1. GENERAL SPECIFICATION

1.1 A pre-engineered, fixed pipe, automatic dry chemical fire suppression system shall be provided and installed for the hazard including work area, plenums and all exhaust ventilation pits and associated ductwork requiring protection.

1.2 The system shall be Kidde Dry Chemical, Model IND, manufactured by Kidde Fire Systems, 400 Main Street, Ashland, Massachusetts. The manufacturer shall be ISO 9001:2000 certified.

2. CODES/STANDARDS COMPLIANCE

2.1 The system shall conform to, and be in accordance with, the following:

A. UL 1254, Underwriters Laboratories Standard for Fire Extinguishing Systems for Protection of Industrial Hazards
B. FM Approvals, where applicable
C. NFPA 17, Standard on Dry Chemical Extinguishing Systems
D. NFPA 33, Standard for Spray Application Using Flammable or Combustible Materials
E. NFPA 34, Standard for Dipping and Coating Processes Using Flammable or Combustible Liquids
F. Kidde Model IND Instruction Manual and all applicable addenda, as identified by Underwriters Laboratories File No. UL EX-2153
G. All applicable insurance company requirements.
H. All applicable local and state codes and standards,
I. NFPA 70 – National Electrical Code (NEC)
J. NFPA 72 – National Fire Alarm Code
K. Requirements of the Local Authorities Having Jurisdiction (AHJ).

2.2 The fire suppression system must have the following listings and approvals:

2.3 The manufacturer shall meet ISO 9001 requirements for the design, production and distribution of the IND Dry Chemical fire suppression systems.

3. SYSTEM DESCRIPTION

3.1 All Industrial Dry Chemical fire suppression equipment and accessories shall be manufactured and/or supplied by:

Kidde Fire Systems
400 Main Street
Ashland, MA 01721
U.S.A.

Phone: (508) 881-2000
URL: http://www.kiddefiresystems.com

3.2 The manufacturer shall warrant all IND fire suppression system products for six years from the date of purchase.

3.3 The system shall be supplied and installed by a factory-authorized, Kidde Fire Systems distributor. The organization and installer shall be trained by the manufacturer to analyze, design, install, test and maintain the IND Dry Chemical Fire suppression system and shall be able to produce a certificate stating such on request.

3.4 The systems design shall be of a pre-engineered, modular type.

3.5 The system shall consist of Kidde Dry Chemical storage Cylinder(s), Kidde actuation hardware and Kidde agent distribution nozzles attached to a pipe network.

3.6 Agents
The system shall use Kidde 90 Multi-Purpose ABC Dry Chemical, (monoammonium phosphate) or Kidde Regular BCM Dry Chemical (sodium bicarbonate) dry chemical agent.

4. COMPONENTS

4.1 IND Cylinder and Valve Assembly

1. The Kidde dry chemical agents 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 agent shall not be acceptable. The cylinder and valve assemblies shall have the following features:
2. The Kidde Model IND cylinder(s) shall be of type and size as required by the Kidde Instruction Manuals.
3. The cylinder(s) shall have a tin-nickel alloy plated brass valve, with 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 will not be acceptable.
4. The cylinder and valve assemblies shall be pressurized to 360 PSIG (24.8 bar) with nitrogen. The cylinder and valve assemblies shall be capable of being stored and operated at the following temperature ranges:
   i. -40°F to 120°F (-40°C to 49°C) for industrial applications
   ii. 0°F to 120°F (-17°C to 49°C) for automotive paint booth applications
5. The cylinder shall have a shield to protect the gauge. The shield shall be a separate assembly from that of the gauge, and shall be separately mounted.

B. Sufficient nozzles, and cylinder-and-valve assemblies shall be provided to protect the entire hazard area. Listed bracketing shall be provided to mount the cylinder 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 dry chemical agent from all cylinder-and-valve assemblies, including automatic shutdown of the heat source or fuel and electrical power to all protected areas upon system discharge.

B. The system control equipment shall include a control head, model *XV*, and actuator(s) for each system cylinder valve. The control head can attach with two bolts to an actuator or can be wall mounted, whichever is applicable. All mechanical components of the control heads shall be enclosed. No exposed levers, except for the local manual actuation handle, will be permitted.

C. The control head can be actuated automatically, by electrical and/or mechanical means. The control head shall be equipped with micro-switch contacts for audible alarm and/or equipment shutdown. For multiple cylinder systems additional actuators shall be provided for each additional cylinder. All cylinders protecting one hazard area must be connected for simultaneous discharge by all methods of system actuation. For electric automatic actuation, the electric solenoid shall be actuated by a tested and listed control panel. The detectors shall be 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. Thermostats shall be located according to NFPA 72, standard for detection. Thermostats shall be chosen with a rating suitable to their expected normal exposure temperature.

D. For automatic mechanical actuation, the system control head shall be activated by Kidde Fire Systems KG series link fire detectors. A mechanical thermo-bulb link system shall require no outside source of power for operation. Thermo-bulb links shall be located in accordance with Kidde's Model IND Instruction Manual part number WK-220423-000 or 83-100036-001, and applicable NFPA, local and UL standards. Thermo-bulb links shall be chosen with a rating suitable to their expected normal exposure temperature.

4.3 Distribution Nozzles

Nozzles shall be located to protect the exhaust duct(s), plenum(s), and all work areas requiring protection. Nozzle choice, coverage and location shall be per the applicable Kidde UL listed instruction manual.

4.4 Distribution Piping

A. The distribution system shall be NPT Schedule 40 black steel, stainless steel, or galvanized pipe.
B. All fittings for Schedule 40 pipe shall be standard weight black malleable iron, galvanized, ductile iron, steel or stainless steel. Fittings may be chrome plated.

5. SYSTEM INSTALLATION AND COMMISSIONING

5.1 IND Fire Suppression System Equipment

The installer shall install the system in accordance with DIOM Manuals, 83-100036-001 and WK-220423-000.

5.2 Training Requirements

The installer shall be trained and certified by the manufacturer on installation, design and maintenance of the Kidde IND fire suppression system.

5.3 Routine Maintenance

Routine maintenance shall be performed accordance with DIOM Manuals, 83-100036-001 and WK-220423-000, NFPA 17, NFPA 33, NFPA 34, and other appropriate standards.