FM-200®

Fire Suppression Agent

Kidde Fire Systems
A UTC Fire & Security Company

Effective: April 2007
K-90-1900

FEATURES

- ***Non-Ozone Depleting***
- ***Safe for Total Flooding of Occupied Spaces***
- ***Clean — No Residue to Clean Up***
- ***Non-Damaging to Hazard Contents***
- ***Fast Acting***
- ***Active Fire Suppression Agent***
- ***UL Component Recognized***
- ***FM Approved***

EXTINGUISHING AGENT

FM-200 (1,1,1,2,3,3,3-heptafluoropropane) is a compound of carbon, fluorine and hydrogen (CF3CHFCF3). It is colorless, odorless and electrically non-conductive. It suppresses fire by a combination of chemical and physical mechanisms without affecting the available oxygen. This allows personnel to see and breathe, permitting them to leave the fire area safely. FM-200 has acceptable toxicity for use in occupied spaces when used as specified in the United States Environmental Protection Agency (EPA) Significant New Alternative Policy (SNAP) program rules. Although FM-200 is considered non-toxic to humans in concentrations necessary to extinguish most fires, certain safety considerations should be observed when applying and handling the agent. The discharge of FM-200 may create a hazard to personnel from the undecomposed agent itself and from the decomposition products which result when the agent is exposed to fire and other hot surfaces. Exposure to the agent is generally of less concern than is exposure to the decomposition products. Unnecessary exposure to the agent or the decomposition products should be avoided.

TOXICITY

In tests, the acute toxicity of FM-200 was shown to be equivalent to that of Halon 1301. FM-200 has been evaluated for cardiac sensitization through test protocols approved by the US EPA. The EPA's SNAP Program classifies FM-200 as acceptable for use as a total flooding agent in occupied spaces. Refer to the SNAP program rules for more information.

CLEANLINESS

FM-200 is clean, leaves no residue, thereby eliminating costly after-fire clean-up, and keeping expensive "downtime" to a minimum. Most materials such as steel, stainless steel, aluminum, brass, and other metals as well as plastics,rubber and electronic components are unaffected by exposure to FM-200.

APPROVALS

FM-200 agent complies with the NFPA Standard 2001: Standard for Clean Agent Fire Extinguishing Systems, EPA SNAP Program (Significant New Alternate Policy), Underwriters Laboratories, Inc. (UL) and Factory Mutual Research Corporation (FMRC).

USE

FM-200 is used in total flooding fire suppression systems. It is stored in steel containers, and is super-pressurized with nitrogen to aid in expelling the agent. The discharge time is 10 seconds or less. The maximum fill density of the agent storage is 70 lb./ft.^{3}.

Table 1. FM-200 Physical Properties

Chemical Formula	CF3CHFCF3
Molecular Weight	170.03
Freezing Point	-204°F (-131°C)
Boiling Point at 1 Atm.	2.6°F (-16.4°C)
Critical Temperature	215.1°F (101.7°C)
Critical Density	38.76 lb./ft.^{3} (621 kg/m^3)
Critical Pressure	422 PSIA (29.0 bar absolute)
Critical Volume	0.0258 cu.ft./lb. (1.61 L/kg)
Ozone Depletion Potential	0

Table 2. FM-200 Fire Protection Properties

Cup Burner Concentration (n-Heptane)	6.70% v/v
Use Concentration for n-Heptane	8.00% v/v
Use Concentration for Acetone	8.30% v/v
Use Concentration for Isopropanol	9.00% v/v
Use Concentration for Toluene	7.00% v/v
Use Concentration for Class A (Surface Fires)*	6.25% v/v
***Note:** Automatic only per NFPA 2001.	

Table 3. FM-200 Toxicity Properties

NOAEL (No Observable Adverse Effect Level)	9.00%
LOAEL (Lowest Observable Adverse Effect Level)	10.50%

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