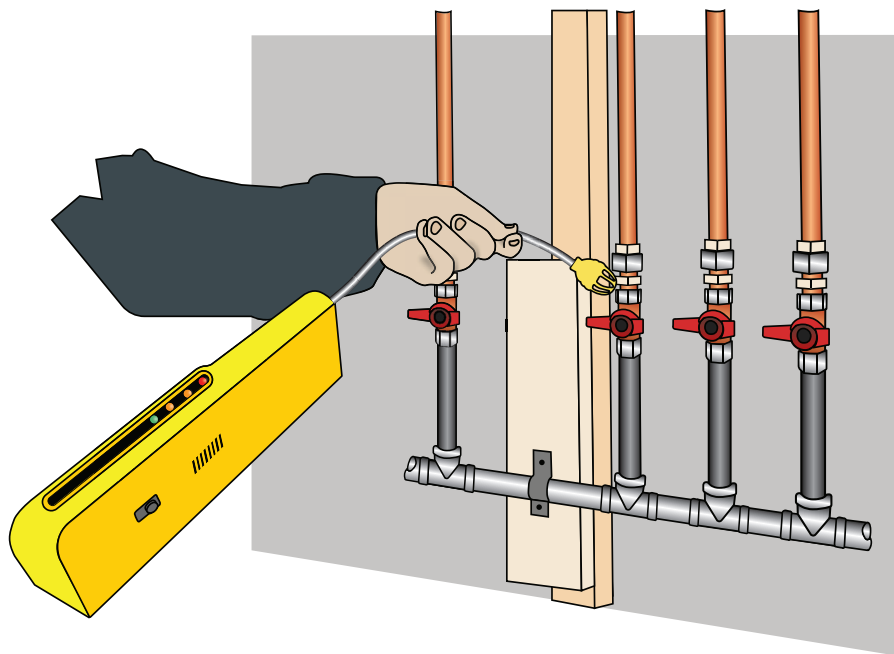
CHANGE SUMMARY: The gas detector for leakage location is now required to be listed.

2024 CODE TEXT: 406.5.1 Detection methods. The leakage shall be located by means of an ~~approved~~ a listed combustible gas detector, a noncorrosive leak detection fluid or other approved leak detection methods.

CHANGE SIGNIFICANCE: Any pressure drop is considered to be a failure of the pressure test, except where the drop can be shown to result from a change in temperature or other cause. This is difficult to demonstrate in the field, especially for short test durations. A true leak should show up as a continuous drop in test pressure. If the rate of pressure drop slows as the test progresses, it may be caused by cooling of the test medium, which causes the pipe to contract.

Once a pressure measuring instrument indicates leakage, the leak or leaks must be located for repair or replacement. Electronic sensors and bubble fluids are used to find leaks that are not readily found by human senses. Open flames must never be used for leak detection due to the danger of a potential explosion and because open flames will not detect small leaks. Many people who have worked with or inspected gas piping installations can recall instances of personal injury, fires and close calls that were caused by searching for leaks with an open flame.

In the 2024 *International Fuel Gas Code*, gas detectors must be listed for their use.



Gas detector used to identify gas leakage.

406.5.1

Leak Detection

406.7.3.1

Inspection, Testing and Purging

CHANGE TYPE: Addition

CHANGE SUMMARY: Purging of fuel gas piping that will be abandoned in place is required.

2024 CODE TEXT: **406.7.3.1 Abandoned fuel gas piping.** Where fuel gas piping is removed from service for an indefinite time period, it shall be purged.

CHANGE SIGNIFICANCE: Purging is intended to prevent a flammable gas/air mixture from being created in the piping. A flammable mixture could be a fire or explosion hazard in the piping, room or space, or in an appliance combustion chamber. There have been documented accidents involving explosions caused by failure to take the necessary precautions during piping purging operations.

Once a piping system has been conditioned (seasoned) by exposure to gas, its ability to absorb the chemical additive in fuel gas diminishes with time. If personnel purge piping into an enclosed area and depend on their sense of smell to detect when gas has reached the purge discharge outlet, they could be fooled if the gas has lost its odor. The sense of smell should never be relied upon to detect the presence of fuel gas.

Combustible gas indicators and detectors are commonly used to detect gas during purging operations. Section 406.7 requires that after the gas piping has been properly purged and charged with fuel gas, the appliances served be purged of air before startup.

In the 2024 *International Fuel Gas Code*, new Section 406.7.3.1 also requires the purging of fuel gas piping that will be abandoned in place.



Abandoned natural gas connection.