

**To Be Rescinded**

1301:7-7-28 Flammable and combustible liquids.

(A) Section FM-2801.0 General

(1) FM-2801.1 Scope: The provisions of this rule, the mechanical code and NFPA 30 and 30A listed in rule 1301:7-7-44 of the Administrative Code shall apply to the storage, handling and processing of flammable and combustible liquids in addition to the requirements of rule 1301:7-7-23 of the Administrative Code.

Except for the following paragraphs of this rule, nothing in this rule shall apply to those underground storage tanks systems regulated by Chapter 1301:7-9 of the Administrative Code.

(a) Paragraph (B) of this rule;

(b) Paragraphs (C) to (C)(11) of this rule;

(c) Paragraphs (H)(2) and (H)(11)(c) to (H)(11)(D) of this rule;

(d) Paragraphs (F) to (F)(11)(r) of this rule;

(e) Paragraphs (E) to (E)(9) of this rule; and

(f) Paragraphs (L) to (L)(5)(b) of this rule.

(2) FM-2801.2 Permit required: A permit shall be required for any of the following purposes:

(a) To install, remove, repair or alter a stationary tank for the storage of flammable or combustible liquids or modify or replace any line or dispensing device connected thereto.

~~(b) To install, repair or alter in any way, an underground storage tank, to modify or replace any piping connected thereto, to take such tank system temporarily or permanently out of service, or to place an out of service tank system back into service. When such a permit is not required by the local fire official the permit shall be obtained from the fire marshal.~~

~~(c)~~ (b) For the storage, handling or use of class I liquids exceeding 5 gallons (~~0.019 m<sup>3</sup>~~) (19 L) in an institutional or residential occupancy, or exceeding 10 gallons (~~0.038 m<sup>3</sup>~~) (38 L) in any other occupancy, or exceeding 60 gallons (~~0.23 m<sup>3</sup>~~) (227 L) outside of any building, except that a permit shall not be required for the following purposes:

(i) For the storage or use of flammable liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant or mobile heating plant.

(ii) For the storage or use of paints, oils, varnishes or similar mixtures when such liquids are stored for painting, maintenance, or similar purposes on the premises and are not stored for a period exceeding 30 days.

(iii) For the storage or use of flammable liquids for operational purposes in equipment and machinery.

~~(d)~~ (c) Storage, handling or use of class II combustible liquids or class III combustible liquids exceeding 25 gallons (~~0.095 m<sup>3</sup>~~) (95 L) in a structure or exceeding 60 gallons (~~0.23 m<sup>3</sup>~~) (227 L) outside of a structure, except for fuel oil utilized in connection with oil-burning equipment in single-family residential occupancies or for the storage or use of class II or class III combustible liquids for operational purposes in equipment or machinery.

~~(e)~~ (d) For the manufacture, processing, blending or refining of flammable or combustible liquids.

~~(f)~~ (e) For the storage of flammable or combustible liquids in stationary tanks.

~~(g)~~ (f) For placing any flammable or combustible liquid stationary tank temporarily or permanently out-of-service and to place a tank back into service (see paragraphs (G)(2)(FM-2807.2.1) and (H)(11)(FM-2808.11) of this rule).

~~(h)~~ (g) For any structure utilized for servicing or repairing a motor vehicle therein.

(i) (h) Permits REQUIRED BY PARAGRAPH (a) shall be obtained from the fire marshal, ~~for aboveground flammable and combustible liquid tank installations.~~ This paragraph applies only where a permit is not obtained from another officer mentioned in section 3737.14 of the Revised Code.

~~(3) FM 2801.3 Permit application: The application for a permit shall be submitted in such form as the fire official may prescribe and shall be accompanied by dimensional drawings and such additional information as may be required by the fire official. Permit and inspection fees which are required by ordinance shall accompany all applications. When a permit required by paragraph (A)(2)(b)(FM 2801.2) of this rule is obtained from the fire marshal an inspection fee in the amount of seventy five dollars shall be paid to the fire marshal for each underground storage tank permit. The application shall be accompanied by two sets of dimensional drawings and specifications drawn to an appropriate scale. The drawings shall show the location of any present or proposed containers and equipment, property lines, pertinent geographical features, and surrounding buildings or structures and the nature of their use. When the installation, addition, or replacement is completed, the owner shall notify the fire marshal and an inspection will be made to determine that the installation, addition, or replacement conforms with the "Ohio Fire Code".~~

(3) FM-2801.3.4 Stationary tank information: The application to install, remove, repair or alter any stationary tank for the storage of flammable or combustible liquids shall contain a general description of the proposed work and include ~~two~~ THREE copies of a dimensional drawing indicating the location, use, capacity and piping arrangement of all existing and proposed tanks

located, or which are to be located, on the premises and all adjacent structures and property lines. Information confirming that the tank complies with the design requirements of paragraph (C)(2)(FM-2803.2) of this rule shall be attached to or made a part of the application.

FM-2801.3.1 THE APPLICATION FOR A PERMIT SHALL BE SUBMITTED IN SUCH FORM AS THE FIRE OFFICIAL MAY PRESCRIBE AND SHALL BE ACCOMPANIED BY DIMENSIONAL DRAWINGS AND SUCH ADDITIONAL INFORMATION AS MAY BE REQUIRED BY THE FIRE OFFICIAL. PERMIT AND INSPECTION FEES WHICH ARE REQUIRED BY ORDINANCE SHALL ACCOMPANY ALL APPLICATIONS.

FM-2801.3.2 WHEN A PERMIT IS OBTAINED FROM THE FIRE MARSHAL THE APPLICATION SHALL BE ACCOMPANIED BY THREE SETS OF DIMENSIONAL DRAWINGS AND SPECIFICATIONS DRAWN TO AN APPROPRIATE SCALE AND THE NONTRANSFERABLE, NONREFUNDABLE PERMIT FEE. THE DRAWINGS SHALL SHOW THE LOCATION OF ANY PRESENT OR PROPOSED CONTAINERS AND EQUIPMENT, PROPERTY LINES, PERTINENT GEOGRAPHICAL FEATURES, AND SURROUNDING BUILDINGS OR STRUCTURES AND THE NATURE OF THEIR USE.

FM-2801.3.3 WHEN THE PERMIT IS TO BE OBTAINED FROM THE FIRE MARSHAL, WRITTEN APPROVAL SHALL BE SECURED PRIOR TO THE WORK COMMENCING.

FM-2801.3.4 WHEN THE INSTALLATION, ADDITION, OR REPLACEMENT IS COMPLETED, THE OWNER SHALL NOTIFY THE FIRE MARSHAL AND AN INSPECTION WILL BE MADE TO DETERMINE THAT THE INSTALLATION, ADDITION, OR REPLACEMENT CONFORMS WITH THE OHIO FIRE CODE.

(4) FM-2801.4 Use group classification: The storage of flammable and combustible liquids exceeding the exempt amounts per control area indicated in table FM-2801.4 shall be classified as use group H-2.

Exception: ~~The storage of class III B liquids shall be classified as use group H-3 materials.~~

(a) THE STORAGE OF CLASS IIIB LIQUIDS SHALL BE CLASSIFIED AS USE GROUP H-3 MATERIALS.

(b) WHOLESALE AND RETAIL SALES AND STORAGE OF FLAMMABLE AND COMBUSTIBLE LIQUIDS WITHIN A CONTROL AREA IN A MERCHANTILE OCCUPANCY CONFORMING TO THE REQUIREMENTS OF THIS RULE AND NFPA 30 LISTED IN RULE 1301:7-7-44 OF THE ADMINISTRATIVE CODE SHALL BE CLASSIFIED AS USE GROUP M.



Table FM-2801.4  
Exempt amounts of flammable and combustible liquids

Condition	Class	Exempt Amounts (gallons) <sup>b</sup>
Inside storage unprotected by sprinklers, approved cabinet or safety containers	IA	30
	IB	60
	IC	90
	Combination (IA, IB, IC)	120 <sup>a</sup>
	II	120
	IIIA	330
	IIIB	13,200
Within approved cabinet or safety containers in unsprinklered structure	IA	60
	IB	120
	IC	180
	Combination (IA, IB, IC)	240 <sup>a</sup>
	II	240
	IIIA	660
	IIIB	26,400
In sprinklered structure, not in approved cabinet or safety containers	IA	60
	IB	120
	IC	180
	Combination (IA, IB, IC)	240 <sup>a</sup>
	II	240
	IIIA	660
	IIIB	unlimited
In sprinklered structure, within approved cabinet or safety containers	IA	120
	IB	240
	IC	360
	Combination (IA, IB, IC)	480 <sup>a</sup>
	II	480
	IIIA	1,320
	IIIB	unlimited



Table FM-2801.4 (cont'd.)  
Exempt amounts of flammable and combustible liquids

Outside storage	IA	60
	IB	120
	IC	180
	Combination (IA, IB, IC)	240 <sup>a</sup>
	II	240
	IIIA	660
	IIIB	unlimited

Note a. Containing not more than the exempt amounts of class IA, IB or IC flammable liquids.

Note b. 1 gallon = ~~0.00379 m<sup>3</sup>~~ 3.785L.

(5) FM-2801.5 Flammable and combustible liquid piping system: The piping systems for flammable and combustible liquids shall comply with NFPA 30, 30A and the mechanical code listed in rule 1301:7-7-44 of the Administrative Code.

(B) Section FM-2802.0 Definitions

FM-2802.1 General: The following words and terms shall, for the purposes of this rule and as stated elsewhere in this code, have the meanings shown herein.

Atmospheric tank: A storage tank that has been designed to operate at pressures from atmospheric through .05 psig (760 mm Hg through 786 Hg) measured at the top of the tank.

Boiling point: The temperature at which the vapor pressure of a liquid equals the atmospheric pressure of 14.7 pounds per square inch (psia) (101 kPa) or 760 mm of mercury. Where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for the purposes of this classification, the 10 percent of a distillation performed in accordance with ASTM D86 listed in rule 1301:7-7-44 of the Administrative Code shall be used as the boiling point of the liquid.

Combustible liquids: Any liquids having a flash point at or above 100 degrees F. (38 degrees C.) shall be known as class II or III liquids. Combustible liquids shall be divided into the following classifications:

Class II. Liquids having flash points at or above 100 degrees F. (38 degrees C.) and below 140 degrees F. (60 degrees C.).

Class IIIA. Liquids having flash points at or above 140 degrees F. (60 degrees C.) and below 200 degrees F. (93 degrees C.).

Class IIIB. Liquids having flash points at or above 200 degrees F. (93 degrees C.).

Filling station: That portion of a property where liquids used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles.

Flammable liquids: Any liquids having a flash point below 100 degrees F. (38 degrees C.), and having a vapor pressure not exceeding 40 psia (276 kPa) at 100 degrees F. (38 degrees C.). flammable liquids shall be known as class I liquids and shall be divided into the following classifications:

Class IA. Liquids having a flash point below 73 degrees F. (23 degrees C.) and having a boiling point below 100 degrees F. (38 degrees C.).

Class IB. Liquids having a flash point below 73 degrees F. (23 degrees C.) and having a boiling point at or above 100 degrees F. (38 degrees C.).

Class IC. Liquids having a flash point at or above 73 degrees F. (23 degrees C.) and below 100 degrees F. (38 degrees C.).

(See combustible liquids for class II or III liquids.)

Flash point: The minimum temperature in degrees Fahrenheit at which a flammable liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D56 and D93 listed in rule 1301:7-7-44 of the Administrative Code.

Marine service station: That portion of a property where liquids used as fuels are stored and dispensed from fixed equipment on shore, piers, wharves, or floating docks into the fuel tanks of self-propelled craft, including all facilities used in conjunction therewith.

Portable tank: Any closed vessel having a liquid capacity over 60 U.S. gallons (227 L) and not intended for fixed installation.

Pressure vessel: Any fired or unfired vessel within the scope of the applicable section of the ASME Boiler and pressure vessel code.

**Private service station:** That portion of a property where liquids used as motor fuels are stored and dispensed from fixed equipment into the tanks of fleet motor vehicles which are owned or operated by a commercial, industrial, governmental, or manufacturing establishment. The person or entity that owns or operates the storage system shall also own or operate the fleet vehicles.

**Remote solvent reservoir:** A liquid solvent container enclosed against evaporative losses to the atmosphere during periods when the container is not being utilized, except for a solvent return opening not larger than 16 square inches (10,322 mm<sup>2</sup>). Such return allows pump-cycled used solvent to drain back into the reservoir from a separate solvent sink or work area.

**Secondary containment tank:** A tank having an inner and an outer wall with an interstitial space (annulus) between the walls and having means for monitoring the interstitial space for a leak. Underground secondary containment tanks are either type I or type II construction.

**Type I:** A primary tank wrapped by an exterior shell that is in direct contact with it. The exterior shell might or might not wrap the full 360 degree circumference of the primary tank.

**Type II:** A primary tank wrapped by an exterior shell that is physically separated from it by stand-offs and wraps the full 360 degree circumference of the primary tank.

**Self-service station:** That portion of a property open for business where liquids used as motor fuels are stored and subsequently dispensed from fixed approved dispensing equipment into the fuel tanks of motor vehicles by persons other than the service station attendant and may include facilities available for sale of other retail products. Such stations include:

**Attended self-service station:** A self-service station open for business which has an attendant on duty at the filling station premises at all times when flammable and combustible liquids are being sold.

**Unattended self-service station:** A self-service station open for business which has no attendant on duty at the filling station premises when flammable and combustible liquids are being dispensed.

**Service station:** That portion of a property ~~open for business~~ where liquids used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles and shall include any facilities available for the sale and service of tires, batteries, and accessories and for minor automotive maintenance work. Major automotive repairs, painting, and body and fender work are excluded.

**Solvent or liquid classifications:** A method for classifying solvents or liquids according to the following classes:

**Class I solvents -** Liquids having a flash point below 100 degrees F. (38 degrees C.).



Class II solvents - Liquids having a flash point at or above 100 degrees F. (38 degrees C.) and below 140 degrees F. (60 degrees C.).

Class IIIA solvents - Liquids having a flash point at or above 140 degrees F. (60 degrees C.) and below 200 degrees F. (93 degrees C.).

Class IIIB solvents - Liquids having a flash point at or above 200 degrees F. (93 degrees C.).

Class IV solvents - Liquids classified as nonflammable.

Special enclosure: A substantially liquid- and vapor-tight enclosure without backfill that has its sides, top, and bottom constructed of reinforced concrete at least 6 in. (15cm) thick, with openings for inspection through the top only.

(C) Section FM-2803.0 Fire safety requirements

(1) FM-2803.1 General: The layout, arrangement and construction of structures in which flammable or combustible liquids in any quantity are used or stored shall comply with the building code listed in rule 1301:7-7-44 of the Administrative Code and be provided with fire protection and fire protection systems as required by that code. Structures and their service equipment shall be maintained as required by this code.

(2) FM-2803.2 Containers, tanks, equipment and apparatus: containers, tanks, equipment and apparatus and all piping, fittings and appliances utilized or intended to be utilized for the storage, handling, use or movement of flammable or combustible liquids shall be constructed and tested in accordance with NFPA 30 listed in rule 1301:7-7-44 of the Administrative Code, and approved.

(a) F-2803.2.1 Warning labels for containers: All cans, containers and vessels containing flammable liquids or flammable liquid compounds or mixtures offered for sale shall be provided with a warning label painted or printed on the container, stating the liquid is flammable and shall be kept away from heat and an open flame. All portable cans, containers and vessels which are empty and offered for sale and intended for the conveyance or storage of flammable liquids or flammable liquid compounds or mixtures shall be conspicuously marked with the name of the product which the cans, containers or vessels are intended to contain.

(b) FM-2803.2.2 Control of spillage from aboveground tanks: Control of spillage from aboveground tanks shall be provided so that any accidental discharge of any Class I, II, or IIIA liquids will be prevented from endangering important facilities, and adjoining property, or reaching waterways, by remote impounding or impounding around tanks by diking in accordance with NFPA 30 listed in rule 1301:7-7-44 of the Administrative Code.

Exceptions

- (i) Tanks storing class IIIB liquids do not require special drainage or diking provisions for fire protection purposes.
- (ii) Aboveground secondary containment-type tanks need not meet the requirements of remote impounding or diking if all of the following conditions are met:
  - (a) The capacity of the tank shall not exceed 12,000 gallons.
  - (b) All piping connections to the tank shall be made above the normal maximum liquid level.
  - (c) Means shall be provided to prevent the release of liquid from the tank by siphon flow.
  - (d) Means shall be provided for determining the level of liquid in the tank. This means shall be accessible to the delivery operator.
  - (e) Means shall be provided to prevent overfilling by sounding an alarm when the liquid level in the tank reaches ninety percent of capacity and by automatically stopping delivery of liquid to the tank when the liquid level in the tank reaches ninety-five percent of capacity. In no case shall these provisions restrict or interfere with the proper functioning of the normal vent or the emergency vent.
  - (f) Spacing between adjacent tanks shall be not less than three feet (0.9 m).
  - (g) The tank shall be capable of resisting the damage from the impact of a motor vehicle or suitable collision barriers shall be provided.
  - (h) Where the interstitial space is enclosed, it shall be provided with emergency venting.
- (3) F-2803.3 Hazardous appliances: The sale or utilization of any heating, lighting or cooking appliance which utilizes a flammable or combustible liquid presenting a hazard shall be prohibited.
- (4) F-2803.4 Unlawful sale for cleaning: Class I flammable liquids shall not be sold or offered for sale for the purpose of domestic cleaning.
- (5) F-2803.5 Dispensing: All flammable or combustible liquids shall be dispensed in accordance with paragraphs (C)(5)(a)(F-2803.5.1) through (C)(5)(d)(F-2803.5.4) of this rule.
  - (a) F-2803.5.1 Dispensing type: Flammable liquids shall not be dispensed by gravity from tanks, drums, barrels or similar containers. Approved pumps taking suction from the top of the container shall be utilized, except when the viscosity of the liquid makes such a restriction impractical. Combustible liquids shall be drawn from tanks, drums or barrels by gravity through an approved self-closing valve or faucet affixed directly on the container or a rigid closed piping system attached

thereto.

(b) F-2803.5.2 Movable tanks: The temporary use of movable tanks in conjunction with the dispensing of flammable or combustible liquids into the fuel tanks of motor vehicles or other motorized equipment on premises to which the public does not have access are permitted, provided such installation is approved.

(c) F-2803.5.3 Pressurization: Flammable or combustible liquids shall not be dispensed by a device operating through AIR OR INERT GAS pressure within a storage tank, drum or container, unless ~~the tank, drum or container has been approved as a pressure vessel for the intended purpose. Additionally, air or oxygen shall not be utilized to pressurize the approved vessel.~~ ALL OF THE FOLLOWING CONDITIONS ARE MET:

(i) THE STORAGE TANK, DRUM OR CONTAINER SHALL BE DESIGNED FOR SUCH PRESSURIZED DISPENSING AND SHALL BE CAPABLE OF WITHSTANDING THE ANTICIPATED OPERATING PRESSURE;

(ii) SAFETY AND OPERATING CONTROLS, INCLUDING PRESSURE RELIEF DEVICES, SHALL BE PROVIDED TO PREVENT OVERPRESSURE OF ANY PART OF THE SYSTEM; AND

(iii) ONLY INERT GAS SHALL BE USED TO DISPENSE CLASS I FLAMMABLE LIQUIDS, INERT GAS SHALL BE USED TO DISPENSE CLASS II AND CLASS III COMBUSTIBLE LIQUIDS THAT ARE HEATED ABOVE THEIR FLASH POINTS.

(d) F-2803.5.4 Prohibited dispensing: All portable or stationary tanks, drums and containers into which flammable or combustible liquids are dispensed shall comply with the requirements of this code.

(6) F-2803.6 Disposal of waste: ~~A person shall not permit or cause to be permitted the unauthorized~~ THE discharge of flammable or combustible liquids or any waste liquid containing petroleum or petroleum products SHALL BE PROHIBITED into or on any street, pavement, highway, drainage canal ditch, storm or sanitary drain or flood control channel, lake or waterway, or the ground. All waste petroleum products shall be stored and disposed of by an approved method.

(7) FM-2803.7 Cleaning: Both class I and II flammable and combustible liquids shall not be used within a structure for washing parts or removing grease or dirt unless used in a labeled machine for such purpose or in a separately ventilated room constructed in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code. Machines shall be utilized and installed in accordance with paragraphs (C)(7)(a)(FM-2803.7.1) through (C)(7)(f)(FM-2803.7.6) of this rule.

(a) F-2803.7.1 Installation: Machines and equipment shall be installed in accordance with the



manufacturer's installation instructions for the labeled equipment.

(b) FM-2803.7.2 Ventilation: Machines and equipment shall be located in areas ventilated to prevent the accumulation of vapors in accordance with the mechanical code listed in rule 1301:7-7-44 of the Administrative Code.

(c) F-2803.7.3 Solvents: Solvents shall be compatible with machines in which the solvents are used.

(d) F-2803.7.4 Accessibility: Machines shall not be located in areas open to the public.

(e) F-2803.7.5 Separation from ignition sources: Machines shall be separated from ignition sources in accordance with the manufacturer's installation instructions or by a distance of 3 feet (914 mm), whichever is greater.

(f) FM-2803.7.6 Quantity limits: The quantity of both class I and II liquids used in machines shall not exceed the design capacity of such machines, and the following requirements:

(i) The quantity of both class I and II liquids used in machines without remote solvent reservoirs shall not exceed 10 gallons (~~0.038 m<sup>3</sup>~~ 38L).

(ii) The quantity of class II liquids used in machines with remote solvent reservoirs shall not exceed 35 gallons (132L) or the design capacity of the machine whichever is greater (~~0.13 m<sup>3</sup>~~) per machine. The aggregate quantity shall not exceed 240 gallons (~~0.91 m<sup>3</sup>~~ 908L) in structures not protected with an approved automatic sprinkler system and 480 gallons (~~1.8 m<sup>3</sup>~~ 1816L) in structures protected with an approved automatic sprinkler system.

(iii) The remote solvent reservoirs shall be permitted to be integral with the machine that the reservoir services, or separated and connected by hoses, tubing, piping or similar devices complying with paragraph (C)(2)(FM-2803.2) of this rule.

(iv) Remote solvent reservoirs shall comply with the container requirements of paragraph (C)(2)(FM-2803.2) of this rule.

(8) F-2803.8 Sources of ignition: Precautions shall be taken to prevent ignition by eliminating or controlling sources of ignition in locations where flammable vapors are capable of existing. Sources of ignition shall include: open flames, lightning, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical and mechanical), spontaneous ignition, chemical and physical-chemical reactions and radiant heat. Where proper precautionary measures are not taken, either the devices shall not be utilized or the operation shall be suspended.

(9) F-2803.9 Spills and leaks: Flammable and combustible liquid spills and leaks in quantities reportable under state, federal or local regulations shall, within twenty-four hours of discovery, be

reported to the appropriate regulatory agency and immediate measures for clean up commenced.

(10) FM-2803.10 Valves: All new ~~above ground~~ AND EXISTING ABOVEGROUND class I flammable and class II combustible liquid tanks shall be provided with either an approved automatic-closing, heat-actuated valve or a normally closed, remotely activated valve or other approved device on each liquid transfer connection located below the liquid level, except for connections utilized for emergency disposal. The valve shall be located within 2 feet (610 mm) of the shell of the tank. ~~Existing aboveground class I flammable and class II combustible liquid tanks located inside of a structure shall be exempted from these valve requirements unless the fire official deems the installation of an existing tank to be unsafe.~~

Exception:

(a) Flammable or combustible liquid tanks with a capacity less than 500 gallons (~~1.9 m<sup>3</sup>~~ 1892.5L) and located in one-story structures designed and protected for flammable or combustible liquid storage and diesel fuel tanks with a capacity less than 500 gallons (~~1.9 m<sup>3</sup>~~ 1892.5L) that are located in sprinklered areas.

(b) PREVIOUSLY APPROVED TANKS THAT DO NOT CONSTITUTE A HAZARD IN THE OPINION OF THE CODE OFFICIAL.

(11) F-2803.11 Prohibited change of use: The seasonal conversion of a gasoline tank or any other tank containing flammable liquids for the storage or dispensing of home heating oils, such as kerosene for retail sales, shall be prohibited.

(D) Section FM-2804.0 Atmospheric storage tanks

FM-2804.1 Storage tanks: All shop-fabricated flammable and combustible liquid storage tanks of any capacity shall bear the label of an approved agency. THE LABEL SHALL INDICATE THE INTENDED USE OF THE TANK. Bolted and field-welded tanks shall comply with this code and the structural and inspection requirements of the building code listed in rule 1301:7-7-44 of the Administrative Code. The tanks shall comply with one of the standards listed in Table FM-2804.1 OR SHALL COMPLY WITH THE REQUIREMENTS FOR A FIRERESISTANT TANK IN ACCORDANCE WITH NFPA 30 AND NFPA 30A LISTED IN RULE 1301:7-7-44 OF THE ADMINISTRATIVE CODE.

Table FM-2804.1  
Flammable and combustible liquid storage tanks

Material	Standard (see rule 1301:7-7-44 of the Administrative Code)
Glass-fiber reinforced plastic Glass-fiber reinforced polyester Steel	UL 1316 ASTM D4021 API 12B, API 12D, API 12F, API 650, UL 58, UL 80, UL 142, UL 443, STI Standard for Dual Wall Underground Steel Storage Tanks

(E) Section FM-2805.0 Fuel-dispensing systems

(1) FM-2805.1 General: Flammable and combustible liquids used or intended to be used as fuels shall be stored in underground tanks on the premises of ALL FILLING STATIONS, service stations and garages open to the public and shall comply with paragraph (H)(FM-2808.0) of this rule and NFPA 30A listed in rule 1301:7-7-44 of the Administrative Code. Fuels shall be transferred to motor vehicle tanks or approved containers by means of approved dispensing units. The transfer of such liquids shall not be made into an open container.

FM-2805.1.1 Portable tanks: These provisions shall not prevent the utilization of portable or semiportable tanks and dispensing devices to refuel vehicles or motorized equipment on premises to which the public does not have access, provided that specific approval is obtained.

FM-2805.1.2 Dispensing: Dispensing devices used to fill portable containers with home heating fuels shall be located at least 20 feet (6 m) from any dispensing devices for class I liquids. Dispensing devices for liquified petroleum gas (LPG), liquified natural gas (LNG), and compressed natural gas (CNG) shall also be located at least 20 feet (6 m) from any dispensing device for class I liquids.

Exception: Existing installations previously approved by the code official.

(2) FM-2805.2 Installation: All fuel-dispensing systems shall be installed in accordance with this section, the mechanical code and NFPA 30 or 30A listed in rule 1301:7-7-44 of the Administrative Code. Gaseous motor fuel dispensing shall comply with paragraph (G)(FM-3607.0) of rule 1301:7-7-



36 and the mechanical code listed in rule 1301:7-7-44 of the Administrative Code.

(3) FM-2805.3 Controls: Dispensers shall be designed to prevent leakage or accidental discharge and shall be provided with remote master control devices to shut off all pumps in the event of an emergency. Such devices shall be adequately identified as pump shutoff controls.

(4) FM-2805.4 Dispenser protection: Each fuel dispenser island shall be protected against impact by a motor vehicle at each end where a vehicle approaches the island. Dispensers not mounted on an island shall be individually protected against motor vehicle impact. Physical barriers around surface-mounted fuel dispenser islands shall be a minimum of 30 inches (762 mm) in height and resist a force of 12,000 pounds (53375 N) applied 30 inches (762 mm) above the driving surface.

(5) FM-2805.5 Fuel dispensing outside the building: Fuel dispensers outside the building shall be located a minimum of 10 feet (3048 mm) from the lot line and 5 feet (1524 mm) from any building opening. Where a dispenser fronts on a street or public way, the separation distance shall be measured to the center line of the street or public way. Where fuel is dispensed to motor vehicles, the motor vehicle served shall be located on the premises.

(6) FM-2805.6 Fuel dispensing inside the building: Fuel-dispensing areas located inside the building shall be mechanically ventilated in accordance with the mechanical code listed in rule 1301:7-7-44 of the Administrative Code. The fuel-dispensing area shall be protected throughout with an approved automatic fire suppression system in accordance with the building code listed in rule 1301:7-7-44 of the Administrative Code.

(7) FM-2805.7 Nozzles: All dispenser hoses shall be equipped with automatic self-closing-type nozzles.

(8) FM-2805.8 Attendant: Each service station open to the public shall have an attendant on duty who is familiar with the location of pump controls and operation of safety equipment.

(9) FM-2805.9 Emergency shutoff valve: An approved emergency shutoff valve designed to close automatically in the event of a fire or impact shall be properly installed in the liquid supply line at the base of each dispenser supplied by a remote pump. The valve shall be installed so the shear groove is flush with or within 3/4 inches (19 mm) of the top of the concrete dispenser island and there is clearance for maintenance purposes provided around the valve body and operating parts. The valve shall be installed at the liquid supply line inlet of each overhead-type dispenser. Where installed, a vapor return line located inside the dispenser housing shall have a shear section or approved flexible connector for the liquid supply line emergency shutoff valve to function. All emergency shutoff valves shall be installed and maintained in accordance with the manufacturer's instructions, tested at the time of initial installation and tested at least yearly thereafter by manually tripping the hold-open linkage.

(F) Section FM-2806.0 Fire safety requirements for service stations and repair garages

(1) FM-2806.1 General: Structures or premises occupied for automotive and marine service stations and repair garages shall comply with this code and the building code and NFPA 30A, 88B and 303 listed in rule 1301:7-7-44 of the Administrative Code.

(2) FM-2806.2 Ignition sources: Motors of vehicles receiving fuel shall be shut off during the fueling operation. Smoking shall not be permitted in areas where motor vehicles are fueled or serviced.

(3) FM-2806.3 Fuel-dispensing safety: A motor vehicle engine shall not be operating during the fueling process. Smoking shall be prohibited in the fuel-dispensing area. The containers into which fuel is dispensed shall be approved.

(a) FM-2806.3.1 WARNING SIGNS: WARNING SIGNS SHALL BE VISIBLY POSTED IN EVERY FUEL-DISPENSING AREA. SUCH SIGNS SHALL INDICATE A WARNING AGAINST THE FOLLOWING:

(i) IT IS ILLEGAL AND DANGEROUS TO FILL UNAPPROVED CONTAINERS WITH FUEL.

(ii) SMOKING IS PROHIBITED.

(iii) THE ENGINE SHALL BE SHUT OFF DURING THE REFUELING PROCESS.

(b) FM-2806.3.2 SELF-SERVICE INSTRUCTIONS: OPERATING INSTRUCTIONS SHALL BE VISIBLY POSTED ON EVERY PUMP AT A SELF-SERVICE FUEL DISPENSING AREA.

(4) FM-2806.4 Equipment: All heating and ventilating appliances and equipment shall comply with the mechanical code listed in rule 1301:7-7-44 of the Administrative Code. Other devices generating a glow, spark or flame capable of igniting flammable vapors shall not be installed or utilized within 18 inches (457 mm) of the floor of a building. Welding or cutting operations shall comply with rule 1301:7-7-22 of the Administrative Code.

(5) FM-2806.5 Floor drains: Floors shall drain to oil or gasoline separators or traps discharging to the sewer installed in accordance with the plumbing code listed in rule 1301:7-7-44 of the Administrative Code. Contents of oil separators or traps of floor drainage systems shall be collected at sufficiently frequent intervals and removed from the premises to prevent oil from entering the sewers. Self-closing metal cans shall be utilized for all oily waste or waste oils.

(6) FM-2806.6 Daily record: A daily record shall be maintained when class I or II liquids are dispensed. The record shall indicate the amount of fuel dispensed from each tank and the inventory remaining. Daily records shall be available for inspection by the code official to determine if there is any leakage of the tank or piping.

- (7) FM-2806.7 Cleaning with flammable and combustible liquids: The use of class I or II liquids for washing parts or removing grease or dirt shall comply with paragraph (C)(7)(FM-2803.7) of this rule.
- (8) FM-2806.8 Basements, pits and subfloor work areas: Electrical wiring and equipment in basements, pits and subfloor work areas shall be installed in accordance with ~~Chapters~~ ARTICLES 511 and 514 of NFPA 70 listed in rule 1301:7-7-44 of the Administrative Code. Ventilation in these areas shall be in accordance with the mechanical code listed in rule 1301:7-7-44 of the Administrative Code.
- (9) FM-2806.9 Portable fire extinguishers: At least one portable fire extinguisher with a minimum 2-A:40-B:C rating shall be located within 30 feet (9144 mm) of travel distance in all service stations.
- (10) FM-2806.10 The standards for attended self-service filling stations shall be those listed in sections 3741.14 and 3741.141 of the Revised Code, NFPA 30A, and the Occupational Safety and Health Act of 1970 and any amendments thereto or standards as may be adopted by the fire marshal pursuant to division (B) of section 3741.14 of the Revised Code.
- (a) FM-2806.10.1 It shall be the responsibility of the operator of the filling station to see that all attendant employees are properly trained in handling emergencies of a flammable fuel type.
- (b) FM-2806.10.2 It shall be the responsibility of the operator of the filling station to see that all attendant employees read and be familiar with applicable codes and standards.
- (c) FM-2806.10.3 Equipment to convert to self-service or new equipment installed for the purpose of providing self-service shall be approved by authoritative sources listed in paragraph (B)(FM-117.2) of rule 1301:7-5-01 of the Administrative Code.
- (d) FM-2806.10.4 Gasoline and other flammable or combustible liquids shall be dispensed only by a person who is not smoking.
- (e) FM-2806.10.5 Dispensing devices shall not be operated by the customer until activated by the attendant. The attendant shall authorize each individual sale and shall activate the dispensing device only after such authorization. The attendant shall not authorize the dispensing of a class I liquid from the self-service dispensers until the attendant has ascertained that a class I liquid can be safely dispensed.
- (f) FM-2806.10.6 Approved key- or card-operated dispensing devices may be activated by the customer with the use of an authorized key or card.
- (g) FM-2806.10.7 Dispensing nozzles used by any person other than an attendant shall be of an



approved automatic closing type. Any person other than a supervisor, employee, or attendant using a dispenser with a hold-open latch shall remain at the refueling point during refueling.

(h) FM-2806.10.8 A sign in block letters at least four inches in height shall be conspicuously displayed on each gasoline pump island where self-service is offered stating that it is a self-service island.

(i) FM-2806.10.9 Signs giving instructions for the operation of gasoline dispensing equipment in block letters shall be conspicuously posted at each self-service filling station offering self-service.

(j) FM-2806.10.10 A sign bearing the following words in block letters shall be conspicuously posted on each gasoline pump island where self-service is offered:

Stop engine;

No smoking;

Warning-it is unlawful and dangerous to dispense gasoline into unapproved containers;

Persons using dispensers with hold-open latches must remain at the refueling point during refueling.

(k) FM-2806.10.11 All signs required by paragraphs (F)(10)(h)(FM-2806.10.8) to (F)(10)(j)(FM-2806.10.10) of this rule shall be constructed of rigid, weather-resistant material.

(11) FM-2806.11 The standards for unattended self-service filling stations shall be those listed in sections 3741.14 and 3741.141 of the Revised Code, NFPA 30A, and the Occupational Safety and Health Act of 1970 and any amendments thereto or standards as may be adopted by the fire marshal pursuant to division (B) of section 3741.14 of the Revised Code.

(a) FM-2806.11.1 Section FM-2806.10 of this rule shall not apply to an unattended self-service filling station which is operated for the sole purpose of fueling the facility owner's, lessee's, or operator's private fleet. Private fleet shall mean one or more motor vehicle(s) titled to or leased to an owner or a lessee which owns or leases an unattended self-service filling station. Private fleet shall not include vehicles titled to or leased to any shareholder, officer, director, employee, agent, or member of any entity, organization, corporation, for profit or not for profit, partnership or other association of individuals.

(b) FM-2806.11.2 Equipment to convert to self-service or new equipment installed for the purpose of providing self-service shall be approved by authoritative sources listed in paragraph (B)(FM-117.2) of rule 1301:7-5-01 of the Administrative Code.

(c) FM-2806.11.3 Gasoline and other flammable or combustible liquids shall be dispensed only by

a person who is not smoking.

(d) FM-2806.11.4 Containment of small spills shall be controlled by grading the pavement away from the building and scoring the pavement or may be done by the use of an oil/water separator.

(e) FM-2806.11.5 Dispensing nozzles shall be of an approved automatic closing type. Any person using a dispenser with a hold-open latch shall remain at the refueling point during refueling.

(f) FM-2806.11.6 Only card operated dispensing devices approved by authoritative sources listed in paragraph (B)(FM-117.2) of rule 1301:7-5-01 of the Administrative Code shall be used.

(g) FM-2806.11.7 Emergency controls shall be installed at a location acceptable to the authority having jurisdiction, but the controls shall be more than twenty feet but less than one hundred feet from the dispensers. Additional emergency controls shall be installed on each group of dispensers or the outdoor equipment used to control the dispensers. Emergency controls shall shut off power to all dispensing devices at the station. Controls shall be manually reset only in a manner approved by the authority having jurisdiction.

(h) FM-2806.11.8 Operating instructions shall be conspicuously posted in the dispensing area and shall include location of emergency controls and a requirement that the user must stay outside of his/her vehicle, in view of the fueling nozzle during dispensing.

(i) FM-2806.11.9 A listed, automatic-closing type hose nozzle valve with latch-open device shall be provided. The system shall include listed equipment with a feature that causes or requires the closing of the hose nozzle valve before the product flow can be resumed or before the hose nozzle valve can be replaced in its normal position in the dispenser.

(j) FM-2806.11.10 Additional fire protection shall be provided. Additional fire protection shall include automatic fixed suppression systems, and automatic fire detection, and transmission of an alarm to an off-site location approved by the authority having jurisdiction. All such systems shall be installed in accordance with the provisions of this code and the building code listed in rule 1301:7-7-44 of the Administrative Code.

(k) FM-2806.11.11 A telephone or other approved, clearly identified means to notify the fire department shall be provided on the site in a location approved by the authority having jurisdiction.

(l) FM-2806.11.12 A sign in block letters at least four inches in height shall be conspicuously displayed on each gasoline pump island where self-service is offered stating that it is a self-service island.

(m) FM-2806.11.13 Signs giving instructions for the operation of gasoline dispensing equipment in block letters shall be conspicuously posted at each self-service filling station offering self-service.

(n) FM-2806.11.14 A sign bearing the following words in block letters shall be conspicuously posted on each gasoline pump island where self-service is offered:

Stop engine;

No smoking;

Warning-it is unlawful and dangerous to dispense gasoline into unapproved containers;

Persons using dispensers with hold-open latches must remain at the refueling point during refueling.

(o) FM-2806.11.15 Emergency instructions shall be conspicuously posted in the dispenser area of unattended self-service filling stations incorporating the following or equivalent wording:

Emergency instructions

In case of fire or spill

Use emergency stop button.

Report accident by calling (specify local fire number) on the phone. Report location.

(p) FM-2806.11.16 All signs required by paragraphs (F)(11)(l)(FM-2806.11.12) to (F)(11)(o)(FM-2806.11.15) of this rule shall be constructed of rigid, weather-resistant material.

(q) FM-2806.11.17 All unattended self-service stations constructed on or after November 27, 1993, shall comply with the provisions of paragraphs (F)(11)(FM-2806.11) to (F)(11)(o)(FM-2806.11.15) of this rule upon receipt of occupancy permit.

(r) FM-2806.11.18 All unattended self-service stations constructed prior to November 27, 1993, shall comply with the provisions of paragraphs (F)(11)(FM-2806.11) to (F)(11)(o)(FM-2806.11.15) of this rule no later than November 26, 1994.

(G) Section FM-2807.0 Above-ground storage tanks

(1) FM-2807.1 General: Flammable and combustible liquid storage tanks of any capacity installed above ground shall comply with this rule.

(2) FM-2807.2 Existing tanks: Existing above-ground tank installations previously approved that constitute a hazard shall not be continued. The code official shall periodically inspect the existing installation for safety. NORMAL AND EMERGENCY RELIEF VENTING SHALL BE

MAINTAINED IN AN OPERATIVE CONDITION. Unsafe tanks shall be removed from service where required by the code official.

FM-2807.2.1 Out of service or reuse of aboveground tanks: A permit shall be obtained from the fire official to remove, place temporarily out of service or otherwise dispose of any aboveground storage tank containing flammable or combustible liquids. When such a permit is not required from the local fire official the permit shall be obtained from the fire marshal.

(a) Tanks "temporarily out of service" shall be emptied of liquid, rendered vapor-free, and the fill line, gauge opening and pump connection secured against tampering. Vent lines shall remain open and be maintained in accordance with the requirements of this rule for vent lines.

(b) Any tank not used for a period of ninety days shall be properly safeguarded or removed in a manner approved by the fire official.

(c) Any tank which has been out of service for a period of one year or determined to be leaking, shall be removed from the property in an approved manner, and the site restored in an approved manner.

(d) Tanks which are to be reinstalled for flammable or combustible liquid service shall comply with all the provisions of this rule.

(e) Tanks which are to be returned to service shall be tested in accordance with NFPA 30 listed in rule 1301:7-7-44 of the Administrative Code.

(3) FM-2807.3 Maximum outside fuel oil storage above ground: Where a combustible liquid storage system connects to a fuel oil piping system, the maximum amount stored outside above ground without additional protection shall be 660 gallons (~~2.5 m<sup>3</sup>~~ 2498 L). Where the amount stored outside above ground exceeds 660 gallons (~~2.5 m<sup>3</sup>~~ 2498 L), the installation shall comply with NFPA 31 listed in rule 1301:7-7-44 of the Administrative Code and paragraph (C)(2)(b)(FM-2803.2.2) of this rule.

(4) FM-2807.4 Maximum inside fuel oil storage: Where a combustible liquid storage system connects to a fuel oil piping system, the maximum amount stored inside any building shall be 660 gallons (~~2.5 m<sup>3</sup>~~ 2498 L). Where the amount stored inside a building exceeds 660 gallons (~~2.5 m<sup>3</sup>~~ 2498 L), the storage area shall be classified as use group h and shall comply with the building code listed in rule 1301:7-7-44 of the Administrative Code.

(5) FM-2807.5 ~~Fuel dispensing systems~~ SERVICE STATIONS: ~~Above ground tanks shall be permitted for the storage of motor fuels on premises to which the public does not have access when installed in accordance with NFPA 30A and the specifications of UL 2085 listed in rule 1301:7-7-44 of the Administrative Code or when approved by the code official, aboveground tanks meeting the specifications of UL 142 listed in rule 1301:7-7-44 of the Administrative Code may be installed in~~



~~accordance with NFPA 30A listed in rule 1301:7-7-44 of the Administrative Code and the provisions of this rule and paragraphs (G)(5)(a)(FM-2807.5.1) through (G)(5)(g)(FM-2807.5.7) of this rule.~~  
ABOVE-GROUND TANKS SHALL NOT BE UTILIZED FOR THE OUTSIDE STORAGE OF MOTOR FUELS AT AUTOMOTIVE, FLEET VEHICLE OR MARINE SERVICE STATIONS TO WHICH THE PUBLIC HAS ACCESS. ABOVE-GROUND TANKS UTILIZED FOR THE STORAGE OF MOTOR FUELS AT SERVICE STATIONS TO WHICH THE PUBLIC DOES NOT HAVE ACCESS SHALL BE INSTALLED IN ACCORDANCE WITH THIS SECTION AND THE REQUIREMENTS FOR FIRERESISTANT TANKS OR TANKS IN VAULTS SPECIFIED IN NFPA 30A LISTED IN RULE 1301:7-7-44 OF THE ADMINISTRATIVE CODE.

#### EXCEPTIONS

WHEN INSTALLED IN ACCORDANCE WITH NFPA 30A LISTED IN RULE 1301:7-7-44 OF THE ADMINISTRATIVE CODE AND APPROVED BY THE CODE OFFICIAL, ABOVEGROUND TANKS MEETING THE SPECIFICATIONS OF UL 142 LISTED IN RULE 1301:7-7-44 OF THE ADMINISTRATIVE CODE MAY BE UTILIZED IN LIEU OF A FIRERESISTANT OR VAULTED TANK.

WHEN APPROVED BY THE CODE OFFICIAL, TANKS SUPPLYING MARINE SERVICE STATIONS MAY BE LOCATED ABOVE GROUND IN SPECIAL ENCLOSURES OR VAULTS IN ACCORDANCE WITH NFPA 30A LISTED IN RULE 1301:7-7-44 OF THE ADMINISTRATIVE CODE, WHERE DOCUMENTATION SUBMITTED WITH THE PERMIT APPLICATION EVIDENCES THAT ROCK FORMATIONS OR HIGH WATER TABLES MAKE UNDERGROUND TANKS IMPRACTICAL.

(a) FM-2807.5.1 Barrier protection: Physical barriers complying with paragraph (E)(4)(FM-2805.4) of this rule shall be provided to protect the area where tanks, except those installed in special enclosures, are located.

(b) FM-2807.5.2 Access: Each tank and each special enclosure shall be surrounded by a clear open space not less than 3 feet (914 mm) in width for maintenance and inspection.

(c) FM-2807.5.3 Capacity limits: Tanks containing motor fuels shall not exceed 12,000 gallons (46 m<sup>3</sup>) individual capacity or 40,000 gallons (136 m<sup>3</sup>) in aggregate capacity. Installations with the maximum allowable aggregate capacity shall be separated from other such installations by not less than 100 feet (30480 mm).

(d) FM-2807.5.4 Shutoffs: Tanks shall be provided with automatic fuel shutoff devices capable of stopping the delivery of fuel into the storage tank at a 90 percent tank capacity.

(e) FM-2807.5.5 Fuel delivery: Motor fuels shall be transferred from tanks by means of fixed pumps so designed and equipped to allow control of the flow and prevent leakage or accidental discharge.

~~Dispensing devices shall be permitted to be installed on top of special enclosures.~~

(f) FM-2807.5.6 Tank openings and connections: Tank and tank enclosure openings for inspection and piping and vent connections shall only be through the top. Approved antisiphon devices shall be installed at each piping connection to a tank where such tank piping extends below the level of the top of such tank.

(g) FM-2807.5.7 Separation distances: Each tank and each special enclosure shall be separated from buildings, lot lines and public ways in accordance with NFPA 30A listed in rule 1301:7-7-44 of the Administrative Code.

~~(6) FM-2807.6 Marine service stations: Tanks supplying marine service stations may be located above ground in special enclosures or vaults in accordance with NFPA 30A listed in rule 1301:7-7-44 of the Administrative Code, where documentation submitted with the permit application evidences that rock formations or high water tables make underground tanks impractical.~~

(H) Section FM-2808.0 Underground storage tank installation

(1) FM-2808.1 Tank handling: Storage tanks shall not be lifted or lowered by means other than the lifting lugs installed by the tank manufacturer. Tanks shall not be dropped, dragged or handled with sharp objects.

(2) FM-2808.2 Location: Loads from a structure foundation system shall not be transmitted to storage tanks installed underground or below a structure. Flammable liquid storage tanks shall be a minimum of one foot (305 mm) from any wall and three feet (914 mm) from a lot line. Combustible liquid storage tanks shall be a minimum of one foot (305 mm) from any wall or lot line.

(3) FM-2808.3 Excavation: The extent of the excavation for the tank shall be such as to permit the minimum backfill around the tank and 1 foot (305 mm) of bedding underneath the tank. The maximum depth of the excavation shall be twice the tank diameter or 23 feet (7010 mm), whichever is less, unless the installation is designed for a greater depth in accordance with the tank manufacturer.

(4) FM-2808.4 High ground water and flood hazard: Tanks and piping installed in areas of high ground water, flood-hazard zones (A zones) or high-hazard zones (V zones) shall be anchored and reinforced to resist hydrostatic and hydrodynamic loads and stresses. The anchoring and reinforcing shall resist the effects of buoyancy with the tank either empty or full when the ground water table is at the high point and during the occurrence of flooding to the base flood elevation.

(a) FM-2808.4.1 Hold-down straps: Hold-down straps or cables shall be as specified by the tank manufacturer and installed in accordance with the tank manufacturer's specifications.

(b) FM-2808.4.2 Hold-down pads: Hold-down pads shall be separated from the tank by a minimum of 6 inches (152 mm) of backfill for metallic tanks and 12 inches (305 mm) of backfill for nonmetallic tanks.

(5) FM-2808.5 Installation and backfill: Tanks shall be installed on a minimum of 12 inches (305 mm) of backfill. Backfill material shall be placed around the tank such that movement of the tank is prevented. The minimum amount of backfill around the tank shall be 12 inches (305 mm) for a steel tank and 24 inches (610 mm) for a nonmetallic tank. Backfill shall be a noncorrosive, inert material, such as: pea gravel, crushed rock, sand or gravel. The pea gravel shall have a minimum size of 1/2 inch (13 mm) and a maximum size of 3/4 inches (19 mm). Washed crushed rock or gravel shall have a minimum size of 1/8 inch (3 mm) and a maximum size of 1/2 inch (13 mm). Sand shall not be utilized as backfill for nonmetallic tanks, unless in accordance with the manufacturer's installation instructions.

(6) FM-2808.6 Cover in traffic areas or under a building: Tanks installed in areas subject to vehicular traffic or under a building shall have a minimum cover of 18 inches (457 mm) of backfill material and 6 inches (152 mm) of reinforced concrete, or 30 inches (762 mm) of backfill material and 6 inches (152 mm) of asphaltic concrete. The cover shall extend a minimum of 1 foot (305 mm) beyond the vertically projected outline of the tank.

(7) FM-2808.7 Cover in nontraffic areas: Tanks installed in areas not subject to vehicular traffic shall have a minimum cover of 12 inches (305 mm) of backfill material and 12 inches (305 mm) of earth, or 12 inches (305 mm) of backfill material and 4 inches (102 mm) of reinforced concrete.

(8) FM-2808.8 Corrosion protection: With the exception of nonmetallic tanks and nonmetallic piping systems, all underground storage tanks, hold-down straps and piping systems shall be protected against corrosion. The means of protection shall comply with STI P3, UL 1746 or ULC CAN/ULC-S603-1 listed in rule 1301:7-7-44 of the Administrative Code or shall be specifically designed by a registered design professional, and approved.

#### EXCEPTIONS

#### NONMETALLIC TANKS

#### NONMETALLIC PIPING SYSTEMS

(a) FM-2808.8.1 Steel pipe coating: Steel piping and tubing installed underground shall be coated with an approved coating, such as: bituminous, epoxy or polyethylene.

(b) FM-2808.8.2 Tank isolation: Metallic piping connections to a steel underground storage tank shall be by dielectric fittings. Metallic hold-down straps shall be electrically isolated from steel tanks.

(9) FM-2808.9 Leak detection: Periodic tests of underground storage tanks and piping systems may be required by the fire official to determine that leakage has not occurred. Testing shall be done in accordance with NFPA 329 listed in rule 1301:7-7-44 of the Administrative Code.

(10) FM-2808.10 Tank test: After installation, all flammable and combustible liquid storage tanks shall be tested with air or an inert gas to a minimum of 3 psi (21 kPa) and a maximum of 5 psi (34 kPa) prior to filling the tank with any flammable or combustible liquid. The tank shall maintain the test pressure for a minimum of 60 minutes without additional air or inert gas.

(a) FM-2808.10.1 Test gauge: The pressure gauge utilized to measure the test pressure shall have a maximum reading of 15 psi (103 kPa). Where the test pressure exceeds 5 psi (34 kPa), the pressure gauge shall have a maximum reading of three times the test pressure.

(b) FM-2808.10.2 Testing of existing storage tank systems: An existing flammable or combustible liquid storage tank and piping system that has been altered or repaired, or which displays evidence of leakage, shall be tested for tightness. The test shall be performed utilizing a testing device capable of detecting a leak rate of 0.1 gallons (0.4 l) per hour while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation and the location of the water table. A leak exists if the net change exceeds the 0.1 gallon (0.4 l) per hour leak rate. Any storage tank system indicating a leak by testing shall either be repaired, removed or abandoned in place.

(11) FM-2808.11 Out of service or reuse of underground flammable and combustible liquid storage tank systems: A permit shall be obtained from the fire official to take out of service, place temporarily out of service, temporarily close, permanently abandon or permanently remove or otherwise dispose of any underground storage tank and piping containing or which contained flammable or combustible liquids. When such a permit is not required from the local fire official the permit shall be obtained from the state fire marshal.

(a) FM-2808.11.1 Secured openings: Tanks temporarily out of service shall have the fill line, gauge opening and pump connection secured against tampering. Vent lines shall remain open and maintained in accordance with the requirements of this rule for vent lines.

(b) FM-2808.11.2 Safeguard: Any tank not utilized for a period of ninety days shall be properly safeguarded or removed in an approved manner.

(c) FM-2808.11.3 Removal: Any underground tank out of service for a period of one year or determined to be leaking shall be removed from the premises in an approved manner, and the site restored in an approved manner. Where the code official determines that the removal of the tank and piping is not necessary, the tank and piping shall be abandoned in place in accordance with API 1604 listed in rule 1301:7-7-44 of the Administrative Code including the following:



- (i) All flammable or combustible liquids from the tank and all connecting lines shall be removed.
  - (ii) The suction, inlet, gauge and vent lines shall be disconnected.
  - (iii) The tank shall be completely filled with an inert solid material, and the remaining underground piping shall be capped.
  - (iv) A record of tank size, location, date of abandonment and method utilized for placing the abandoned tank in a safe condition shall be kept.
- (d) FM-2808.11.4 Return to service: Tanks which are to be reinstalled for flammable or combustible liquid service shall comply with all of the provisions of this rule. Tanks which are to be returned to service shall be tested in an approved manner.

(I) Section FM-2809.0 Fire control

- (1) FM-2809.1 Interior storage rooms: At least one portable fire extinguisher with a minimum 20-B:C rating shall be located outside of but not more than 10 feet (3048 mm) from the door opening into any interior storage room where flammable or combustible liquids are stored.
- (2) FM-2809.2 Inside buildings: At least one portable fire extinguisher with a minimum 20-B:C rating shall be located not less than 10 feet (3048 mm) nor more than 25 feet (7620 mm), from any flammable or combustible liquid storage area located outside of an interior storage room but inside the building.
- (3) FM-2809.3 Ignition sources: Open flames and smoking shall not be permitted in flammable or combustible liquid storage areas.
- (4) FM-2809.4 Water-reactive materials: Materials that react with water shall not be stored in the same room with flammable or combustible liquids.
- (5) FM-2809.5 Electrical grounding: Containers and portable tanks utilized for flammable liquids shall be electrically bonded or grounded during the transfer of liquids so as to eliminate or mitigate the fire hazard of static electricity by dissipating the charge.

(J) Section FM-2810.0 Leak detection

Inventory records for underground storage tanks containing flammable and combustible liquids shall be maintained by the owner or operator of such tank. Product inventory control shall be conducted as described in "American Petroleum Institute 1621-87; Recommended Practice for Bulk Liquid Stock Control of Retail Outlets" listed in rule 1301:7-7-44 of the Administrative Code and in

accordance with this rule.

(1) FM-2810.1 Daily inventory records shall be kept for each tank at each location by the operator. Such records shall be available at the location for inspection at any time by a proper authority and shall cover at least ninety days prior to the date of inspection.

(2) FM-2810.2 The inventory referred to in paragraph (J)(1) of this rule shall be based on the actual measurement of tank liquid levels daily. The written record of such testing shall include a computation of daily gain or loss. The operator of the location shall be responsible for taking action to correct any abnormal loss or gain not explainable by temperature variation or other causes. Such abnormal loss or gain shall be reported promptly by the operator to the local fire official and fire marshal.

(3) FM-2810.3 The mere recording of pump meter readings combined with shipment records shall not constitute adequate inventory records for the purpose of this rule.

(4) FM-2810.4 Exemptions. The requirements for daily inventory records shall not apply in the following situations:

(a) Daily inventories are not required to be maintained when an installation is not in operation, except that during such an operation when an inventory must be taken at least once every seven days.

(b) Daily inventories need not be maintained for storage tanks connected to oil burning equipment.

(c) Daily inventories need not be maintained for storage tanks connected to manufacturing equipment.

(5) FM-2810.5 The following actions shall be taken by the operator daily:

(a) The operator shall record all meter totalizer readings, immediately gauge and record all tank measurements an balance inventory and product transferred.

(b) The operator shall record and make adjustments for all transfers of product occurring during gauging period.

(c) The operator shall retain all of the aforementioned records.

(d) The operator shall check all tanks for water. Experience will indicate whether daily checks are required or if they can be made less frequently. In any circumstances, the check must be made once a week. Tanks should be checked for water after a thaw and after a delivery.

(K) Section FM-2811.0 Tank vehicles

(1) FM-2811.1 Scope: This section shall apply to tank vehicles utilized for the transportation of asphalt or flammable or combustible liquids. The design, construction and operation of cargo tanks and their appurtenances shall comply with this section.

(a) FM-2811.1.1 Design: All tank vehicles shall be designed and constructed in accordance with NFPA 385 listed in rule 1301:7-7-44 of the Administrative Code.

(b) FM-811.1.2 Operation of tank vehicles: Tank vehicles shall be utilized and operated in accordance with NFPA 385 listed in rule 1301:7-7-44 of the Administrative Code, and as follows:

(i) Tank vehicles shall not be parked or left unattended on any street, highway, avenue or alley. This restriction shall not prevent a driver from the necessary absence from the vehicle in connection with the delivery of the load, except that during actual discharge of the liquid, a responsible person shall be present at the vehicle. This restriction shall also not prevent stops for meals during the day or night when the street is well-lighted at the point of parking. Tank vehicles shall not be parked out-of-doors at any one point for longer than one hour, except at flammable liquid bulk terminals, bulk plants and other approved locations.

(ii) Tank vehicles shall not be parked or garaged in any structure, except structures specifically approved for such purpose.

(iii) Each tank vehicle shall be provided with at least one portable fire extinguisher with a minimum 2-A:20-B:C rating.

(2) FM-2811.2 Filling and discharging: The driver, operator or attendant of any tank vehicle shall not remain in the vehicle cab and shall not leave the vehicle while the vehicle is being filled or discharged. The delivery hose, when attached to a tank vehicle, shall be considered a part of the tank vehicle. When making or breaking hose connections, the motors of tank trucks or tractors shall be shut down. If loading or unloading is performed without a power pump, the tank truck or tractor motor shall be shut down throughout such operations.

(a) FM-2811.2.1 Hose connections: Delivery of flammable liquids to underground tanks of more than 1,000 gallons (~~3.8 m<sup>3</sup>~~ 3785 L) in capacity shall be made by means of vapor-tight connections between the hose and fill pipe. Where underground tanks are equipped with any type of vapor recovery system, all connections required to be made for the safe and proper functioning of the particular vapor recovery process shall be made. Such connections shall be made liquid and vapor tight and remain connected throughout the unloading process. Vapors shall not be discharged at grade level during delivery.

(b) FM-2811.2.2 Hose protection: Upon arrival at a point of delivery and prior to discharging any flammable or combustible liquids into underground tanks, the driver, operator or attendant of the

tank vehicle shall ensure that all hoses utilized for liquid delivery and vapor recovery, where required, will be protected from physical damage by motor vehicles. Such protection shall be provided by positioning the tank vehicle to prevent motor vehicles from passing through the area or areas occupied by hoses, or consist of portable traffic-warning devices, such as traffic cones.

(L) Section FM-2812.0 Tank lining

Procedure for the interior coating and repair of leaking and/or deteriorated underground storage tanks containing flammable or combustible liquids (both steel and nonmetallic).

(1) FM-2812.1 The fire official shall determine whether or not the repair of leaking and/or deteriorating underground storage tanks containing flammable or combustible liquids shall be permitted within its jurisdiction. If such repair is permitted by the fire official, it shall be accomplished in the manner prescribed in paragraphs (L)(2)(FM-2812.2) and (L)(5)(FM-2812.5) of this rule.

(2) FM-2812.2 Manufacturers desiring to have their product used in Ohio shall register the specifications for the internal coating system for the repair of underground storage tanks containing flammable or combustible liquids with the fire marshal. The specifications shall clearly describe the composition of the product, strength, limitations on use, preparation procedures, application procedures, quality control techniques, curing times and temperatures, field thickness testing procedures, field hardness testing procedures, and a method for determining whether an existing tank is repairable. This information, along with the results of the standards tests, shall be signed and sealed by a registered professional engineer.

(3) FM-2812.3 Each manufacturer who has registered an internal coating system must submit to the fire marshal a list of qualified applicators. It is the responsibility of the manufacturer to keep this list current. The list shall indicate that the applicator is qualified to seal metal tanks nonmetallic tanks or both. The internal coating procedure shall be in accordance with API 1631 listed in rule 1301:7-7-44 of the Administrative Code.

(4) FM-2812.4 The applicator shall inform the following officials of the location of each project in the following manner:

(a) The fire authority shall have in its possession a written notice stating the location of the project and the applicator's anticipated timetable for each stage of the project, prior to the commencement of the project. A copy of such written notice shall be mailed to the fire marshal simultaneously with its delivery to the fire authority.

(b) Any applicator failing to make proper notification of the project location will be removed, for a period of six months, from the qualified applicator list on file with the fire marshal. Reinstatement can be accomplished only by the manufacturer resubmitting the applicator's name after the six-month



period has elapsed.

(c) A current "Certificate of Insurance" covering the liability of the applicator shall be filed with the fire marshal.

(d) A sample of the "Application for Tank Repairs" may be obtained from the fire marshal.

(5) FM-2812.5 A "Certificate of Performance" shall be utilized as follows:

(a) A "Certificate of Performance" on each field application shall be submitted to the fire authority. The certificate (to be designed by the fire marshal and printed and supplied by the contractor) shall be signed by the qualified applicator and will confirm that the tank preparation and product application complies with the sealant manufacturer's specifications which are registered with the fire marshal.

(b) A sample of the "Certificate of Performance" may be obtained from the fire marshal.

(M) Section FM-2813.0 Fuel for kerosene heaters

The fire marshal recognizes and hereby adopts standard specification ASTM D 3699-78, issued by the "American Society for Testing and Materials," for the purpose of prescribing two grades of kerosene suitable for use in kerosene heaters, as follows:

(1) FM-2813.1 No. 1-K kerosene: This is a special low-sulfur grade kerosene with a maximum sulfur content of four-hundredths of one per cent (0.04 per cent) by weight, suitable for use in unvented kerosene heaters.

(2) FM-2813.2 No. 2-K kerosene: This is a regular grade kerosene with a maximum sulfur content of thirty-hundredths of one per cent (0.30 per cent) by weight, suitable for use in vented or flue-connected kerosene heaters.

(N) Section FM-2814.0 Safe use of unvented kerosene heaters

(1) FM-2814.1 Scope: This rule is designed to ensure the safe use of unvented kerosene heaters exempted from division (A) of section 3701.82 of the Revised Code when used in assembly buildings, business buildings, high hazard buildings, institutional buildings, mercantile buildings, and type R-1 and R-2 residential buildings, as such groups of buildings are defined in Chapter 4101:2-3 of the Administrative Code as adopted by the board of building standards under section 3781.10 of the Revised Code. The demonstration of such heaters by the manufacturer or his agent, or by a merchant, shall not be considered within the scope of this rule.

(2) FM-2814.2 R-1 and R-2 buildings: In accordance with the definitions of these use groups, R-1

buildings include all hotels, motels, and dormitories arranged for the shelter and sleeping accommodation of more than twenty individuals; R-2 buildings include all multiple family dwellings having more than three dwelling units, as well as all dormitories and boarding and lodging houses arranged for the shelter and sleeping accommodation of more than five but not more than twenty individuals.

(3) FM-2814.3 Issuance of citation: If the fire marshal, his authorized representative, or a certified fire safety inspector finds that the use of an unvented kerosene heater or the storage of its fuel is not in compliance with the provisions of this rule, he shall issue a citation to the responsible person as authorized by section 3737.42 of the Revised Code.

(4) FM-2814.4 General provisions: The use of unvented kerosene heaters in the aforementioned buildings and the storage of the fuel for such heaters shall comply with the following provisions:

(a) No unvented kerosene heater shall be located in any building means of egress. For the purpose of this rule, means of egress has the same meaning as defined in the Ohio Fire Code, i.e., a continuous and unobstructed path of travel from any point in a building or structure to a public way, comprising all vertical and horizontal means of travel and including intervening room spaces, doors, hallways, corridors, passageways, balconies, ramps, stairs, enclosures, lobbies, escalators, and exits.

(b) No unvented kerosene heater shall be elevated by being placed upon a stand or otherwise placed or suspended above the floor.

(c) No unvented kerosene heater shall be placed within three feet of any furniture, drapery, curtain, decorative material, accessory, appliance, equipment, merchandise, goods, or fixture, or any other thing, which is or may be combustible.

(d) No unvented kerosene heater shall be left unattended while it is operating.

(e) Every unvented kerosene heater shall be set and centered upon a non-combustible mat or shallow base, the dimensions of which shall be sufficient to allow at least three feet of the mat or base to extend outward in any direction from any part of the unvented kerosene heater.

(f) Every unvented kerosene heater shall be used in an area where there is adequate ventilation, as recommended by the manufacturer of such heater.

(g) No unvented kerosene heater shall be fueled or refueled while it is operating or within ten minutes of flame extinguishment, or contrary to the instructions of its manufacturer.

(h) No unvented kerosene heater or its fuel reservoir shall be fueled or refueled inside a building. All such fueling operations shall be performed outdoors.

(i) Every unvented kerosene heater shall be fueled or refueled strictly in accordance with the instructions of its manufacturer.

(j) The fuel used in every unvented kerosene heater shall be only no. 1-K kerosene, as prescribed in this rule.

(k) The fuel used in every unvented kerosene heater shall be stored away from occupied areas and in an approved container which shall be marked or labeled in a conspicuous manner to read: "1-K kerosene."

(l) At least one fire extinguisher with a minimum two-A, twenty-B:C rating and capacity shall be provided and available for use within twenty-five feet of every unvented kerosene heater during its operation.

(0) Section FM-2815.0 Manufacturer's instructions for using kerosene heaters

(1) FM-2815.1 Scope: Pursuant to division (F) of section 3701.82 of the Revised Code, this rule is for the purpose of prescribing standards for the written instructions issued by the manufacturer of any kerosene heater sold or offered for sale in this state with respect to ventilation requirements and warnings of potential fire hazards that may occur in using the heater.

(2) FM-2815.2 Manufacturer's instructions: Effective July 1, 1983, no person shall sell or offer for sale any kerosene heater in this state unless the manufacturer has provided instructions for operating the heater and certain information about its use, which shall include the following:

(a) All pertinent information bearing upon the assembly and installation of the heater.

(b) All pertinent information bearing upon the proper operation, maintenance, and storage of the heater.

(c) All pertinent information which might reasonably bear upon the health or life safety of persons in the vicinity of the heater if recommended assembly, installation, operational, or maintenance procedures are not respected.

(d) All safety features incorporated in the heater shall be described.

(e) Instructions for starting or lighting the heater, regulating its flame or heat, and turning it off or extinguishing its flame.

(f) Proper fueling procedures shall be set forth.

(g) A cautionary warning that the heater may be extremely hot while in operation; that, therefore,

it may burn, injure, or damage any person or thing contacting it; and that, in particular, infants, children, physically or mentally incompetent persons, and pets should be kept away from the unit.

(h) A cautionary warning that the heater may be extremely hot while in operation; that, therefore, the heat radiating from it may ignite any combustible thing in close proximity; that it should not be placed within three feet of any furniture, drapery, curtain, clothing, or other thing which is or may be combustible; that, however, the heater may be placed against or within three feet of a combustible wall, provided the heater is specifically designed for such installation or placement.

(i) A cautionary warning that the heater may be extremely hot while in operation; that, therefore, no fueling procedure, including the removal of the fuel reservoir, should be carried out while the unit is operating and until it has cooled down.

(j) A cautionary warning that the heater should not be moved while it is in operation.

(k) A cautionary warning that neither the heater nor any surface of the heater should be used for the purpose of cooking or warming food, unless the heater is specifically designed for cooking and warming food.

(l) A cautionary warning that no additive for the heater's fuel with a flashpoint below one hundred degrees fahrenheit shall be used.

(m) The recommended minimum room size for the Btu output of the heater shall be set forth.

(n) The type and grade of fuel the heater is designed to use shall be set forth, together with any safety or fire hazard which might be involved if improper fuel is used.

(o) A cautionary warning for every unvented kerosene heater, warning that when the heater is in operation the combustion process uses oxygen from the space being heated and returns carbon monoxide to the atmosphere as a product of combustion; that, without adequate ventilation, the depletion of oxygen may present a risk of asphyxiation; and that carbon monoxide is a colorless, odorless, highly poisonous gas which, without adequate ventilation, may cause headache, dizziness, and nausea, or even be fatal.

(p) The ventilation requirements necessary for the safe operation of every unvented kerosene heater shall be set forth.

(q) A cautionary warning for every unvented kerosene heater, warning that the fuel used in such heater should be restricted to no. 1-K kerosene, as prescribed in this rule, or "Fresh, High Quality, Crystal Clear Kerosene."

(P) Section FM-2816.0 Manufacturer's markings for unvented kerosene heaters



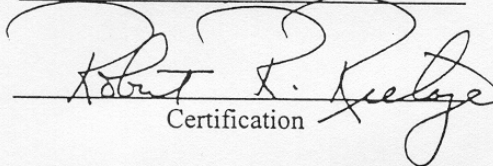
FM-2816.1 No person shall sell or offer for sale in this state any kerosene heater designed for unvented use and subject to the exemption contained in division (D) of section 3701.82 of the Revised Code unless the manufacturer has marked such heater in some conspicuous manner by marking plate or otherwise for the purpose of showing that the heater has been listed by a testing agency recognized by the fire marshal. Such marking shall mean that at a minimum the heater has met the requirements contained in Underwriters Laboratories (UL) Standard No. 647.

(Q) Section FM-2817.0 Bulk, processing and industrial plants

(1) FM-2817.1 General: bulk, processing or industrial plants, refineries or other plants and distilleries and all building, tanks and equipment used for the storage, processing, distillation, refining or blending of flammable or combustible liquids shall be located, constructed and used in accordance with the building code and NFPA 30 listed in rule 1301:7-7-44 of the Administrative Code and any other applicable law or ordinance of the jurisdiction.

(2) FM-2817.2 Dispensing: apparatus dispensing liquids into the fuel tanks of motor vehicles of the public shall not be located at a bulk plant unless separated by a fence or similar barrier from the area in which the bulk operations are conducted. Aboveground tanks located at a bulk plant shall not be connected by piping to service station tanks or dispensers.

Effective: January 3, 2000

  
 Certification

November 17, 1999  
 Date

Promulgated under: R.C. Section 119.03

Rule amplifies: R.C. Section 3737.22

Authorized by: R.C. Section 3737.82

R.C. 119.032 Review Date: 1/01/03

Prior effective dates: 1/1/77; 7/1/79; 12/10/82; 7/1/83; 6/1/85; 5/9/88; 11/5/90; 6/28/92; 9/1/95; 1/09/98

Effective:

R.C. 119.032 review dates: 11/23/2004

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Certification

06/10/2005

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Date

Promulgated Under: 119.03  
Statutory Authority: 3737.82, 3737.86  
Rule Amplifies: N/A  
Prior Effective Dates: 1/1/77, 7/1/79, 12/10/82, 7/1/83, 6/1/85, 5/9/88,  
11/5/90, 6/28/92, 9/1/95, 1/9/98, 1/3/00