

3M™ NOVEC™ 1230 FIRE PROTECTION FLUID

Data/Specifications



FEATURES

- UL/ULC listed as a component of the SAPPHIRE® Suppression System
- Effective, total flooding performance on Class A, B, and C fires
- Long-term, sustainable alternative to Halons, HFCs and PFCs
- Clean agent suitable for protection of high-value assets

DESCRIPTION

3M™ NOVEC™ 1230 Fire Protection Fluid, referenced as FK-5-1-12 in NFPA 2001 and ISO 14250, is a fluorinated ketone (or fluoroketone) with a chemical structure of $CF_3CF_2C(O)CF(CF_3)_2$. It is a clear, colorless, odorless, liquid that is super-pressurized with nitrogen and stored in high-pressure cylinders as part of a SAPPHIRE Suppression System.

APPLICATIONS

Although stored in liquid form, NOVEC 1230 fluid will turn to a gas upon discharge making it an effective total flooding agent for a variety of hazards. As a clean agent, it leaves no residue behind and will not affect sensitive high-value electronics. Typical applications include:

- Telecommunication switch rooms
- Computer and electronic control rooms
- Hazards aboard ships
- Critical military applications

ENVIRONMENTAL IMPACT

NOVEC 1230 fluid has 0.0 ozone depletion potential, an atmospheric lifetime of just five days, and a global warming potential of 1.0. NOVEC 1230 fluid is registered with the U.S. EPA under TSCA (Toxic Substances Control Act) and ELINCS (European List of Notified Chemical Substances). It has met the requirements of registration under SNAP (Significant New Alternatives Policy) and is approved for use as an alternative to Halon 1301 for flooding applications in occupied spaces.

PERFORMANCE

NOVEC 1230 fluid suppresses fires via its cooling effect. It has been tested and listed at a design concentration of 4.2% (Class A/C hazards) and 5.85% minimum (Class B hazards) in conjunction with a SAPPHIRE total flooding system. With the NOAEL (No Observable Adverse Effect Level) measured at 10%, NOVEC 1230 fluid provides a substantial margin of safety in occupied spaces.

APPROVALS

NOVEC 1230 Fire Protection Fluid complies with NFPA 2001: Standard for Clean Agent Fire Extinguishing Systems. It is listed by Underwriters Laboratories (UL) and Underwriters Laboratories of Canada (ULC) as a component of the SAPPHIRE™ Suppression System. Containers meet the applicable U.S. Department of Transportation (DOT) specifications.

PHYSICAL PROPERTIES

Chemical formula	$CF_3CF_2C(O)CF(CF_3)_2$
Molecular weight	316.04
Boiling point @ 1 atm	49.2 °C (120.6 °F)
Freezing point	-108 °C (-162.4 °F)
Density, sat. liquid	1.60 g/ml (99.9 lbm/ft ³)
Density, gas 1 atm	0.0136 g/ml (0.851 lbm/ft ³)
Specific volume, 1 atm	0.0733 m ³ /kg (1.175 ft ³ /lb)
Liquid viscosity @ 0 °C/25 °C	0.56/0.39 centistokes
Heat of vaporization @ BP	88.1 kJ/kg (37.9 BTU/lb)
Solubility of H ₂ O in NOVEC 1230 liquid	<0.001% by wt.
Vapor pressure @ 25 °C	0.40 bar (5.85 psig)
Dielectric strength relative to N ₂ @ 25 °C	2.3

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