



Lake Havasu City Fire Department Fire Prevention Bureau

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**FD Specification #07
Protection of Commercial Cooking Operations**

2018 IFC, Ch. 6 & 9

**Rev. 9/01/2021
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OVERVIEW

Installation of ventilation control and fire protection systems used for the protection of commercial cooking installations requires approval from both the Lake Havasu City Fire Department (LHCFD) and the Development Services/Building Division (LHCDS).

PURPOSE

This fire department specification is intended to provide the necessary information to obtain a fire department construction permit to design and install any fire protection system, within the city limits, for protecting commercial cooking operations. Nothing in this specification is intended to be less restrictive than the applicable provisions of the International Fire Code (IFC). Where conflicts occur between provisions of this specification and IFC, the provisions of the IFC and its referenced standards must apply.

SCOPE

This specification provides the minimum fire safety inspection requirements related to design, installation, modification, operation, inspection, and maintenance of commercial kitchen hoods, cooking oil storage, and extinguishing systems designed to protect them.

PERMIT

A mechanical permit to install ventilation control systems, including commercial cooking hoods, is required and is obtainable from the LHCDS. A fire department construction permit is required for the installation or modification of commercial cooking fire extinguishing systems, and is obtainable from the LHCFD.

REQUIREMENTS

1. Cooking equipment used in processes producing smoke or grease laden vapors must be equipped with an exhaust system that complies with all of the equipment and performance requirements of the IFC, IMC, NFPA 17-A, NFPA 70 and NFPA, their listings and the manufacturer's installation instructions. Cooking equipment used in fixed, mobile, or temporary concessions, such as trucks, buses, trailers, pavilions, and tents must comply with these standards. Contact the LHCDS to obtain a mechanical permit.
2. Portable ductless exhaust hood systems must comply with all requirements of **NFPA 96, UL 197, UL710B** and their listings. Commercial electric cooking appliances must meet all requirements of **UL 197**. Appliances employing integral systems for limiting the emission of grease-laden air (exhaust hoods) must be installed in accordance with NFPA 96 and

relevant standards and listings. Systems employing integral recirculating systems must also comply with the requirements **UL 710B**.

3. Additionally, the effluent emitted from the appliance must not exceed 5 mg/m³ as measured in accordance with the U. S. Environmental Protection Agency (EPA) Test Method 202, *Determination of Condensable Particulate Emissions from Stationary Sources*. These appliances require prescribed maintenance and must be approved by the Fire Marshal (FM) prior to use. Note: A Type I hood is not required for an electric cooking appliance where an approved testing agency provides documentation that appliance effluent contains 5 mg/m³ or less of grease when tested at an exhaust flow rate of 500 cfm in accordance with **UL 710B**
4. Plans:
 - a. Plans and specifications for a wet chemical fire extinguishing system meeting the requirements of **UL 300** must be provided to the LHCFD.
 - b. Plans must be provided by a qualified individual, to scale, and contain sufficient detail to enable the reviewer to determine the extent of protection.
 - c. Plans must include:
 1. The location and identification of the hazards to be protected.
 2. The type of agent and size of the cylinder to be installed.
 3. The location and function of all devices.
 4. The size, length, and arrangement of all connections, piping and nozzles.
5. Commercial Cooking Fire-Extinguishing Systems
 - a. Automatic fire-extinguishing systems for commercial cooking systems must be of a type recognized for protection of commercial cooking equipment and exhaust systems of the type and arrangement protected.
 - b. Pre-engineered automatic dry- and wet-chemical extinguishing systems must be tested in accordance with **UL 300**, listed, and *labeled* for the intended application. Other types of automatic fire-extinguishing systems must be *listed* and *labeled* for specific use as protection for commercial cooking operations. Systems must be installed in accordance with this 2018 IFC, their listings, and the manufacturer's installation instructions. Automatic fire-extinguishing systems of the following types must be installed in accordance with the referenced standard indicated, as follows:
 1. Carbon dioxide extinguishing systems, NFPA 12.
 2. *Automatic sprinkler systems*, NFPA 13.
 3. Automatic water mist systems, NFPA 750
 4. Foam-water sprinkler system or foam-water spray systems, NFPA 16.
 5. Dry-chemical extinguishing systems, NFPA 17.
 6. Wet-chemical extinguishing systems, NFPA 17A.

Exception: Factory-built commercial cooking recirculating systems that are tested in accordance with UL 710B and *listed, labeled* and installed in accordance with **§ 304 Installation** of the *International Mechanical Code*.

- c. For information regarding manual system operation, system interconnection, carbon dioxide systems and other approved fire protection systems, see **IFC § 904.12**.
- d. Extinguishing systems must be connected to the fire alarm/sprinkler monitoring system, where provided.
- e. Extent of protection: The automatic fire-extinguishing system used to protect ventilating hoods, ducts, and cooking appliances must be installed to include cooking surfaces, deep fat fryers, griddles, upright broilers, char-broilers, range tops, and grills. Protection must also be provided for the enclosed plenum space within the hood, above filters, and exhaust ducts serving the hood.

6. Domestic Cooking Systems

- a. Cooktops and ranges installed in Group I-1, I-2-Condition 1, and R-2 college dormitories, where domestic cooking facilities are installed, contact the Fire Prevention Bureau for requirements.

PORTABLE FIRE EXTINGUISHERS

Portable fire extinguishers protecting commercial cooking equipment must be provided within a 30-foot travel distance of the equipment. All solid fuel cooking appliances, whether or not under a hood, with fireboxes 5-cubic feet or less in volume must have one (1) minimum 2.5-gallon or two (2) 1.5-gallon Class K wet-chemical portable fire extinguishers. When hazard areas include deep fat fryers, listed Class K portable fire extinguishers must be provided as follows:

- 1. For up to four fryers having a maximum cooking medium capacity of 80 pounds each: one Class K portable fire extinguisher of a minimum 1.5-gallon capacity.
- 2. For every additional group of four fryers having a maximum cooking medium capacity of 80 pounds each: one additional Class K portable fire extinguisher of a minimum 1.5-gallon capacity shall be provided.
- 3. For individual fryers exceeding 6 square feet in surface area: Class K portable fire extinguishers must be installed in accordance with the extinguisher manufacturer's recommendations.

OPERATIONS AND MAINTENANCE

Automatic fire-extinguishing systems protecting commercial cooking systems must be maintained in accordance with the following provisions:

- 1. The ventilation system in connection with hoods must be operated at the required rate of air movement, and classified grease filters must be in place when equipment under a kitchen grease hood is used.

2. Where grease extractors are installed, they must be operated when the commercial-type cooking equipment is used.
3. Hoods, grease-removal devices, fans, ducts, and other appurtenances must be cleaned at intervals necessary to prevent the accumulation of grease. Cleanings must be recorded, and records must state the extent, time, and date of cleaning. Such records must be maintained on the premises.
4. Where changes in the cooking media, positioning of cooking equipment or replacement of cooking equipment occur in existing commercial cooking systems, the automatic fire-extinguishing system must be required to comply with all applicable provisions of **IFC § 904.12, Commercial Cooking Systems**.
5. Automatic fire-extinguishing systems must be serviced at least every six (6) months and after activation of the system. Inspection must be by qualified individuals, and a certificate of inspection is required to be forwarded to the FM upon completion via the Compliance Engine.
6. Fusible links and automatic sprinkler heads must be replaced at least annually, and other protection devices must be serviced or replaced in accordance with the manufacturer's instructions.

Exception: Frangible bulbs are not required to be replaced annually. (IFC § 904.12.5.3)

References

- 2018 IFC, Ch. 6 §607 Commercial Cooking Hoods:
- 2018 IFC, Ch. 9 §904, Alternative Automatic Fire-extinguishing Systems:
- 2018 International Mechanical Code (IMC), Ch. 4
- NFPA 96, Ventilation Control and Fire Protection of Commercial Cooking Operations
- NFPA 17-A, Wet Chemical Extinguishing Systems
- NFPA 70, National Electrical Code
- UL 197 Commercial Electric Cooking Appliances
- UL300, Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas.
- UL 710B Recirculating Systems

Note: This FD Specification is intended to be a guide only. For full installation, fire-flow, location, distribution, and maintenance requirements, refer to the references above. Where conflicts exist between this document and the applicable codes and standards, the above references must supersede.

APPROVED: 

Scott Hartman, Fire Marshal

DATE: 9/1/2021