

**Carlsbad Fire Department
Fire & Life Safety Division**

**Guideline for
Fire Extinguishing Systems for
Commercial Cooking Operations**



Approved and Authorized By:

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Guideline for Fire Extinguishing Systems for Commercial Cooking Operations Guideline

PURPOSE

This guideline has been prepared to assist those responsible for the design, installation, testing, and inspection of wet chemical fire extinguishing systems used to protect commercial cooking appliances to comply with 2021 NFPA 17A; 2022 California Fire Code (CFC) Chapter 9, Section 904.13; and 2022 California Mechanical Code (CMC) Chapter 5.

SCOPE

This guideline applies to any facility where commercial cooking operations produce grease laden vapors. Cooking appliances producing grease laden vapors shall be equipped with an exhaust system with the following components: hood, grease removal devices, duct system, and fire extinguishing equipment.

SUBMITTAL REQUIREMENTS

1. General Requirements

- A. Submit three (3) sets of legible, scaled plans with ONE (1) set of current and complete technical data sheets/manufacturer's specifications shall be submitted to Carlsbad Fire & Life Safety Division.
- B. Scope of work for the project.
- C. Complete address of the project.
- D. Only persons properly trained shall be considered competent to design, install, and service pre-engineered wet chemical systems. Proof of proper training for the designer and installer shall be provided upon plan submittal. CMC 513.9/NFPA 17A – 1.7
- E. Applicable codes and standards used for the system design (e.g., 2022 CFC, 2022 CBC, etc.).
- F. Sectional view of cooking appliances with the dimensions of each piece of cooking equipment specified.
- G. Specify the size and location of the back shelf, if any.
- H. If applicable to the appliances on site, specify the following:
 - whether or not the fryer has a drip board
 - type of charbroiler
 - the depth of wok
- I. A scaled floor plan layout that includes the location of the cooking equipment, exit doors, manual pull, and other non-protected appliances indicated.

- J. Fire extinguishing protection is required for open pizza ovens. If the pizza oven is closed, and no protection is provided, this must be specified on the plan.
- K. Hood, plenum, and duct dimensions.
- L. Piping schematic that includes the equivalent pipe length calculation (if applicable); the number and type of nozzles; and the location, height and direction of nozzle placement over each piece of cooking equipment.
- M. An equipment legend for each supply tank (multiple cylinders supplying the same nozzles shall be combined on legend). The legend shall include the type of nozzles that are connected to that tank, the tip number and/or identifier, the total number of flow point used, and the number of flow points allowed for that size tank.
- N. Detection schematic that includes the location of each fusible link for each protected equipment, the location of the manual pull, and the length of the detection system.
- O. NOTE: If the chemical fire extinguishing system is not designed to fully protect the duct, then the duct will also require fire sprinklers to be installed as per 2022 NFPA 13, Section 8.9

2. Place following notes verbatim on plan

- A. Where a building fire alarm or monitoring system is installed, automatic fire-extinguishing systems shall be monitored by the building fire alarm or monitoring system in accordance with NFPA 72. CFC 904.3.5 as amended.
- B. The approved system shall be pre-tested prior to the City of Carlsbad scheduled inspection of the required acceptance test.
- C. Piping shall be rigidly supported to prevent movement.
- D. Appliances with wheels shall be secured in place.
- E. Manual pull stations shall be located no higher than four (4) feet above finished floor and shall be readily accessible for use.
- F. A manual actuation device shall be located at or near a means of egress from of egress from the cooking area not less than 10 feet (3048 mm) and not more than 20 feet (6096 mm) from the kitchen exhaust system. The manual actuation shall require a maximum force of 40 pounds (178 N) and a maximum movement of 14 inches (356 mm) to actuate the fire suppression system.
- G. All gas fueled, electrically powered, and heat producing equipment located under the hood shall shut down upon activation of the extinguishing system.
- H. All discharge nozzles shall be provided with caps, covers, or other suitable protective devices.
- I. All discharge nozzles shall be located and installed in relation to the protected appliance as shown in the manufacturer's listed installation manual.

- J. Hood and duct construction and installation shall be in accordance with the CMC and nationally recognized standards. These assemblies are subject to approval and inspection by the Building Official and are not part of the Carlsbad plan review process except as it relates to the installation of the hood extinguishing system.
- K. Where multiple manual actuators are installed for protection of separate extinguishing systems, they shall be identified as to which extinguishing system each will activate.
- L. Hood exhaust fans shall continue to operate after the extinguishing system has been activated, unless fan shutdown is required by a listed component of the ventilation system or by the design of the extinguishing system.
- M. The inside edge of the hood shall overhang a horizontal distance of not less than six (6) inches beyond the edge of the cooking surface on all open sides, and the vertical distance between the lip of the hood and the cooking surface shall not exceed four (4) feet unless the manufacturer's specifications state otherwise.

OWNERS NOTES

- A. **System test.** Systems shall be inspected and tested for proper operation at six-month intervals. Tests shall include a check of the detection system, alarms and releasing devices, including manual stations and other associated equipment. Extinguishing system units shall be weighed and the required amount of agent verified. Stored pressure-type units shall be checked for the required pressure. The cartridge of cartridge-operated units shall be weighed and replaced at intervals indicated by the manufacturer in accordance with CFC 904.5.1.
- B. **Fusible link maintenance.** Fixed temperature sensing elements shall be maintained to ensure proper operation of the system in accordance with 904.5.2

TESTING

- A. The system shall be pre-tested prior to City of Carlsbad inspection to determine that the system is properly installed and functions in accordance with the approved plans, the manufacturer's installation and maintenance manual. Testing shall include: a manual and automatic activation via fusible link, a shutdown of all electrical and gas cooking equipment, verification of nozzle type and height, and orientation relative to placement of cooking appliances will also be verified during the inspection.