3M™ NOVEC™ 1230 FIRE PROTECTION FLUID

Description

Novec 1230 is a colorless, clear liquid (see Physical Properties Table for additional information). It is stored as a liquid and dispensed into the hazard as an electrically non-conductive gaseous 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.

Extinguishing Method

Novec 1230 extinguishes a fire by heat absorption. The gaseous mixture created when Novec 1230 discharges into air has a much higher heat capacity than air alone. The gaseous mixture absorbs large amounts of heat due to the high heat capacity and extinguishes fires by sufficiently cooling the combustion zone. It is important to note, Novec 1230 does not use the depletion or displacement of oxygen to extinguish a fire and therefore is safe for use in occupied spaces.

Approvals

- Underwriters Laboratories (UL)
- Underwriters Laboratories of Canada (ULC)
- Factory Mutual (FM)
- United States EPA Significant New Alternative Policy (SNAP) report

For exact certification listings, please reference the respective agency web site.

Use and Limitations

Novec 1230 fluid can be used on the following Class of Hazards:

Class A & C: Electrical and Electronic Hazards
Telecommunications Facilities
High value assets, where the associated down-time would be costly

Class B: Flammable liquids and gases

Novec 1230 shall "NOT" be used on fires involving the following materials:

- Chemicals or mixtures of chemicals that are capable of rapid oxidation in the absence of air such as Cellulose Nitrate and Gunpowder
- Reactive metals such as Lithium, Sodium, Potassium, Magnesium, Titanium, Zirconium, Uranium, and Plutonium
- Metal hydrides such as Sodium Hydride and Lithium Aluminum Hydride
- Chemicals capable of undergoing auto-thermal decomposition such as Organic Peroxides and Hydrazine

Exposure Limitations

The discharge of clean agent systems to extinguish a fire can result in potential hazard to personnel from the natural form of the clean agent or from the products of combustion that result from exposure of the agent to the fire or hot surfaces. Unnecessary exposure of personnel either to the natural agent or to the products of decomposition shall be avoided.

Hazard Type	Design Concentration	Maximum Human Exposure Time
Normally Occupied Space	4.5% to 10%	5 minutes

Fike does not recommend Novec 1230 systems to be used in any normally occupied spaces where the design concentration required is above 10%

Physical Properties

Not for specification purposes.All values @ 25°C (77°F) unless otherwise specified.

Chemical Name	Dodecafluoro-2-methylpentan-3-one
ASHRAE Designation	FK-5-1-12
Chemical Formula	$CF_3CF_2C(O)CF(CF_3)_2$
Molecular Wt.	316.04
Boiling Point @ 1 atm (760 mmHg)	49.2°C (120.6°F)
Freezing Point	-108.0°C (-162.4°F)
Critical Temperature	168.7°C (335.6°F)
Critical Pressure	18.65 bar (270.44 psia)
Critical Volume	494.5 cc/mole (0.0251 ft^3/lbm)
Critical Density	639.1 kg/m^3 (39.91 lb/ft^3)
Density, Sat. Liquid	1.60 g/ml (99.9 lb/ft^3)
Density, Gas @ 1 atm	0.0136 g/ml (0.851 lb/ft^3)
Specific Volume, Gas @ 1 atm	0.0733 m^3/kg (1.175 ft^3/lb)
Specific Heat, Liquid	1.103 kJ/kg-°C (0.2634 Btu/lb-°F)
Specific Heat, Vapor @ 1 ATM	0.891 kJ/kg-°C (0.2127 Btu/lb-°F)
Heat of Vaporization @ Boiling Point	88.0 kJ/kg (37.9 Btu/lb)
Liquid Viscosity @ 0°C/25°C	0.56/0.39 centistokes
Vapor Pressure	0.404 bar (5.85 psig)
Relative dielectric strength, 1 atm, (N_2 =1.0)	2.3
Ozone Depletion Potential (ODP)[1]	0.0
Global Warming Potential (GWP)[2]	≤1
Atmospheric Lifetime	0.019 years

Notes:

1. World Meteorological Organization (WHO) 1998, Model-derived method.
2. Intergovernmental Panel on Climate Change (IPCC) 2013 Method, 100 Year ITH.