

1. GENERAL

- 1.1 The system shall be a pre-engineered, fixed pipe, automatic wet chemical agent fire suppression system for protection of all hazard areas associated with cooking operations, including exhaust hoods, plenums, ductwork and cooking appliances.
- 1.2 The system shall be a Kidde Fire Systems, Model WHDR Wet Chemical Fire Suppression System, manufactured by Kidde Fire Systems, 400 Main Street, Ashland, Massachusetts. The manufacturer shall be ISO 9001:2015 certified.
- 1.3 All requirements outlined in this specification shall be completed in their entirety. These requirements, combined with good engineering practices must be followed in order to produce a safe and effective fire protection and suppression system.

2. CODES & STANDARDS COMPLIANCE

- 2.1 The design, installation, testing and maintenance of the system shall be in accordance with the following codes and standards as applicable:
 - A. UL 300, *Standard for Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment*
 - B. UL1254, *Standard for Pre-Engineered Dry Chemical Extinguishing System Units*
 - C. ULC/ORD-C1254.6, *Fire Testing of Restaurant Cooking Area Fire Extinguishing System Units*
 - D. NFPA 17A: *Standard for Wet Chemical Extinguishing Systems*
 - E. NFPA 70: *National Electrical Code® (NEC)*
 - F. NFPA 72: *National Fire Alarm and Signaling Code*
 - G. NFPA 96: *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*
 - H. Kidde Fire Systems *WHDR Wet Chemical Fire Suppression System Design, Installation, Operation and Maintenance (DIOM) Manual*, part number 87-122000-001 and all applicable addenda & technical bulletins, as identified by Underwriters Laboratories and Underwriters Laboratories Canada, File No. EX3559
 - I. All applicable insurance company requirements
 - J. All applicable local and state codes and standards
 - K. Requirements of the Local Authorities Having Jurisdiction (AHJ)
- 2.2 The wet chemical system shall have the following listings and approvals as applicable:
 - A. Underwriters Laboratories (UL), per Test Standard UL 300
 - B. Underwriters Laboratories Canada (ULC), per Standard ULC/ORD-C1254.6
 - C. Fire Department, City of New York, Certificate of Approval
- 2.3 The manufacturer shall meet ISO 9001 requirements for the design, production and distribution of the wet chemical fire suppressions systems for cooking operations.

3. SYSTEM DESCRIPTION

- 3.1 All wet chemical fire suppression equipment and accessories must be manufactured and/or supplied by Kidde Fire Systems, 400 Main Street, Ashland, MA 01721, USA, Telephone 508.881.2000, www.kiddefiresystems.com.
- 3.2 The manufacturer shall warranty all WHDR Wet Chemical Fire Suppression System products for

three (3) years from the date of purchase.

- 3.3 The system shall be supplied and installed by factory authorized, Kidde Fire Systems distributor. The organization and installer shall be trained by the manufacturer to design, install, test and maintain the WHDR Wet Chemical Fire Suppression System and shall be able to produce a certificate stating such upon request.
- 3.4 The wet chemical fire suppression system for the cooking appliances and ventilation shall be a pre-engineered modular Kidde model WHDR.
- 3.5 The system shall consist of Kidde WHDR Series Cylinder & Valve Assemblies, Kidde actuation hardware and Kidde distribution nozzles attached to a fixed pipe network.
- 3.6 The system shall use Kidde APC wet chemical agent, a potassium salt solution fire suppression agent. This agent works by producing a synthetic cellular mass (saponification) on the surface of hot or burning grease. This foam layer acts to smother a fire, and serves to prevent re-flash until the grease cools.

4. COMPONENTS

4.1 WHDR Series Cylinder & Valve Assembly

- A. Kidde APC wet chemical agent shall be contained in one or more stored pressure DOT/TC rated steel cylinder and valve assemblies. Cylinders requiring an external source to pressurize the cylinder shall not be acceptable.
- B. Sufficient cylinder quantities and sizes to protect the entire hazard area shall be provided in accordance with the Kidde WHDR DIOM Manual and filled with the required amount of APC wet chemical agent.
- C. The cylinder(s) shall have a tin-nickel alloy plated brass valve, with visual pressure gauge. Agent cylinders without pressure gauges shall not be acceptable. The valve shall contain a check stem which is operated by the stroke of the actuating assembly. Agent cylinders utilizing a burst disc as a means of sealing the discharge outlet shall not be acceptable.
- D. The cylinder(s) shall have a separately mounted shield to protect the pressure gauge.
- E. The cylinder and valve assemblies shall be factory pressurized with dry nitrogen to 175 PSIG at 70°F (1207 kPa at 21°C). The cylinder and valve assemblies shall be capable of being stored and operated at temperatures from 0°F to 120°F (-18°C to 49°C).
- F. Kidde bracketing shall be provided to mount the cylinders securely to the intended mounting surface.

4.2 Control Equipment

- A. The system control equipment shall be capable of all functions associated with automatically and manually discharging the wet chemical agent from all cylinder and valve assemblies, including automatic shutdown of the fuel and heat source(s), and electrical power to all protected and other required areas upon system discharge.
- B. The system control equipment shall be either cylinder or wall mounted, whichever is applicable. A System Valve Actuator shall be supplied for each cylinder valve. All mechanical components of the control heads shall be enclosed. No exposed levers, except for a local manual actuation handle, shall be permitted.
- C. The system shall be capable of automatic and manual actuation, either by electrical or mechanical means. The control head shall be equipped with microswitch contacts for audible alarm and/or equipment shutdown. All cylinders protecting a single-hazard area must be connected for simultaneous discharge by all methods of system actuation.

- D. When automatic electric actuation is utilized, the electric solenoid shall be actuated by a tested and listed compatible control panel. The detectors shall be Fenwal Detect-A-Fire rate-compensated thermostat fire detectors. All detection and releasing circuits shall be supervised and the system shall provide for a secondary power supply calculated, at minimum, according to NFPA and UL standards. Fenwal thermostats shall be chosen with a rating suitable to their expected normal exposure temperature(s).
- E. For automatic mechanical actuation, the system control head shall be activated by Kidde Fire Systems thermo-bulb link or fusible metal alloy link fire detectors per the Kidde WHDR DIOM Manual. The thermo-bulb or fusible link system shall require no outside source of power for operation. Detector links used for mechanical system actuation shall be located in accordance with the Kidde WHDR DIOM Manual and all applicable NFPA and UL standards. The heat detector links shall be chosen with a rating suitable for their expected normal exposure temperature(s).

4.3 Distribution Nozzles

- A. Nozzles shall be located to protect the exhaust ducts, plenums, and all cooking appliances requiring protection. Nozzle type(s), quantity, coverage and location shall be in accordance with the Kidde WHDR DIOM Manual.
- B. All nozzles shall be equipped with strainers to prevent foreign matter in the agent distribution piping or tubing from clogging the nozzle orifice. All nozzles shall be equipped with caps with replaceable foil seals to prevent entry of grease and foreign matter into the nozzles and piping. The foil seals are to be ruptured by pressure at system discharge. Nozzles utilizing a separate blow-off cap shall not be acceptable.
- C. All nozzles shall incorporate a ring identification system to easily identify nozzle type. Rings are to be machined into the nozzle body by the manufacturer.

4.4 Distribution System

- A. The APC wet chemical agent distribution system shall be designed and installed in accordance with the Kidde WHDR DIOM Manual.
- B. The distribution system shall consist of Schedule 40 black steel pipe or stainless steel tubing. Chrome plated piping is permissible. Galvanized piping shall not be used. Pipe thread compound or tape shall not be used.
- C. All fittings for Schedule 40 pipe shall be standard weight steel, malleable iron, ductile iron or cast iron. Galvanized fittings shall not be used.
- D. Fittings for stainless steel tubing shall be compression or flare type. Bending of tubing is permissible. All bending radii shall be in accordance with the Kidde WHDR DIOM Manual using commercially available bending jigs.

5. SYSTEM INSTALLATION AND COMMISSIONING

5.1 Kidde WHDR Wet Chemical Fire Suppression System Equipment

A factory authorized Kidde Fire Systems distributor shall install and commission the system in accordance with the Kidde WHDR DIOM Manual.

5.2 Training Requirements

The installer shall be trained and certified by Kidde Fire Systems on design, installation, testing and maintenance of the Kidde WHDR Wet Chemical Fire Suppression System.

5.3 Routine Maintenance

Routine maintenance shall be performed by an authorized Kidde Fire Systems distributor, and in accordance with the Kidde WHDR DIOM Manual, NFPA 96, NFPA 17A, all applicable local codes and standards, and requirements of the local Authority Having Jurisdiction.