**Chapter 50 Commercial Cooking**

50.1 Application

50.1.1\*

The design, installation, operation, inspection, and maintenance of all public and private commercial cooking equipment and mobile and temporary cooking operations shall comply with this chapter and NFPA 96.

50.1.2

This chapter shall apply to residential cooking equipment used for commercial cooking operations. [96:1.1.2]

50.1.3\*

Cooking equipment used in fixed, mobile, or temporary concessions, such as trucks, buses, trailers, pavilions, tents, or any form of roofed enclosure, shall comply with NFPA 96. [96:1.1.3]

50.1.4

This chapter shall not apply to cooking equipment located in a single dwelling unit. [96:1.1.4]

50.1.5\*

This chapter shall not apply to facilities where all of the following are met:

Only residential equipment is used.

Fire extinguishers are located in all kitchen areas in accordance with Section 13.6.

The facility is not an assembly occupancy.

The AHJ has approved the installation.

[96:1.1.5]

50.2 General Requirements for Cooking Operations in Buildings and Mobile and Temporary Cooking Operations

50.2.1 General

50.2.1.1

Cooking equipment used in processes producing smoke or grease-laden vapors shall be equipped with an exhaust system that complies with all the equipment and performance requirements of this chapter. [96:4.1.1]

50.2.1.1.1\*

Cooking equipment that has been listed in accordance with UL 197 or an equivalent standard for reduced emissions shall not be required to be provided with an exhaust system. [96:4.1.1.1]

50.2.1.1.2

The listing evaluation of cooking equipment covered by 50.2.1.1.1 shall demonstrate that the grease discharge at the exhaust duct of a test hood placed over the appliance shall not exceed 0.00018 oz/ft3 (5 mg/m3) when operated with a total airflow of 500 cfm (0.236 m3/sec). [96:4.1.1.2]

50.2.1.2

All such equipment and its performance shall be maintained in accordance with the requirements of this chapter during all periods of operation of the cooking equipment. [96:4.1.2]

50.2.1.3

The following equipment shall be kept in working condition:

Cooking equipment

Hoods

Ducts

Fans

Fire-extinguishing equipment

Special effluent or energy control equipment

[96:4.1.3]

50.2.1.3.1

Maintenance and repairs shall be performed on all components at intervals necessary to maintain good working condition. [96:4.1.3.1]

50.2.1.4

All airflows shall be maintained. [96:4.1.4]

50.2.1.5

The responsibility for inspection, testing, maintenance, and cleanliness of the ventilation control and fire protection of the commercial cooking operations, including cooking appliances, shall ultimately be that of the owner of the system, provided that this responsibility has not been transferred in written form to a management company, tenant, or other party. [96:4.1.5]

50.2.1.6

Multi-tenant applications shall require the concerted cooperation of design, installation, operation, and maintenance responsibilities by tenants and by the building owner. [96:4.1.7]

50.2.1.7

All interior surfaces of the exhaust system shall be accessible for cleaning and inspection purposes. [96:4.1.8]

50.2.2\* Clearance

50.2.2.1\*

Where enclosures are not required, hoods, grease removal devices, exhaust fans, and ducts shall have a clearance of at least 18 in. (457 mm) to combustible material, 3 in. (76 mm) to limited-combustible material, and 0 in. (0 mm) to noncombustible material. [96:4.2.1]

50.2.2.2

Where a hood, duct, or grease removal device is listed for clearances less than those required in 50.2.2.1, the listing requirements shall be permitted. [96:4.2.2]

50.2.3 Drawings

50.2.3.1

Where inspections are required, notice shall be given to the AHJ on completion of the installation, or as otherwise directed. [96:4.6.3]

50.2.3.2

For cooking operations in buildings, a drawing(s) of the exhaust system installation along with copies of operating instructions for subassemblies and components used in the exhaust system, including electrical schematics, shall be kept on the premises and made available on request to the AHJ and maintenance persons. [96:4.6.4]

50.2.4 AHJ Notification

If required by the AHJ, notification in writing shall be given of any alteration, replacement, or relocation of any exhaust or extinguishing system or part thereof or cooking equipment. [96:4.7]

50.3 Protection of Coverings and Enclosure Materials

50.3.1

Measures shall be taken to prevent physical damage to any covering or enclosure material. [96:7.7.3.1]

50.3.2

Any damage to the covering or enclosure shall be repaired, and the covering or enclosure shall be restored to meet its intended listing and fire resistance rating and to be acceptable to the AHJ. [96:7.7.3.2]

50.3.3

In the event of a fire within a kitchen exhaust system, the duct, the enclosure, and the covering directly applied to the duct shall be inspected by qualified personnel to determine whether the duct, the enclosure, and the covering directly applied to the duct are structurally sound, capable of maintaining their fire protection functions, suitable for continued operation, and acceptable to the AHJ. [96:7.7.3.3]

50.3.4

Listed grease ducts shall be installed in accordance with the terms of the listing and the manufacturer's instructions. [96:7.7.3.4]

50.4 Fire-Extinguishing Equipment for Cooking Operations in Buildings

50.4.1

Prior to installation of any fire-extinguishing system, construction documents shall be reviewed and approved by the AHJ.

50.4.2 Permits

Permits, where required, shall comply with Section 1.12.

50.4.3 General Requirements

50.4.3.1

Fire-extinguishing equipment for the protection of grease removal devices, hood exhaust plenums, and exhaust duct systems shall be provided. [96:10.1.1]

50.4.3.2\*

Cooking equipment that produces grease-laden vapors and that might be a source of ignition of grease in the hood, grease removal device, or duct shall be protected by fire-extinguishing equipment. [96:10.1.2]

50.4.3.3

Fume incinerators, thermal recovery units, air pollution control devices, or other devices installed in the exhaust duct, shall be protected by an automatic fire-extinguishing system. [96:10.1.3]

50.4.4 Types of Equipment

50.4.4.1

Fire-extinguishing equipment shall include both automatic fire-extinguishing systems as primary protection and portable fire extinguishers as secondary backup. [96:10.2.1]

50.4.4.2\*

A placard shall be conspicuously placed near each Class K extinguisher that states that the fire protection system shall be activated prior to using the fire extinguisher. [96:10.2.2]

50.4.4.2.1

The language and wording for the placard shall be approved by the AHJ. [96:10.2.2.1]

50.4.4.3\*

Automatic fire-extinguishing systems shall comply with UL 300 or other equivalent standards and shall be installed in accordance with the requirements of the listing. [96:10.2.3]

50.4.4.3.1\*

In existing dry or wet chemical systems not in compliance with UL 300, the fire-extinguishing system shall be made to comply with 50.4.4.3 when any of the following occurs:

The cooking medium is changed from animal oils and fats to vegetable oils.

The positioning of the cooking equipment is changed.

Cooking equipment is replaced.

The equipment is no longer supported by the manufacturer.

[96:10.2.3.1]

50.4.4.3.2

All existing fire-extinguishing systems shall meet the requirements of 50.4.4.3. [96:10.2.3.2]

50.4.4.4

Grease removal devices, hood exhaust plenums, exhaust ducts, and cooking equipment that are not addressed in UL 300 or other equivalent test standards shall be protected with an automatic fire-extinguishing system(s) in accordance with the applicable NFPA standard(s), all local building and fire codes, and the fire-extinguishing system's manufacturer's recommendations and shall be approved by the AHJ. [96:10.2.4]

50.4.4.5

Automatic fire-extinguishing equipment provided as part of listed recirculating systems shall comply with UL 710B. [96:10.2.5]

50.4.4.6

Automatic fire-extinguishing systems shall be installed in accordance with the terms of their listing, the manufacturer's instructions, and the following standards where applicable:

NFPA 12

NFPA 13

NFPA 17

NFPA 17A

NFPA 750

[96:10.2.6]

50.4.4.7 Modifications to Existing Hood Systems

50.4.4.7.1

Any abandoned pipe or conduit from a previous installation shall be removed from within the hood, plenum, and exhaust duct. [96:10.2.7.1]

50.4.4.7.2

Penetrations and holes resulting from the removal of conduit or piping shall be sealed with listed or equivalent liquidtight sealing devices. [96:10.2.7.2]

50.4.4.7.3

The addition of obstructions to spray patterns from the cooking appliance nozzle(s) such as baffle plates, shelves, or any modification shall not be permitted. [96:10.2.7.3]

50.4.4.7.4

Changes or modifications to the hazard after installation of the fire-extinguishing systems shall result in re-evaluation of the system design by a properly trained, qualified, and certified person(s). [96:10.2.7.4]

50.4.4.8 Hoods With Water Wash

50.4.4.8.1

Areas requiring protection in accordance with 50.4.3.1 shall be permitted to be protected by a water-wash system that is listed as a fire-extinguishing system in compliance with UL 300 or other equivalent standards and installed in accordance with the requirements of its listing. [96:10.2.8.1]

50.4.4.8.2

Each such area not provided with a listed water-wash fire-extinguishing system shall be provided with a fire-extinguishing system listed for the purpose. [96:10.2.8.2]

50.4.4.8.3

The water supply for water-wash fire-extinguishing systems shall be permitted to be supplied from the domestic water supply when the minimum water pressure and flow are provided in accordance with the terms of the listing. [96:10.2.8.3]

50.4.4.8.4

The water supply for water-wash fire-extinguishing systems shall be controlled by a listed indicating valve. [96:10.2.8.4]

50.4.4.8.5

Where a separate fire-extinguishing system is used for protection of cooking equipment only, a water-wash fire-extinguishing system listed for protection of the grease removal device(s), hood exhaust plenum(s), exhaust duct(s), or combination thereof shall be provided with instructions and appropriate means for electrical interface for simultaneous actuation. [96:10.2.8.5]

50.4.4.8.6

A water-wash system approved to be used for protection of the grease removal device(s), hood exhaust plenum(s), exhaust duct(s), or combination thereof shall include instructions and appropriate electrical interface for simultaneous actuation of the water-wash system from an automatic fire-extinguishing system, where the automatic fire-extinguishing system is used for cooking equipment protection only. [96:10.2.8.6]

50.4.4.8.7

Where the automatic fire-extinguishing system in accordance with NFPA 17A provides protection for the hood and duct in a hood containing a water-wash system, the water-wash system shall be made inoperable or delayed for a minimum of 60 seconds upon operation of the automatic fire-extinguishing system. [96:10.2.8.7]

50.4.4.8.8

Grease removal devices, hood exhaust plenums, and exhaust ducts on hoods with water wash shall be permitted to be protected by a sprinkler system with an individual control valve if the design of the hood prevents the water from reaching the cooking appliances. [96:10.2.8.8]

50.4.4.9 Water-Based Fire-Extinguishing System

50.4.4.9.1

The water required for listed automatic fire-extinguishing systems shall be permitted to be supplied from the domestic water supply where the minimum water pressure and flow are provided in accordance with the terms of the listing. The water supply shall be controlled by a supervised water supply control valve. [96:10.2.9.1]

50.4.4.9.2

Where the water supply is from a dedicated fire protection water supply in a building with one or more fire sprinkler systems, separate indicating control valves and drains shall be provided and arranged so that the hood system and sprinkler systems can be controlled individually. [96:10.2.9.2]

50.4.4.10 Water Valve Supervision

Valves controlling the water supply to listed water-wash fire-extinguishing systems, automatic fire-extinguishing systems, or both shall be listed indicating type of valve and shall be supervised open by one of the following methods:

Central station, proprietary, or remote station alarm service

Local alarm service that will cause the sounding of an audible signal at a constantly attended point

Locking valves open

\* Sealing of valves and approved weekly recorded inspection

[96:10.2.10]

50.4.5 Simultaneous Operation

50.4.5.1

Fixed pipe extinguishing systems in a single hazard area (see 3.3.44 of NFPA 96 for the definition of single hazard area) shall be arranged for simultaneous automatic operation upon actuation of any one of the systems. [96:10.3.1]

50.4.5.1.1

Hoods installed end to end, back to back, or both, or sharing a common ductwork, not exceeding 75 ft (22.9 m) in distance from the farthest hood, and having a grease-producing appliance(s) located under one or more of the hoods, shall be considered a single hazard area requiring simultaneous automatic fire protection in all hoods and ducts. [96:10.3.1.1]

50.4.5.1.1.1

In hoods that are installed end to end, back to back, or both, and that share a common ductwork, the ductwork beyond 75 ft (22.9 m) from the farthest hood shall be protected by an independent fire-extinguishing system with its own detection system or by a fire-extinguishing system that activates simultaneously with the fire-extinguishing system(s) protecting the hoods. [96:10.3.1.1.1]

50.4.5.1.2

Hoods installed end to end, back to back, or both that do not share a common exhaust duct and are separated by a wall(s) or other means to ensure that grease-laden vapors exhausted under one hood cannot propagate to the other hoods, the hoods' fire-extinguishing system(s) shall be independent and shall not be required to simultaneously discharge. [96:10.3.1.2]

50.4.5.1.3

Fume incinerators, thermal recovery units, air pollution control devices, or other devices installed in the exhaust duct shall not be required to comply with 50.4.5.1.1. [96:10.3.1.3]

50.4.5.2

Simultaneous operation shall not be required where the one fixed pipe extinguishing system is an automatic sprinkler system. [96:10.3.2]

50.4.5.2.1

Where an automatic sprinkler system is used in conjunction with a water-based fire-extinguishing system served by the same water supply, hydraulic calculations shall consider both systems operating simultaneously. [96:10.3.2.1]

50.4.5.3

Simultaneous operation shall be required where a dry or wet chemical system is used to protect common exhaust ductwork by one of the methods specified in NFPA 17 or NFPA 17A. [96:10.3.3]

50.4.6 Fuel and Electric Power Shutoff

50.4.6.1

Upon actuation of any fire-extinguishing system for a cooking operation, all sources of fuel and electric power that produce heat to all equipment protected by the system shall automatically shut off. [17A:4.4.4.1]

50.4.6.2

Steam supplied from an external source shall not be required to automatically shut off. [96:10.4.2]

50.4.6.3

Gas appliances not requiring protection but located under the same ventilation equipment where protected appliances are located shall also be automatically shut off upon actuation of the extinguishing system. [17A:4.4.4.2]

50.4.6.4

Shutoff devices shall require manual resetting prior to fuel or power being restored. [96:10.4.4]

50.4.6.5

Solid fuel cooking operations shall not be required to be shut down. [96:10.4.5]

50.4.7 Manual Actuation

50.4.7.1

All systems shall have both automatic and manual methods of actuation. [96:10.5.1]

50.4.7.1.1

At least one manual actuation device shall be located in a means of egress or at a location acceptable to the AHJ. [96:10.5.1.1]

50.4.7.1.2

The manual actuation device shall clearly identify the hazard protected and be provided with instructions for its use. [96:10.5.1.2]

50.4.7.1.3\*

Manual actuation devices installed in locations where accidental operation could occur shall be provided with a guard where required by the AHJ. [96:10.5.1.3]

50.4.7.2

An automatic sprinkler system shall not require a method of manual actuation. [96:10.5.2]

50.4.8 System Annunciation

50.4.8.1

Upon actuation of an automatic fire-extinguishing system, an audible alarm or visual indicator shall be provided to show that the system has actuated. [96:10.6.1]

50.4.8.2

Where a fire alarm signaling system is serving the occupancy where the extinguishing system is located, the actuation of the automatic fire-extinguishing system shall actuate the fire alarm signaling system in accordance with the requirements of NFPA 72. [96:10.6.2]

50.4.9 Special Design and Application

50.4.9.1

Hoods containing automatic fire-extinguishing systems are protected areas; therefore, these hoods shall not be considered obstructions to overhead sprinkler systems and shall not require additional sprinkler coverage underneath. [96:10.7.1]

50.4.9.2

A single listed detection device shall be permitted for more than one appliance when installed in accordance with the system's listing. [17A:5.6.1.5.4]

50.4.10 Review and Certification

50.4.10.1

Where required, complete drawings of the system installation, including the hood(s), exhaust duct(s), and appliances, along with the interface of the fire-extinguishing system detectors, piping, nozzles, fuel and electric power shutoff devices, agent storage container(s), and manual actuation device(s), shall be submitted to the AHJ. [96:10.8.1]

50.4.10.2\* Installation Requirements

50.4.10.2.1

Installation of systems shall be performed only by persons properly trained and qualified to install the specific system being provided. [96:10.8.2.1]

50.4.10.2.2

The installer shall provide certification to the AHJ that the installation is in agreement with the terms of the listing and the manufacturer's instructions and/or approved design. [96:10.8.2.2]

50.4.11 Portable Fire Extinguishers

50.4.11.1\*

Portable fire extinguishers shall be selected and installed in kitchen cooking areas in accordance with Section 13.6 and shall be specifically listed for such use. [96:10.9.1]

50.4.11.2

Class K fire extinguishers shall be provided for cooking appliance hazards that involve combustible cooking media (vegetable oils and animal oils and fats). [96:10.9.2]

50.4.11.3

Portable fire extinguishers shall be provided for other hazards in kitchen areas and shall be selected and installed in accordance with Section 13.6. [96:10.9.3]

50.4.11.4

Carbon dioxide-type extinguishers shall not be permitted. [96:10.9.4]

50.4.11.5

Portable fire extinguishers shall be maintained in accordance with Section 13.6. [96:10.9.5]

50.5 Fire-Extinguishing Equipment for Mobile and Temporary Cooking Operations

50.5.1 General Requirements

50.5.1.1

Fire-extinguishing equipment for the protection of grease removal devices, hood exhaust plenums, and exhaust duct systems shall be provided. [96:11.1.1]

50.5.1.2\*

Cooking equipment that produces grease-laden vapors shall be protected by a fire-extinguishing system for the protection of grease removal devices, hood exhaust plenums, and exhaust duct systems. [96:11.1.2]

50.5.2 Types of Equipment

50.5.2.1\*

A placard shall be conspicuously placed near each Class K extinguisher that states that the fire protection system shall be activated prior to using the fire extinguisher. [96:11.2.1]

50.5.2.1.1

The language and wording for the placard shall be approved by the AHJ. [96:11.2.1.1]

50.5.2.2\*

Automatic fire-extinguishing systems shall comply with UL 300 or other equivalent standards and shall be installed in accordance with the terms of their listing and NFPA 17A. [96:11.2.2]

50.5.2.3 Modifications to Existing Hood Systems

50.5.2.3.1

Any abandoned pipe or conduit from a previous installation shall be removed from within the hood, plenum, and exhaust duct. [96:11.2.3.1]

50.5.2.3.2

Penetrations and holes resulting from the removal of conduit or piping shall be sealed with listed or equivalent liquidtight sealing devices. [96:11.2.3.2]

50.5.2.3.3

The addition of obstructions to spray patterns from the cooking appliance nozzle(s) such as baffle plates, shelves, or any modification shall not be permitted. [96:11.2.3.3]

50.5.2.3.4

Changes or modifications to the hazard after installation of the fire-extinguishing systems shall result in reevaluation of the system design by a properly trained, qualified, and certified person(s). [96:11.2.3.4]

50.5.3 Fuel and Electric Power Shutoff

50.5.3.1

Upon actuation of any fire-extinguishing system for a cooking operation, all sources of fuel and electric power that produce heat to all equipment protected by the system shall automatically shut off. [17A:4.4.4.1]

50.5.3.2

Gas appliances not requiring protection but located under the same ventilation equipment where protected appliances are located shall also be automatically shut off upon actuation of the extinguishing system. [17A:4.4.4.2]

50.5.3.3

Shutoff devices shall require manual resetting prior to fuel or power being restored. [96:11.3.3]

50.5.3.3.1

Where an electrical gas valve is used for shutting off gas to appliances, a manually reset relay shall be used to restore electrical power to the gas valve. [96:11.3.3.1]

50.5.4 Manual Actuation

50.5.4.1

All systems shall have both automatic and manual methods of actuation. [96:11.4.1]

50.5.4.1.1\*

At least one manual actuation device shall be located in a means of egress or at a location acceptable to the AHJ. [96:11.4.1.1]

50.5.4.1.2

The manual actuation device shall clearly identify the hazard protected and be provided with instructions for its use. [96:11.4.1.2]

50.5.4.1.3\*

Manual actuation devices installed in locations where accidental operation could occur shall be provided with a guard where required by the AHJ. [96:11.4.1.3]

50.5.4.2

An automatic sprinkler system shall not require a method of manual actuation. [96:11.4.2]

50.5.5 System Annunciation

50.5.5.1

Upon actuation of an automatic fire-extinguishing system, an audible alarm or visual indicator shall be provided to show that the system has actuated. [96:11.5.1]

50.5.5.2

At least one listed audible and visual notification appliance shall be installed on the exterior surface of the vehicle readily audible and visible to the public. [96:11.5.2]

50.5.6 Review and Certification

50.5.6.1

Where required, complete drawings of the system installation, including the hood(s), exhaust duct(s), and appliances, along with the interface of the fire-extinguishing system detectors, piping, nozzles, fuel and electric power shutoff devices, agent storage container(s), and manual actuation device(s), shall be submitted to the AHJ and located within the mobile cooking operation. [96:11.6.1]

50.5.6.2\* Installation Requirements

50.5.6.2.1

Installation of systems shall be performed only by persons properly trained and qualified to install the specific system being provided. [96:11.6.2.1]

50.5.6.2.2

The installer shall provide certification to the AHJ that the installation is in agreement with the terms of the listing and the manufacturer's instructions and/or approved design. [96:11.6.2.2]

50.5.7 Portable Fire Extinguishers

50.5.7.1\*

Portable fire extinguishers shall be selected and installed in kitchen cooking areas in accordance with Section 13.6 and shall be specifically listed for such use. [96:11.7.1]

50.5.7.2

Class K fire extinguishers shall be provided for cooking appliance hazards that involve combustible cooking media (vegetable oils and animal oils and fats). [96:11.7.2]

50.5.7.3

Portable fire extinguishers shall be provided for solid fuel cooking operations in accordance with Section 13.6. [96:11.7.3]

50.5.7.4

Portable fire extinguishers shall be provided for other hazards in kitchen areas and shall be selected and installed in accordance with Section 13.6. [96:11.7.4]

50.5.7.5

Where internal combustion engine power sources are provided, at least one portable fire extinguisher 20-B:C shall be provided. [96:11.7.5]

50.5.7.6

Carbon dioxide—type extinguishers shall not be permitted. [96:11.7.6]

50.5.7.7

Portable fire extinguishers shall be maintained in accordance with Section 13.6. [96:11.7.7]

50.6 Procedures for the Use, Inspection, Testing, and Maintenance of Equipment

50.6.1 Operating Procedures

50.6.1.1

Exhaust systems shall be operated whenever cooking equipment is turned on. [96:12.1.1]

50.6.1.2

Filter-equipped exhaust systems shall not be operated with filters removed. [96:12.1.2]

50.6.1.3

Openings provided for replacing air exhausted through ventilating equipment shall not be restricted by covers, dampers, or any other means that would reduce the operating efficiency of the exhaust system. [96:12.1.3]

50.6.1.4\*

Instructions shall be provided to new employees on hiring and to all employees annually on the use of portable fire extinguishers and the manual actuation of the fire-extinguishing system. [96:12.1.4]

50.6.1.4.1

Responsibility for compliance with 50.6.1.4 shall be that of management of the commercial cooking operation. [96:12.1.4.1]

50.6.1.4.2

Records of compliance with 50.6.1.4 shall be maintained and shall be available to the AHJ. [96:12.1.4.2]

50.6.1.4.3

Instructions for manually operating the fire-extinguishing system shall be posted conspicuously in the kitchen and shall be reviewed with employees by the management. [96:12.1.4.3]

50.6.1.5

Listed exhaust hoods shall be operated in accordance with the terms of their listings and the manufacturer's instructions. [96:12.1.5]

50.6.1.6

Cooking equipment shall not be operated while its fire-extinguishing system or exhaust system is nonoperational or impaired. [96:12.1.6]

50.6.1.6.1

Where the fire-extinguishing system or exhaust system is nonoperational or impaired, the system shall be tagged as noncompliant, the system owner or the owner's representative shall be notified in writing of the impairment, and, where required, the AHJ shall be notified. [96:12.1.6.1]

50.6.1.7

Secondary filtration and pollution control equipment shall be operated in accordance with the terms of its listing and the manufacturer's recommendations. [96:12.1.7]

50.6.1.7.1

The requirement of 50.6.1.7 shall not apply to mobile and temporary cooking operations. [96:12.1.7.1]

50.6.1.8

Inspection and maintenance of "other equipment" as allowed in 9.3.1 of NFPA 96 shall be conducted by properly trained and qualified persons at a frequency determined by the manufacturer's instructions or the equipment listing. [96:12.1.8]

50.6.2 Inspection, Testing, and Maintenance of Fire-Extinguishing Systems

50.6.2.1\*

Maintenance of the fire-extinguishing systems and listed exhaust hoods containing a constant or fire-activated water system that is listed to extinguish a fire in the grease removal devices, hood exhaust plenums, and exhaust ducts shall be made by properly trained, qualified, and certified person(s) acceptable to the AHJ at least every 6 months. [96:12.2.1]

50.6.2.1.1

The requirement of 50.6.2.1 shall not apply to mobile and temporary cooking operations. [96:12.2.1.1]

50.6.2.2\*

All actuation and control components, including remote manual pull stations, mechanical and electrical devices, detectors, and actuators, shall be tested for proper operation during the inspection in accordance with the manufacturer's procedures. [96:12.2.2]

50.6.2.3

The specific inspection and maintenance requirements of the extinguishing system standards as well as the applicable installation and maintenance manuals for the listed system and service bulletins shall be followed. [96:12.2.3]

50.6.2.4\*

Fusible links of the metal alloy type and automatic sprinklers of the metal alloy type shall be replaced at least semiannually. [96:12.2.4]

50.6.2.5

The year of manufacture and the date of installation of the fusible links shall be marked on the system inspection tag. [96:12.2.5]

50.6.2.5.1

The tag shall be signed or initialed by the installer. [96:12.2.5.1]

50.6.2.5.2

The fusible links shall be destroyed when removed. [96:12.2.5.2]

50.6.2.6

Detection devices that are bulb-type automatic sprinklers and fusible links other than the metal alloy type shall be examined and cleaned or replaced annually. [96:12.2.6]

50.6.2.7

Fixed temperature-sensing elements other than the fusible metal alloy type shall be permitted to remain continuously in service, provided they are inspected and cleaned or replaced if necessary in accordance with the manufacturer's instructions, every 12 months or more frequently to ensure proper operation of the system. [96:12.2.7]

50.6.2.8

Where required, certificates of inspection and maintenance shall be forwarded to the AHJ. [96:12.2.8]

50.6.2.8.1

Records, including certificates of inspection and maintenance, shall be permitted to be forwarded to or shared with the AHJ either by hard copy or electronically. [96:12.2.8.1]

50.6.3 Inspection of Fire Dampers

50.6.3.1

The requirements in 50.6.3 shall not apply to mobile and temporary cooking operations. [96:12.3.1]

50.6.3.2

Actuation components for fire dampers shall be inspected for proper operation in accordance with the manufacturer's listed procedures. [96:12.3.2]

50.6.3.3 Replacement of Fusible Links

50.6.3.3.1

Fusible links on fire damper assemblies shall be replaced at least semiannually or more frequently as necessary. [96:12.3.3.1]

50.6.3.3.2

Replacement shall be made by a certified person acceptable to the AHJ. [96:12.3.3.2]

50.6.3.4\* Documentation Tag

50.6.3.4.1

The year of manufacture and the date of installation of the fusible links shall be documented. [96:12.3.4.1]

50.6.3.4.2

The tag shall be signed or initialed by the installer. [96:12.3.4.2]

50.6.4\* Inspection for Grease Buildup

The entire exhaust system shall be inspected for grease buildup by a properly trained, qualified, and certified person(s) acceptable to the AHJ and in accordance with Table 50.6.4. [96:12.4]

Table 50.6.4 Schedule of Inspection for Grease Buildup

Type or Volume of Cooking

Inspection

Frequency

Systems serving solid fuel cooking

operations

Monthly

\*Systems serving high-volume cooking

operations

Quarterly

Systems serving moderate-volume cooking

operations

Semiannually

†Systems serving low-volume cooking

operations

Annually

\*High-volume cooking operations include 24-hour cooking, charbroiling, and wok cooking.

†Low-volume cooking operations include churches, day camps, seasonal businesses, and senior centers.

[96:Table 12.4]

50.6.5 Inspection, Testing, and Maintenance of Listed Hoods Containing Mechanical, Water Spray, or Ultraviolet Devices

Listed hoods containing mechanical or fire-actuated dampers, internal washing components, or other mechanically operated devices shall be inspected and tested by properly trained, qualified, and certified persons every 6 months or at frequencies recommended by the manufacturer in accordance with their listings. [96:12.5]

50.6.6 Cleaning of Exhaust Systems

50.6.6.1

If upon inspection, the exhaust system is found to be contaminated with deposits from grease-laden vapors, the contaminated portions of the exhaust system shall be cleaned by a properly trained qualified, and certified person(s) acceptable to the AHJ. [96:12.6.1]

50.6.6.1.1

A measurement system of deposition shall be established to trigger a need to clean when the exhaust system is inspected at the frequencies in Table 50.6.4. [96:12.6.1.1]

50.6.6.1.1.1

Hoods, grease removal devices, fans, ducts, and other appurtenances shall be cleaned to remove combustible contaminants to a minimum of 0.002 in. (50 µm). [96:12.6.1.1.1]

50.6.6.1.1.2

A grease depth gauge comb, as shown in Figure 50.6.6.1.1.2 shall be placed upon the surface to measure grease depth. [96:12.6.1.1.2]

FIGURE 50.6.6.1.1.2 Depth Gauge Comb. [96:Figure 12.6.6.1.1.2]

50.6.6.1.1.3

Where a measured depth of 0.078 in. (2000 µm) is observed, the surfaces shall be cleaned in accordance with 50.6.6.1. [96:12.6.1.1.3]

50.6.6.1.1.4

Where a measured depth of 0.125 in. (3175 µm) is observed in a fan housing, the surfaces shall be cleaned in accordance with 50.6.6.1. [96:12.6.1.1.4]

50.6.6.2

Hoods, grease removal devices, fans, ducts, and other appurtenances shall be cleaned to remove combustible contaminants prior to surfaces becoming heavily contaminated with grease or oily sludge. [96:12.6.2]

50.6.6.3

At the start of the cleaning process, electrical switches that could be activated accidentally shall be locked out. [96:12.6.3]

50.6.6.4

Components of the fire suppression system shall not be rendered inoperable during the cleaning process. [96:12.6.4]

50.6.6.5

Fire-extinguishing systems shall be permitted to be rendered inoperable during the cleaning process where serviced by properly trained and qualified persons. [96:12.6.5]

50.6.6.6

Flammable solvents or other flammable cleaning aids shall not be used. [96:12.6.6]

50.6.6.7

Cleaning chemicals shall not be applied on fusible links or other detection devices of the automatic extinguishing system. [96:12.6.7]

50.6.6.8

After the exhaust system is cleaned, it shall not be coated with powder or other substance. [96:12.6.8]

50.6.6.9

When cleaning procedures are completed, all access panels (doors) and cover plates shall be restored to their normal operational condition. [96:12.6.9]

50.6.6.10

When an access panel is removed, a service company label or tag preprinted with the name of the company and giving the date of inspection or cleaning shall be affixed near the affected access panels. [96:12.6.10]

50.6.6.11

Dampers and diffusers shall be positioned for proper airflow. [96:12.6.11]

50.6.6.12

When cleaning procedures are completed, all electrical switches and system components shall be returned to an operable state. [96:12.6.12]

50.6.6.13

When an exhaust system is inspected or cleaned, a certificate showing the name of the servicing company, the name of the person performing the work, and the date of inspection or cleaning shall be maintained on the premises. [96:12.6.13]

50.6.6.14

After cleaning or inspection is completed, the exhaust cleaning company and the person performing the work at the location shall provide the owner of the system with a written report that also specifies areas that were inaccessible or not cleaned. [96:12.6.14]

50.6.6.15

Where required, certificates of inspection and cleaning and reports of areas not cleaned shall be submitted to the AHJ. [96:12.6.15]

50.6.6.16

Metal containers used to collect grease drippings shall be inspected or emptied at least weekly. [96:12.6.16]

50.6.7 Cooking Equipment Maintenance

50.6.7.1

Inspection and servicing of the cooking equipment shall be made at least annually by properly trained and qualified persons. [96:12.7.1]

50.6.7.2

Cooking equipment that collects grease below the surface, behind the equipment, or in cooking equipment flue gas exhaust, such as griddles, deep-fat fryers, or charbroilers, shall be inspected and, if found with grease accumulation, cleaned by a properly trained, qualified, and certified person(s) acceptable to the AHJ. [96:12.7.2]

50.7 Minimum Safety Requirements for Cooking Equipment

50.7.1 Cooking Equipment

50.7.1.1\*

Cooking equipment shall be approved based on one of the following criteria:

Listings by a testing laboratory

Test data acceptable to the AHJ

[96:13.1.1]

50.7.1.2 Installation

50.7.1.2.1\*

All listed appliances shall be installed in accordance with the terms of their listings and the manufacturer's instructions. [96:13.1.2.1]

50.7.1.2.1.1

Solid fuel used for flavoring within a gas-operated appliance shall be in a solid fuel holder (smoker box) that is listed with the equipment. [96:13.1.2.1.1]

50.7.1.2.2\*

Cooking appliances requiring protection shall not be moved, modified, or rearranged without prior re-evaluation of the fire-extinguishing system by the system installer or servicing agent, unless otherwise allowed by the design of the fire-extinguishing system. [96:13.1.2.2]

50.7.1.2.2.1

A solid fuel holder shall not be added to an existing appliance until the fire-extinguishing system has been evaluated by the fire-extinguishing system service provider. [96:13.1.2.2.1]

50.7.1.2.3

The fire-extinguishing system shall not require re-evaluation where the cooking appliances are moved for the purposes of maintenance and cleaning, provided the appliances are returned to approved design location prior to cooking operations, and any disconnected fire-extinguishing system nozzles attached to the appliances are reconnected in accordance with the manufacturer's listed design manual. [96:13.1.2.3]

50.7.1.2.3.1\*

An approved method shall be provided that will ensure that the appliance is returned to an approved design location. [96:13.1.2.3.1]

50.7.1.2.4

All deep-fat fryers shall be installed with at least a 16 in. (406 mm) space between the fryer and surface flames from adjacent cooking equipment. [96:13.1.2.4]

50.7.1.2.5

Where a steel or tempered glass baffle plate is installed at a minimum 8 in. (203 mm) in height between the fryer and surface flames of the adjacent appliance, the requirement for a 16 in. (406 mm) space shall not apply. [96:13.1.2.5]

50.7.1.2.5.1

If the fryer and the surface flames are at different horizontal planes, the minimum height of 8 in. (203 mm) shall be measured from the higher of the two. [96:13.1.2.5.1]

50.7.2 Commercial Kitchen Cooking Oil Storage Tank Systems

Commercial kitchen cooking oil storage tank systems shall comply with 66.19.7.

50.8 Mobile and Temporary Cooking Operations

50.8.1 General

50.8.1.1

Mobile and temporary cooking operations shall comply with the requirements of this section, NFPA 96 and the applicable section for the type of cooking performed.

50.8.1.2

Where required by the AHJ, permits shall be required for the location, design, construction, and operation of mobile and temporary cooking operations.

50.8.1.3

Cooking equipment that is powered on during transit shall be listed as installed for such use. [96:17.1.2]

50.8.1.4 Fire Department Access

Mobile or temporary cooking operations shall not block fire apparatus access roads, fire lanes, fire hydrants, or other fire protection devices and equipment.

50.8.1.5 Communications

50.8.1.5.1

Where required by the AHJ, an approved method of communication to emergency personnel shall be accessible to all employees.

50.8.1.5.2

The address of the current operational location shall be posted and accessible to all employees.

50.8.1.6 Storage of Flammable and Combustible Liquids

Flammable and combustible liquids shall not be stored inside mobile cooking vehicles or in temporary cooking areas unless stored in accordance with NFPA 30.

50.8.2 Location of Mobile and Temporary Cooking Operations

50.8.2.1\* Relative to Buildings

Mobile or temporary cooking operations shall be separated from the entrances and other exits of buildings or structures, combustible materials, vehicles, and other cooking operations by a clear space distance of 10 ft (3 m). [96:17.2.1]

50.8.2.2\* Relative to Other Mobile or Temporary Cooking

Mobile or temporary cooking operations shall be separated from other mobile or temporary cooking operations by a clear distance of 10 ft (3 m). [96:17.2.2]

50.8.2.3

When the mobile unit is parked, the vehicle shall be stabilized so that it will not move, either by jacking the vehicle or placing wheel chocks around the wheels. [96:17.2.3]

50.8.3 Tents

50.8.3.1

Temporary cooking operations conducted in tents shall comply with NFPA 102 and Chapter 25. [96:17.3.1]

50.8.3.2

Seating for the public shall not be located within any mobile or temporary cooking vehicle.

50.8.4 Cooking Appliance Installation on Vehicles

50.8.4.1

Subsection 50.8.4 shall apply to the installation of all appliances on vehicles. It shall not apply to engines. [58:6.26.7.1]

50.8.4.2

All appliances covered by 50.8.4 installed on vehicles shall be approved. [58:6.26.7.2]

50.8.4.3

Where the device or appliance, such as a cargo heater or cooler, is designed to be in operation while the vehicle is in transit, means, such as an excess-flow valve, to stop the flow of gas in the event of a line break shall be installed. [58:6.26.7.3]

50.8.4.4

Gas-fired heating appliances shall be equipped with shutoffs in accordance with 5.23.7(A) of NFPA 58, except for portable heaters used with cylinders having a maximum water capacity of 2.7 lb (1.2 kg), portable torches, melting pots, and tar kettles. [58:6.26.7.4]

50.8.4.5

Gas-fired heating appliances, other than ranges and illuminating appliances installed on vehicles intended for human occupancy, shall be designed or installed to provide for a complete separation of the combustion system from the atmosphere inside the vehicle. [58:6.26.7.5]

50.8.4.6\*

Where unvented-type heaters that are designed to protect cargo are used on vehicles not intended for human occupancy, provisions shall be made to provide air from the outside for combustion and dispose of the products of combustion to the outside. [58:6.26.7.6]

50.8.4.7

Appliances installed in the cargo space of a vehicle shall be readily accessible whether the vehicle is loaded or empty. [58:6.26.7.7]

50.8.4.8

Appliances shall be constructed or otherwise protected to minimize possible damage or impaired operation due to cargo shifting or handling. [58:6.26.7.8]

50.8.4.9

Appliances shall be located so that a fire at any appliance will not block egress of persons from the vehicle. [58:6.26.7.9]

50.8.4.10

A permanent caution plate shall be affixed to either the appliance or the vehicle outside of any enclosure. [58:6.26.7.10]

50.8.4.10.1

The caution plate shall be adjacent to the container(s). [58:6.26.7.10.1]

50.8.4.10.2

The caution plate shall include the following text:

CAUTION:

Be sure all appliance valves are closed before opening container valve.

Connections at the appliances, regulators, and containers shall be checked periodically for leaks with soapy water or its equivalent.

Never use a match or flame to check for leaks.

Container valves shall be closed when equipment is not in use.

[58:6.26.7.10.2]

50.8.4.11

Gas-fired heating appliances and water heaters shall be equipped with automatic devices designed to shut off the flow of gas to the main burner and the pilot in the event the pilot flame is extinguished. [58:6.26.7.11]

50.8.5 Internal Combustion Engine Power Sources

50.8.5.1

Electric generator and internal combustion power sources used for mobile or temporary cooking shall comply with 50.8.5.

50.8.5.2

Electrical appliances, fixtures, equipment, or wiring other than low-voltage and automotive vehicle circuits or extensions thereof, installed within or on vehicles, shall comply with NFPA 70.

50.8.5.3

An internal combustion engine shall be permitted to be used to operate an electric power generator. [96:17.5.1]

50.8.5.4

Generator units that are not vehicle-mounted while in use shall meet the requirements of 50.8.5.4.1 through 50.8.5.4.3. [96:17.5.2]

50.8.5.4.1

Internal combustion engine power sources shall be located at least 12 ft (4 m) from mobile or temporary cooking operations. [96:17.5.2.1]

50.8.5.4.2

Internal combustion engine power sources shall be isolated from physical contact by the installation of physical guards, fencing, or an enclosure. [96:17.5.2.2]

50.8.5.4.3

Internal combustion engine power sources shall be positioned so that the exhaust complies with the following:

Located at least 12 ft (4 m) from openings, air intakes, and means of egress

In a position pointed away from any building

In a position pointed away from any mobile or temporary cooking operations

[96:17.5.2.3]

50.8.6 Vehicle-Mounted Generators

50.8.6.1

Vehicle-mounted generators shall meet the requirements of 50.8.6.2 through 50.8.6.5.

50.8.6.2

Internal combustion engine-driven generator units (subject to the provisions of NFPA 1192) shall be listed and installed in accordance with the manufacturer's instructions and shall be vapor resistant to the interior of the vehicle. [1192:6.4.5.1]

50.8.6.3

Where a generator compartment is used to isolate the installed generator from the vehicle's interior, or a compartment is provided for the future installation of a generator and is intended to isolate the future generator from the vehicle interior, the generator compartment shall be lined with galvanized steel not less than 26 MSG thick. [1192:6.4.5.2]

50.8.6.3.1

Seams and joints shall be lapped, mechanically secured, and made vapor resistant to the interior of the vehicle. [1192:6.4.5.2.1]

50.8.6.3.2

Alternative materials and methods of construction shall be permitted in accordance with Section 1.4. [1192:6.4.5.2.2]

50.8.6.4

Liquid fuel lines and exhaust systems shall not penetrate into the area. [1192:6.4.5.2.3]

50.8.6.5

Holes into the living area shall be sealed. [1192:6.4.5.2.4]

50.8.7 LP-Gas Systems

50.8.7.1

LP-Gas systems for mobile cooking operations shall comply with NFPA 58 and this section. [96:17.7.1]

50.8.7.1.1

LP-Gas cylinders shall be secured in an upright position. [96:17.7.1.1]

50.8.7.1.2

Where a shutoff valve is provided, it shall be readily accessible and identified with a sign permanently affixed to the vehicle in reflective decal material with letters a minimum of 2 in. (50 mm) high.

50.8.7.2 Equipment Installation

Equipment shall be installed in accordance with Section 6.20 of NFPA 58, 50.8.7.2.1, and 50.8.7.2.2. [58:6.26.6]

50.8.7.2.1

Installation shall be made in accordance with the manufacturer's recommendations and, in the case of approved equipment, as provided in the approval. [58:6.26.6.1]

50.8.7.2.2

Equipment installed on vehicles shall be protected against vehicular damage as provided for container appurtenances and connections in 50.8.7.4.7.5. [58:6.26.6.2]

50.8.7.3 LP-Gas System Leak Detection

50.8.7.3.1

All mobile and temporary cooking operations equipped with a propane appliance and an electrical system shall be equipped with a propane detector listed and marked on the device as being suitable for use in the vehicles under the requirements of UL 1484, and installed according to the terms of its listing. [96:17.7.2.1]

50.8.7.3.2

The LP-Gas leak detection system shall be tested monthly. [96:17.7.2.2]

50.8.7.3.3

LP-Gas systems shall be inspected prior to each use. [96:17.7.2.3]

50.8.7.3.4

LP-Gas leak detection testing shall be performed every time a new LP-Gas connection is made or an LP-Gas cylinder is changed out. [96:17.7.2.4]

50.8.7.3.5

LP-Gas leak detection testing shall be documented and the documentation be held in the mobile or temporary unit and made available to the AHJ upon request. [96:17.7.2.5]

50.8.7.4 LP-Gas Systems on Vehicles (Other Than Engine Fuel Systems)

50.8.7.4.1\* Application

Section 50.8.7.4 shall apply to the following:

Nonengine fuel systems on all vehicles

Installations served by exchangeable (removable) cylinder systems and by permanently mounted containers.

[58:6.26.1]

50.8.7.4.2 Nonapplication

Section 50.8.7.4 shall not apply to the following:

Systems installed on mobile homes

Systems installed on recreational vehicles

Cargo tank vehicles, including trailers and semitrailers, and similar units used to transport LP-Gas as cargo, which are covered by Chapter 9 of NFPA 58.

LP-Gas engine fuel systems on the vehicles, which are covered by Chapter 11 of NFPA 58.

[58:6.26.2]

50.8.7.4.3 LP-Gas Container Installation Requirements

50.8.7.4.3.1

Only ASME mobile LP-Gas containers in compliance with the following shall be used:

A maximum allowable working pressure (MAWP) of 312 psi (2.2 MPag) or higher for LP-Gas containers installed in the enclosed spaces of a vehicle

A maximum allowable working pressure (MAWP) of 250 psi (1.7 MPag) or higher for LP-Gas containers installed on the exterior of a vehicle

[96:17.7.3.1.1]

50.8.7.4.3.2

LP-Gas containers installed on vehicles shall not exceed 200 gal (0.8 m3) aggregate water capacity. [96:17.7.3.1.2]

50.8.7.4.4

Disconnected LP-Gas containers and LP-Gas cylinders for purposes other than engine fuel systems shall not be transported or stored inside the vehicle. [96:17.7.3.2]

50.8.7.4.5

All other LP-Gas containers and LP-Gas cylinders in storage shall comply with Section 10.5 of NFPA 96 and Chapter 69. [96:17.7.3.3]

50.8.7.4.6

The LP-Gas supply system, including the containers, shall be installed either on the outside of the vehicle or in a recess or cabinet vaportight to the inside of the vehicle but accessible from and vented to the outside, with the vents located near the top and bottom of the enclosure and 3 ft (1 m) horizontally away from any opening into the vehicle below the level of the vents. [58:6.26.3.3]

50.8.7.4.7

Containers shall be mounted securely on the vehicle or within the enclosing recess or cabinet. [58:6.26.3.4]

50.8.7.4.7.1

Containers shall be installed with road clearance in accordance with 11.8.3 of NFPA 58. [58:6.26.3.4(A)]

50.8.7.4.7.2

Fuel containers shall be mounted to prevent jarring loose and slipping or rotating, and the fastenings shall be designed and constructed to withstand, without permanent visible deformation, static loading in any direction equal to four times the weight of the container filled with fuel. [58:6.26.3.4(B)]

50.8.7.4.7.3

Where containers are mounted within a vehicle housing, the securing of the housing to the vehicle shall comply with this provision. Any removable portions of the housing or cabinet shall be secured while in transit. [58:6.26.3.4(C)]

50.8.7.4.7.4

Field welding on containers shall be limited to attachments to nonpressure parts such as saddle plates, wear plates, or brackets applied by the container manufacturer. [58:6.26.3.4(D)]

50.8.7.4.7.5

All container valves, appurtenances, and connections shall be protected to prevent damage from accidental contact with stationary objects; from loose objects, stones, mud, or ice thrown up from the ground or floor; and from damage due to overturn or similar vehicular accident. [58:6.26.3.4(E)]

50.8.7.4.7.6

Permanently mounted ASME containers shall be located on the vehicle to provide the protection specified in 50.8.7.4.7.5. [58:6.26.3.4(F)]

50.8.7.4.7.7

Cylinders shall have permanent protection for cylinder valves and connections. [58:6.26.3.4(G)]

50.8.7.4.7.8

Where cylinders are located on the outside of a vehicle, weather protection shall be provided. [58:6.26.3.4(H)]

50.8.7.4.7.9

Containers mounted on the interior of passenger-carrying vehicles shall be installed in compliance with Section 11.9 of NFPA 58. Pressure relief valve installations for such containers shall comply with 11.8.5 of NFPA 58. [58:6.26.3.4(I)]

50.8.7.4.8

Where equipment such as a cargo heater or cooler is designed to be in operation while the vehicle is in transit, means such as an excess-flow valve to stop the flow of gas in the event of a line break shall be installed. [96:17.7.3.6]

50.8.7.4.9

Cylinders shall be retested every 5 to 12 years in accordance with the manufacturer's recommendations and 49 CFR 180.205:

No letter after the requalification date means the cylinder must be retested within 12 years.

"S" means the cylinder must be retested within 7 years.

"E" means the cylinder must be retested within 5 years.

[96:17.7.3.7]

50.8.7.5 Installation of LP-Gas Container Appurtenances

50.8.7.5.1

Container appurtenances shall be installed in accordance with the following:

Pressure relief valve installation on ASME containers installed in the interior of vehicles complying with Section 11.9 of NFPA 58 shall comply with 11.8.5 of NFPA 58.

Pressure relief valve installations on ASME containers installed on the outside of vehicles shall comply with 11.8.5 of NFPA 58 and 50.8.7.4.6.

Main shutoff valves on containers for liquid and vapor shall be readily accessible.

Cylinders shall be designed to be filled in either the vertical or horizontal position, or if they are the universal type, they are permitted to be filled in either position.

All container inlets, outlets, or valves installed in container inlets or outlets, except pressure relief devices and gauging devices, shall be labeled to designate whether they communicate with the vapor or liquid space.

Containers from which only vapor is to be withdrawn shall be installed and equipped with connections to minimize the possibility of the accidental withdrawal of liquid.

[58:6.26.4.1]

50.8.7.5.2

Propane containers shall be so located that the discharge from their pressure relief valves shall be not less than 3 ft (0.9 m) measured horizontally along the surface of the vehicle from any of the following located below the level of such discharge:

Openings into the vehicle

Propane-burning appliance intake and exhaust vents

All combustion engine and hydronic heating appliance exhaust terminations

[96:17.7.4.2]

50.8.7.6

Regulators shall be installed in accordance with 6.10.2 of NFPA 58 and 50.8.7.6.1 through 50.8.7.6.5. [58:6.26.4.2]

50.8.7.6.1

Regulators shall be installed with the pressure relief vent opening pointing vertically downward to allow for drainage of moisture collected on the diaphragm of the regulator. [58:6.26.4.2(A)]

50.8.7.6.2

Regulators not installed in compartments shall be equipped with a durable cover designed to protect the regulator vent opening from sleet, snow, freezing rain, ice, mud, and wheel spray. [58:6.26.4.2(B)]

50.8.7.6.3

If vehicle-mounted regulators are installed at or below the floor level, they shall be installed in a compartment that provides protection against the weather and wheel spray. [58:6.26.4.2(C)]

50.8.7.6.4

Regulator compartments shall comply with the following:

The compartment shall be of sufficient size to allow tool operation for connection to and replacement of the regulator(s).

The compartment shall be vaportight to the interior of the vehicle.

The compartment shall have a 1 in.2 (650 mm2) minimum vent opening to the exterior located within 1 in. (25 mm) of the bottom of the compartment.

The compartment shall not contain flame or spark-producing equipment.

[58:6.26.4.2(D)]

50.8.7.6.5

A regulator vent outlet shall be at least 2 in. (51 mm) above the compartment vent opening. [58:6.26.4.2(E)]

50.8.7.7 Gas Piping

50.8.7.7.1

Piping shall be installed in accordance with 6.11.3 of NFPA 58 and 50.8.7.7.1.1 through 50.8.7.7.1.13. [58:6.26.5.1]

50.8.7.7.1.1

Steel tubing shall have a minimum wall thickness of 0.049 in. (1.2 mm). [58:6.26.5.1(A)]

50.8.7.7.1.2

A flexible connector shall be installed between the regulator outlet and the fixed piping system to protect against expansion, contraction, jarring, and vibration strains. [58:6.26.5.1(B)]

50.8.7.7.1.3

Flexibility shall be provided in the piping between a cylinder and the gas piping system or regulator. [58:6.26.5.1(C)]

50.8.7.7.1.4

Flexible connectors shall be installed in accordance with 6.11.6 of NFPA 58. [58:6.26.5.1(D)]

50.8.7.7.1.5

Flexible connectors longer than the length allowed in NFPA 58, or fuel lines that incorporate hose, shall be used only where approved. [58:6.26.5.1(E)]

50.8.7.7.1.6

The fixed piping system shall be designed, installed, supported, and secured to minimize the possibility of damage due to vibration, strains, or wear and to preclude any loosening while in transit. [58:6.26.5.1(F)]

50.8.7.7.1.7

Piping shall be installed in a protected location. [58:6.26.5.1(G)]

50.8.7.7.1.8

Where piping is installed outside the vehicle, it shall be installed as follows:

Piping shall be under the vehicle and below any insulation or false bottom.

Fastening or other protection shall be installed to prevent damage due to vibration or abrasion.

At each point where piping passes through sheet metal or a structural member, a rubber grommet or equivalent protection shall be installed to prevent chafing.

[58:6.26.5.1(H)]

50.8.7.7.1.9

Gas piping shall be installed to enter the vehicle through the floor directly beneath or adjacent to the appliance served. [58:6.26.5.1(I)]

50.8.7.7.1.10

If a branch line is installed, the tee connection shall be located in the main gas line under the floor and outside the vehicle. [58:6.26.5.1(J)]

50.8.7.7.1.11

Exposed parts of the fixed piping system either shall be of corrosion-resistant material or shall be coated or protected to minimize exterior corrosion. [58:6.26.5.1(K)]

50.8.7.7.1.12

Hydrostatic relief valves shall be installed in isolated sections of liquid piping as provided in Section 6.15 of NFPA 58. [58:6.26.5.1(L)]

50.8.7.7.1.13

Piping systems, including hose, shall be pressure tested and proven free of leaks in accordance with Section 6.16 of NFPA 58. [58:6.26.5.1(M)]

50.8.7.7.2

There shall be no fuel connection between a tractor and trailer or other vehicle units. [58:6.26.5.2]

50.8.7.7.3

After installation or modification, piping systems (including hose) shall be proven free of leaks at not less than the normal operating pressure. [58:6.16.1.1]

50.8.7.7.4\*

Containers shall be designed, fabricated, tested, and marked (or stamped) in accordance with the regulations of the U.S. Department of Transportation (DOT 49 CFR); Federal Aviation Administration (FAA 14 CFR); the ASME Boiler and Pressure Vessel Code, Section VIII, "Rules for the Construction of Unfired Pressure Vessels"; or the API-ASME Code for Unfired Pressure Vessels for Petroleum Liquids and Gases, except for UG-125 through UG-136. [58:5.2.1.1]

50.8.7.7.4.1

Used containers constructed to specifications of the Association of American Railroads shall not be installed. [58:5.2.1.1(A)]

50.8.7.7.4.2

Adherence to applicable ASME Code case interpretations and addenda that have been adopted and published by ASME 180 calendar days prior to the effective date of NFPA 58 shall be considered as compliant with the ASME Code. [58:5.2.1.1(B)]

50.8.7.7.4.3

Where containers fabricated to earlier editions of regulations, rules, or codes listed in 50.8.7.7.4, and of the Interstate Commerce Commission (ICC) Rules for Construction of Unfired Pressure Vessels, prior to April 1, 1967, are used, the requirements of Section 1.4 of NFPA 58 shall apply. [58:5.2.1.1(C)]

50.8.7.7.5

Containers that have been involved in a fire and show no distortion shall be requalified for continued service before being used or reinstalled. [58:5.2.1.2]

50.8.7.7.5.1

Cylinders shall be requalified by a manufacturer of that type of cylinder or by a repair facility approved by DOT. [58:5.2.1.2(A)]

50.8.7.7.5.2

ASME or API-ASME containers shall be retested using the hydrostatic test procedure applicable at the time of the original fabrication. [58:5.2.1.2(B)]

50.8.7.7.5.3

All container appurtenances shall be replaced. [58:5.2.1.2(C)]

50.8.7.7.5.4

DOT 4E specification (aluminum) cylinders and composite cylinders involved in a fire shall be removed from service. [58:5.2.1.2(D)]

50.8.7.7.6 General Location of Cylinders Storage

50.8.7.7.6.1

Cylinders in storage shall be located to minimize exposure to excessive temperature rises, physical damage, or tampering. [58:8.2.1.1]

50.8.7.7.6.2

Cylinders in storage having individual water capacity greater than 2.7 lb (1.1 kg) [nominal 1 lb (0.45 kg) LP-Gas capacity] shall be positioned so that the pressure relief valve is in direct communication with the vapor space of the cylinder. [58:8.2.1.2]

50.8.7.7.6.3

Cylinders stored in buildings in accordance with Section 8.3 of NFPA 58 shall not be located near exits, near stairways, or in areas normally used, or intended to be used, for the safe egress of occupants. [58:8.2.1.3]

50.8.7.7.6.4

If empty cylinders that have been in LP-Gas service are stored indoors, they shall be considered as full cylinders for the purposes of determining the maximum quantities of LP-Gas permitted by 8.3.1, 8.3.2.1, and 8.3.3.1 of NFPA 58. [58:8.2.1.4]

50.8.7.7.6.5

Cylinders shall not be stored on roofs. [58:8.2.1.5]

50.8.7.7.7 Protection of Valves on LP-Gas Cylinders in Storage

50.8.7.7.7.1

Cylinder valves shall be protected as required by 5.2.6.1 and 7.2.2.5 of NFPA 58. [58:8.2.2.1]

50.8.7.7.7.2

Screw-on-type caps or collars shall be in place on all cylinders stored, regardless of whether they are full, partially full, or empty, and cylinder outlet valves shall be closed. [58:8.2.2.2]

50.8.7.7.7.3

Valve outlets on cylinders less than 108 lb (49 kg) water capacity [nominal 45 lb (20 kg) propane capacity] shall be plugged, capped, or sealed in accordance with 7.2.2.5 of NFPA 58. [58:8.2.2.3]

50.8.7.8 Transportation of Cylinders

50.8.7.8.1

Cylinders having an individual water capacity not exceeding 1000 lb (454 kg) [nominal 420 lb (191 kg) propane capacity], when filled with LP-Gas, shall be transported in accordance with the requirements of Section 9.3 of NFPA 58. [58:9.3.2.1]

50.8.7.8.2

Cylinders shall be constructed as provided in Section 5.2 of NFPA 58 and equipped in accordance with Section 5.9 of NFPA 58 for transportation as cylinders. [58:9.3.2.2]

50.8.7.8.3

The quantity of LP-Gas in cylinders shall be in accordance with Chapter 7 of NFPA 58. [58:9.3.2.3]

50.8.7.8.4

Cylinder valves shall comply with the following:

Valves of cylinders shall be protected in accordance with 5.2.6.1 of NFPA 58.

Screw-on-type protecting caps or collars shall be secured in place.

The provisions of 7.2.2.5 of NFPA 58 shall apply.

[58:9.3.2.4]

50.8.7.8.5

The cargo space of the vehicle shall be isolated from the driver's compartment, the engine, and the engine's exhaust system. [58:9.3.2.5]

50.8.7.8.5.1

Open-bodied vehicles shall be considered to be in compliance with this provision. [58:9.3.2.5(A)]

50.8.7.8.5.2

Closed-bodied vehicles having separate cargo, driver, and engine compartments shall be considered to be in compliance with this provision. [58:9.3.2.5(B)]

50.8.7.8.5.3

Closed-bodied vehicles, such as passenger cars, vans, and station wagons, shall not be used for transporting more than 215 lb (98 kg) water capacity [nominal 90 lb (41 kg) propane capacity], but not more than 108 lb (49 kg) water capacity [nominal 45 lb (20 kg) propane capacity] per cylinder, unless the driver and engine compartments are separated from the cargo space by a vaportight partition that contains no means of access to the cargo space. [58:9.3.2.5(C)]

50.8.7.8.6

Cylinders and their appurtenances shall be determined to be leak-free before being loaded into vehicles. [58:9.3.2.6]

50.8.7.8.7

Cylinders shall be loaded into vehicles with flat floors or equipped with racks for holding cylinders. [58:9.3.2.7]

50.8.7.8.8

Cylinders shall be fastened in position to minimize the possibility of movement, tipping, and physical damage. [58:9.3.2.8]

50.8.7.8.9

Cylinders being transported by vehicles shall be positioned in accordance with Table 50.8.7.8.9. [58:9.3.2.9]

Table 50.8.7.8.9 Orientation of Cylinders on Vehicles

Propane

Capacity of

Cylinder

lb

kg

Open Vehicles

Enclosed Spaces of

Vehicles

≤45

≤20

Any position

>45

>20

Relief valve in

communication

with the vapor space

≤4.2

≤1.9

Any position

>4.2

>1.9

Relief valve in

communication

with the vapor space

[58:Table 9.3.2.9]

50.8.7.8.10

Vehicles transporting cylinders where the total weight is more than 1000 lb (454 kg), including the weight of the LP-Gas and the cylinders, shall be placarded as required by DOT regulations or state law. [58:9.3.2.10]

50.8.8 Electrical Wiring

50.8.8.1

Vehicle-mounted generators shall comply with the provisions of NFPA 70, Article 551, Part III. [96:17.8.1]

50.8.8.2

The manufacturer of an engine generator unit intended for installation in a recreational vehicle shall provide instructions for the safe and effective installation, operation, and servicing of the generator. [96:17.8.2]

50.8.8.3

Refueling of internal combustion engine power sources shall be permitted only when the electric generators and internal combustion power sources are not in use. [96:17.8.3]

50.8.8.3.1

Refueling of internal combustion engines shall not be allowed during mobile or temporary cooking operations. [96:17.8.3.1]

50.8.8.3.2

Refueling of internal combustion engine power sources from a container shall be permitted when the engine is shut down and the surface temperature of the engine and fuel tank is below the autoignition temperature of the fuel. [96:17.8.3.2]

50.8.9 Carbon Monoxide Detectors

50.8.9.1

If the heat source is nonelectric and open flames are used, at least one listed carbon monoxide detector shall be installed. [96:17.9.1]

50.8.10 Training

50.8.10.1

Prior to performing cooking operations, one worker shall be provided with initial training in emergency response procedures, including the following:

Using portable fire extinguishers and extinguishing systems

Shutting off fuel sources

Notifying the local fire department

Refueling internal combustion engine power sources and LP-Gas container change-out

Performing leak detection of LP-Gas

Understanding fuel properties

[96:17.10.1]

50.8.10.2

During the time of cooking operation at least one person in the vehicle shall be trained to provide the functions listed in 50.8.10.1. [96:17.10.2]

50.8.10.3

The provision of training shall be the responsibility of the owner, and the training program and materials shall be acceptable to the AHJ. [96:17.10.3]

50.8.10.4

Refresher training shall be provided annually. [96:17.10.4]

50.8.10.5

Initial and refresher training shall be documented, and the documentation shall be held in the mobile unit and made available to the AHJ upon request. [96:17.10.5]

50.8.10.6

The address of the current operational location shall be posted and accessible to all employees. [96:17.10.6]

50.8.11 Parking, Servicing, and Repair

50.8.11.1

Where vehicles with LP-Gas fuel systems used for purposes other than propulsion are parked, serviced, or repaired inside buildings, the requirements of 50.8.11.2 through 50.8.11.4 shall apply. [58:6.26.8.1]

50.8.11.2

The fuel system shall be leak-free, and the container(s) shall not be filled beyond the limits specified in Chapter 7 of NFPA 58. [58:6.26.8.2]

50.8.11.3

The container shutoff valve shall be closed, except that the container shutoff valve shall not be required to be closed when fuel is required for test or repair. [58:6.26.8.3]

50.8.11.4

The vehicle shall not be parked near sources of heat, open flames, or similar sources of ignition, or near unventilated pits. [58:6.26.8.4]

50.8.11.5

Vehicles having containers with water capacities larger than 300 gal (1.1 m3) shall comply with the requirements of Section 9.7 of NFPA 58. [6.26.8.5]

Wheel chocks shall be provided to prevent mobile and temporary cooking units from moving. [96:17.11.5]

50.8.12 General Precautions

50.8.12.1

All fat fryers shall have a lid over the oil vat that can be secured to prevent the spillage of cooking oil during transit. This lid shall be secured at all times when the vehicle is in motion.