

CHAPTER 28

MECHANICAL SYSTEMS

SECTION 2801 GENERAL

2801.1 Scope. Mechanical appliances, equipment and systems shall be constructed and installed in accordance with this chapter, the *International Mechanical Code* and the *International Fuel Gas Code*. Masonry chimneys, fireplaces and barbecues shall comply with the *International Mechanical Code* and Chapter 21 of this code.

Exception: This code shall not govern the construction of water heaters, boilers and pressure vessels to the extent which they are regulated by the Virginia Boiler and Pressure Vessel Regulations (16 VAC 25-50). However, the building official may require the owner of a structure to submit documentation to substantiate compliance with those regulations.

2801.1.1 Required heating in dwelling units. Heating facilities shall be required in every dwelling unit or portion thereof which is to be rented, leased or let on terms, either expressed or implied, to furnish heat to the occupants thereof. The heating facilities shall be capable of maintaining the room temperature at 65°F (18°C) during the period from October 15 to May 1 during the hours between 6:30 a.m. and 10:30 p.m. of each day and not less than 60°F (16°C) during other hours when measured at a point 3 feet (914 mm) above the floor and 3 feet (914 mm) from the exterior walls. The capability of the heating system shall be based on the outside design temperature required for the locality by this code.

2801.1.2 Required heating in nonresidential structures. Heating facilities shall be required in every enclosed occupied space in nonresidential structures. The heating facilities shall be capable of producing sufficient heat during the period from October 1 to May 15 to maintain a temperature of not less than 65°F (18°C) during all working hours. The required room temperature shall be measured at a point 3 feet (914 mm) above the floor and 3 feet (914 mm) from the exterior walls.

Processing, storage and operation areas that require cooling or special temperature conditions and areas in which persons are primarily engaged in vigorous physical activities are exempt from these requirements.

2801.1.3 Changes to the *International Mechanical Code* (IMC). The following changes shall be made to the IMC:

1. Change Section 403.3 of the IMC to read:

403.3 Outdoor airflow rate. Ventilation systems shall be designed to have the capacity to supply the minimum outdoor airflow rate determined in accordance with this section. The occupant load utilized for design of the ventilation system shall not be less than the number determined from the estimated maximum occupant load rate indicated in Table 403.3. Ventilation rates for occupancies not represented in Table

403.3 shall be those for a listed occupancy classification that is most similar in terms of occupant density, activities and building construction; or shall be determined by an approved engineering analysis. The ventilation system shall be designed to supply the required rate of ventilation air continuously during the period the building is occupied, except as otherwise stated in other provisions of the code.

With the exception of smoking lounges and other designated areas where smoking is permitted, the ventilation rates in Table 403.3 are based on the absence of smoking in occupiable spaces.

Exception: The occupant load is not required to be determined based on the estimated maximum occupant load rate indicated in Table 403.3 where approved statistical data document the accuracy of an alternate anticipated occupant density.

2. Add the following areas to Table 403.3 of the IMC in the occupancy classifications shown:

OCCUPANCY CLASSIFICATION	PEOPLE OUTDOOR AIRFLOW RATE IN BREATHING ZONE CFM/PERSON	AREA OUTDOOR AIRFLOW RATE IN BREATHING ZONE R_a CFM/FT ^{2a}	DEFAULT OCCUPANT DENSITY #/1000 FT ^{2a}	EXHAUST AIRFLOW RATE CFM/FT ^{2a}
Food and beverage service				
Bars or cocktail lounges designated as an area where smoking is permitted ^b	30	—	100	—
Cafeteria or fast food designated as an area where smoking is permitted ^b	20	—	100	—
Dining rooms designated as an area where smoking is permitted ^b	20	—	70	—
Public spaces				
Lounges designated as an area where smoking is permitted ^b	30	—	—	—

3. Add Section 801.1.1 to the IMC to read:

801.1.1 Equipment changes. Upon the replacement or new installation of any fuel-burning appliances or equipment in existing buildings, an inspection or inspections shall be conducted to ensure that the connected vent or chimney systems comply with the following:

1. Vent or chimney systems are sized in accordance with this code.

- Vent or chimney systems are clean, free of any obstruction or blockages, defects or deterioration and are in operable condition.

Where not inspected by the local building department, persons performing such changes or installations shall certify to the building official that the requirements of Items 1 and 2 of this section are met.

- Change Section 1101.10 of the IMC to read:

1101.10 Locking access port caps. Refrigerant circuit access ports located outdoors shall be fitted with locking-type tamper-resistant caps or shall be otherwise secured to prevent unauthorized access.

2801.1.4 Changes to the *International Fuel Gas Code*. The following changes shall be made to the *International Fuel Gas Code*:

- Change Section 301.1 of the International Fuel Gas Code to read:

301.1 Scope. This code shall apply to the installation of fuel gas piping systems, fuel gas utilization equipment, and related accessories as follows:

- Coverage of piping systems shall extend from the point of delivery to the connections with gas utilization equipment. (See “point of delivery.”)
- Systems with an operating pressure of 125 psig (862 kPa gauge) or less.

Piping systems for gas-air mixtures within the flammable range with an operating pressure of 10 psig (69 kPa gauge) or less.

LP-Gas piping systems with an operating pressure of 20 psig (140 kPa gauge) or less.

- Piping systems requirements shall include design, materials, components, fabrication, assembly, installation, testing and inspection.
- Requirements for gas utilization equipment and related accessories shall include installation, combustion and ventilation air and venting.

This code shall not apply to the following:

- Portable LP-Gas equipment of all types that are not connected to a fixed fuel piping system.
- Installation of farm equipment such as brooders, dehydrators, dryers, and irrigation equipment.
- Raw material (feedstock) applications except for piping to special atmosphere generators.
- Oxygen-fuel gas cutting and welding systems.
- Industrial gas applications using gases such as acetylene and acetylenic compounds, hydrogen, ammonia, carbon monoxide, oxygen, and nitrogen.

- Petroleum refineries, pipeline compressor or pumping stations, loading terminals, compounding plants, refinery tank farms, and natural gas processing plants.

- Integrated chemical plants or portions of such plants where flammable or combustible liquids or gases are produced by chemical reactions or used in chemical reactions.

- LP-Gas installations at utility gas plants.

- Liquefied natural gas (LNG) installations.

- Fuel gas piping in power and atomic energy plants.

- Proprietary items of equipment, apparatus, or instruments such as gas generating sets, compressors, and calorimeters.

- LP-Gas equipment for vaporization, gas mixing, and gas manufacturing.

- Temporary LP-Gas piping for buildings under construction or renovation that is not to become part of the permanent piping system.

- Installation of LP-Gas systems for railroad switch heating.

- Installation of LP-Gas and compressed natural gas (CNG) systems on vehicles.

- Except as provided in Section 401.1.1, gas piping, meters, gas pressure regulators, and other appurtenances used by the serving gas supplier in the distribution of gas, other than undiluted LP-Gas.

- Building design and construction, except as specified herein.

- Add Section 404.9.3 to the *International Fuel Gas Code* to read:

404.9.3 Coating application. Joints in gas piping systems shall not be coated prior to testing and approval.

- Add Section 501.1.1 to the *International Fuel Gas Code* to read:

501.1.1 Equipment changes. Upon the replacement or new installation of any fuel-burning appliances or equipment in existing buildings, an inspection or inspections shall be conducted to ensure that the connected vent or chimney systems comply with the following:

- Vent or chimney systems are sized in accordance with this code.
- Vent or chimney systems are clean, free of any obstruction or blockages, defects or deterioration and are in operable condition.

Where not inspected by the local building department, persons performing such changes or installations shall certify to the building official that the requirements of Items 1 and 2 of this section are met.