Kidde Fire Systems
Agent Component Datasheet

HFC-227ea Fire Suppression Agent

Effective: August 2023
K-90-1800 Rev AA

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***
- ***RoHS Complaint***

EXTINGUISHING AGENT

HFC-227ea agent (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. HFC-227ea agent 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 HFC-227ea agent is considered nontoxic to humans in concentrations necessary to extinguish most fires, certain safety considerations should be observed when applying and handling the agent. The discharge of HFC-227ea agent 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

HFC-227ea agent has been evaluated for cardiac sensitization through test protocols approved by the US EPA. The EPA's SNAP Program classifies HFC-227ea agent as acceptable for use as a total flooding agent in occupied spaces. Refer to the SNAP program rules for more information.

CLEANLINESS

HFC-227ea agent is clean, leaving no residue, thereby eliminating costly after-fire clean-up, and keeping expensive "down-time" 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 HFC-227ea agent.

APPROVALS

HFC-227ea 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

HFC-227ea agent is used in total flooding fire suppression systems. The agent is stored in steel containers. To aid in expelling the agent in our ECS 360 platform, the agent cylinder is super pressurized with nitrogen. In our ADS platform, super-pressurized nitrogen from an external driver cylinder is used to expel the agent. The discharge time is 10 seconds or less. The maximum fill density of the agent storage is 70 lb./ft.

Table 1: HFC-227ea Physical Properties

Chemical Formula	CF3CHFCF3
Molecular Weight	170.03
Freezing Point	-204F (-131C)
Boiling Point at 1 Atm	2.6F (-16.4C)
Critical Temperature	215.1F (101.7C)
Critical Density	38.76 lb/ft3 (621 kg/m3)
Critical Pressure	422 PSIA (29.0 bar absolute)
Critical Volume	0.0258 cu ft/lb (1.61 L/kf)
Ozone Depletion Potential	0
Global Warming Potential	3220

Table 2: HFC-227ea agent 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: HFC-227ea agent Toxicity Properties

NOAEL (No Observable Adverse Effect Level)	9.0%
LOAEL (Lowest Observable Adverse Effect Level)	10.5%

COMPATIBILITY

System	Industrial Approval	Marine Approval
ADS™ with HFC-227ea Fire Suppression Agents	UL, ULC, FM	UL, USCG
ECS™ 360 with HFC-227ea Fire Suppression Agents*	UL, ULC, FM	UL, USCG

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