# CHAPTER 22

# SPECIAL PIPING AND STORAGE SYSTEMS

**User notes:**

***About this chapter:*** *Chapter 22 addresses fuel oil piping and storage related to oil-fired heating appliances. Materials, joining methods, tanks, pumps, valves and installation of such are covered.*

***Code development reminder:*** *Code change proposals to this chapter will be considered by the IRC—Plumbing/Mechanical Code Development Committee during the 2018 (Group A) Code Development Cycle. See explanation on page iv.*

## SECTION M2201
## OIL TANKS

**M2201.1 Materials.** Supply tanks shall be *listed* and *labeled* and shall conform to UL 58 for underground tanks and UL 80 for indoor tanks.

**M2201.2 Above-ground tanks.** The maximum amount of fuel oil stored above ground or inside of a building shall be 660 gallons (2498 L). The supply tank shall be supported on rigid noncombustible supports to prevent settling or shifting.

**Exception:** The storage of fuel oil, used for space or water heating, above ground or inside buildings in quantities exceeding 660 gallons (2498 L) shall comply with NFPA 31.

**M2201.2.1 Tanks within buildings.** Supply tanks for use inside of buildings shall be of such size and shape to permit installation and removal from *dwellings* as whole units. Supply tanks larger than 10 gallons (38 L) shall be placed not less than 5 feet (1524 mm) from any fire or flame either within or external to any fuel-burning *appliance*.

**M2201.2.2 Outdoor above-ground tanks.** Tanks installed outdoors, above ground shall be not less than 5 feet (1524 mm) from an adjoining property line. Such tanks shall be suitably protected from the weather and from physical damage.

**M2201.3 Underground tanks.** Excavations for underground tanks shall not undermine the foundations of existing structures. The clearance from the tank to the nearest wall of a *basement*, pit or property line shall be not less than 1 foot (305 mm). Tanks shall be set on and surrounded with noncorrosive inert materials such as clean earth, sand or gravel well-tamped in place. Tanks shall be covered with not less than 1 foot (305 mm) of earth. Corrosion protection shall be provided in accordance with Section M2203.7.

**M2201.4 Multiple tanks.** Cross connection of two supply tanks shall be permitted in accordance with Section M2203.6.

**M2201.5 Oil gauges.** Inside tanks shall be provided with a device to indicate when the oil in the tank has reached a predetermined safe level. Glass gauges or a gauge subject to breakage that could result in the escape of oil from the tank shall not be used. Liquid-level indicating gauges shall comply with UL 180.

**M2201.6 Flood-resistant installation.** In flood hazard areas as established by Table R301.2(1), tanks shall be installed in accordance with Section R322.2.4 or R322.3.10.

**M2201.7 Tanks abandoned or removed.** Outdoor above-grade fill piping shall be removed when tanks are abandoned or removed. Tank abandonment and removal shall be in accordance with the *International Fire Code*.

## SECTION M2202
## OIL PIPING, FITTING AND CONNECTIONS

**M2202.1 Materials.** Piping shall consist of steel pipe, copper and copper-alloy pipe and tubing or steel tubing conforming to ASTM A539. Aluminum tubing shall not be used between the fuel-oil tank and the burner units.

**M2202.2 Joints and fittings.** Piping shall be connected with standard fittings compatible with the piping material. Cast-iron fittings shall not be used for oil piping. Unions requiring gaskets or packings, right or left couplings, and sweat fittings employing solder having a melting point less than 1,000°F (538°C) shall not be used for oil piping. Threaded joints and connections shall be made tight with a lubricant or pipe thread compound.

**M2202.3 Flexible connectors.** Flexible metallic hoses shall be *listed* and *labeled* in accordance with UL 536 and shall be installed in accordance with their *listing* and *labeling* and the manufacturer's installation instructions. Connectors made from combustible materials shall not be used inside of buildings or above ground outside of buildings.

## SECTION M2203
## INSTALLATION

**M2203.1 General.** Piping shall be installed in a manner to avoid placing stresses on the piping, and to accommodate expansion and contraction of the piping system.

**M2203.2 Supply piping.** Supply piping used in the installation of oil burners and *appliances* shall be not smaller than 3/8-inch (9 mm) pipe or 3/8-inch (9 mm) outside diameter tubing. Copper tubing and fittings shall be Type L or heavier.

**M2203.3 Fill piping.** Fill piping shall terminate outside of buildings at a point not less than 2 feet (610 mm) from any building opening at the same or lower level. Fill openings shall be equipped with a tight metal cover.

**M2203.4 Vent piping.** Vent piping shall be not smaller than 1-1/4-inch (32 mm) pipe. Vent piping shall be laid to drain toward the tank without sags or traps in which the liquid can collect. Vent pipes shall not be cross connected with fill pipes, lines from burners or overflow lines from auxiliary tanks. The lower end of a vent pipe shall enter the tank through the top and shall extend into the tank not more than 1 inch (25 mm).

**M2203.5 Vent termination.** Vent piping shall terminate outside of buildings at a point not less than 2 feet (610 mm), measured vertically or horizontally, from any building opening. Outer ends of vent piping shall terminate in a weather-proof cap or fitting having an unobstructed area equal to or greater than the cross-sectional area of the vent pipe, and shall be located sufficiently above the ground to avoid being obstructed by snow and ice.

**M2203.6 Cross connection of tanks.** Cross connection of two supply tanks, not exceeding 660 gallons (2498 L) aggregate capacity, with gravity flow from one tank to another, shall be acceptable providing that the two tanks are on the same horizontal plane.

**M2203.7 Corrosion protection.** Underground tanks and buried piping shall be protected by corrosion-resistant coatings or special alloys or fiberglass-reinforced plastic.

## SECTION M2204
## OIL PUMPS AND VALVES

**M2204.1 Pumps.** Oil pumps shall be positive displacement types that automatically shut off the oil supply when stopped. Automatic pumps shall be *listed* and *labeled* in accordance with UL 343 and shall be installed in accordance with their *listing*.

**M2204.2 Shutoff valves.** A manual shutoff valve shall be installed between the oil supply tank and the burner. Such valve shall be provided with ready access. Where the shutoff valve is installed in the discharge line of an oil pump, a pressure relief valve shall be incorporated to bypass or return surplus oil. Valves shall comply with UL 842.

**M2204.3 Maximum pressure.** Pressure at the oil supply inlet to an *appliance* shall be not greater than 3 pounds per square inch (20.7 kPa).

**M2204.4 Relief valves.** Fuel-oil lines incorporating heaters shall be provided with relief valves that will discharge to a return line when excess pressure exists.