

FIRERASER® HFC-227_{EA} CLEAN AGENT

Data Sheet

APPLICATION/DESCRIPTION

HFC-227_{ea} is a clean agent extinguishant used in Fike's Fireraser system. HFC-227_{ea} is ideal for applications where clean-up of other media presents a problem, where weight versus suppression potential is a factor, where an electrically non-conductive medium is needed and where people compatibility is an overriding factor. When environmental impact is a consideration, HFC-227_{ea} is particularly useful. It has zero ozone-depleting potential, low global warming potential and a short atmospheric lifetime.

HFC-227_{ea} is an odorless, colorless, liquefied compressed gas. (See Physical Properties Table for additional information). It is stored as a liquid and dispensed into the hazard as a colorless, electrically non-conductive vapor that is clear and does not obscure vision. It leaves no residue and has acceptable toxicity for use in occupied spaces at design concentration. HFC-227_{ea} extinguishes a fire by a combination of chemical and physical mechanisms. HFC-227_{ea} does not displace oxygen and therefore is safe for use in occupied spaces without fear of oxygen deprivation.

Performance

HFC-227_{ea} is an effective fire extinguishing agent that can be used on many types of fires. It is effective for many surface fires, such as flammable liquids, and most solid combustible materials.

On a weight-of-agent basis, HFC-227_{ea} is a very effective gaseous extinguishing agent. The HFC-227_{ea} design concentration for normal Class A combustibles is 6.25 - 7% in accordance with NFPA 2001.

Specifications

HFC-227_{ea} is manufactured to these specifications:

- Purity, % by weight: 99.0 Minimum
- Acidity, ppm by weight: 3.0 Maximum
- Water content, % by weight: 0.001 Maximum
- Non-volatile residues, gram/100mL: 0.05 Maximum

Toxicity

The toxicology of HFC-227_{ea} compares favorably with other suppression agents. The LC50 of HFC-227_{ea} is greater than 800,000 ppm. HFC-227_{ea} has been evaluated for cardiac sensitization via test protocols approved by the United States Environmental Protection Agency. Test results show that cardiac tolerance to HFC-227_{ea} is higher than that of other suppression agents and is acceptable for safe use in occupied spaces. HFC-227_{ea} will decompose to form halogen acids when exposed to open flames. The formation of these acids is minimized by using Fike early warning detection systems and proper system installation. When properly applied and installed, the generation of these by-products of HFC-227_{ea} is minimal.

APPROVALS

HFC-227_{ea} complies with NFPA Standard 2001 - current edition. The Fike Fireraser is FM approved.

- FM Approved 3024056

Form No. M.1.02.01-1

PHYSICAL PROPERTIES

- Chemical Name: Heptafluoropropane (CF₃CHF₂CF₃)
- Molecular Weight: 170.03
- Boiling Point @ 760 mm Hg: 2.55°F (-16.4°C)
- Freezing Point : -204°F (-131.1°C)
- Critical Temperature: 215°F (101.7°C)
- Critical Pressure (psia): 422 psia (2912 kPa)
- Critical Volume (ft³/lbm) (cc/mole): 0.0258 (274)
- Critical Density (lbm/ft³): 38.8 (621 kg/m³)
- Specific Heat, Liquid (BTU/lb-F°) @ 77°F (25°C): 0.283 (1.184 kJ/kg/°C)
- Specific Heat, Vapor (BTU/lb-°F) @ constant pressure of 1 ATM @ 77°F (25°C): 0.1932 (0.808 kJ/kg/°C)
- Heat of Vaporization (BTU/lb) at Boiling Point: 57.0 (132.6 kJ/kg)
- Thermal Conductivity (BTU/h ft°F) of Liquid @ 77°F (25°C): 0.040 (0.069 w/m°C)
- Viscosity, Liquid (lb/ft hr) @ 77°F (25°C): 0.443 (0.184 centipoise)
- Vapor Pressure (psia) @ 77°F (25°C): 66.4 (457.7 kPa)
- Ozone Depletion Potential: 0
- Estimated Atmospheric Lifetime (years): 31-42
- LC50 (Rats; 4hrs - ppm): >800,000

