

3M™ Novec™ 1230 Fire Protection Fluid



**3M**

# One fire protection fluid. So many reasons to use it.

Novec 1230 fluid offers a long-term, sustainable technology that has the greatest margin of safety, the lowest GWP for chemical clean agent alternatives, and zero ozone depletion potential.

## What is Novec 1230 fluid?

Novec 1230 fluid is a fluoroketone – a proprietary 3M technology that offers a number of important advantages over conventional halon replacements.

## How does it work?

Extinguishing via its cooling effect, Novec 1230 fluid works as a gas, yet it is a liquid at room temperature. Because it is not packaged under pressure, Novec 1230 fluid has unique shipping and handling advantages over high pressure alternatives. Also, systems using Novec 1230 fluid allow for more efficient use of space compared to inert gas systems.

## Where is Novec 1230 fluid used?

Novec 1230 fluid is a highly efficient fire extinguishant that can be used for flooding applications in engineered and pre-engineered systems.

It is ideal for special hazards: spaces where the continuous operation of high-value equipment is paramount. Examples include: telecommunication switch rooms, computer and electronic control rooms, hazards aboard ships and critical military applications such as vehicle engine and crew bay protection. It is also ideal for environments such as libraries, cultural facilities, storage rooms, archives and museums, where valuable items must not be damaged by a fire extinguishing agent.

## What sets it apart?

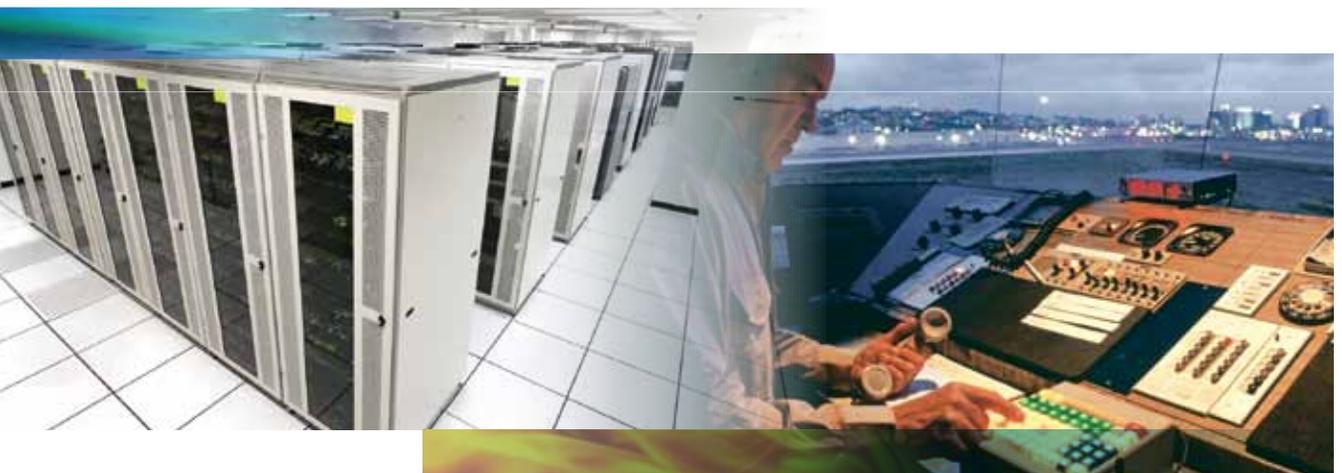
Novec 1230 fluid has zero ozone depletion potential and the lowest atmospheric lifetime for chemical clean agent alternatives: 5 days. The next closest halon alternative is 29 years.

Novec 1230 fluid has a Global Warming Potential of 1, which is 99.9% lower than any halocarbon agent acceptable for use in occupied spaces.

Novec 1230 fluid has the largest margin of safety among chemical clean agents for use in occupied spaces.

It makes good business sense to use Novec 1230 fluid because it is a sustainable, long-term technology. Not only does Novec 1230 fluid meet today's regulations but it also meets those of the foreseeable future.

Novec 1230 fluid is supported by 3M global sales, technical and customer service resources, with fully-staffed technical service laboratories in the U.S., South America, Europe, Middle East, Japan and Southeast Asia.



Since its introduction to the fire suppression market in 2002, 3M™ Novec™ 1230 Fire Protection Fluid has distinguished itself as the sustainable halon replacement, designed to alleviate concerns for human safety, performance and the environment. Unlike earlier generation halons and HFCs, Novec 1230 fluid has the key features defining sustainable clean agent protection:

- Zero ozone depletion potential
- A global warming potential of one
- Five-day atmospheric lifetime
- A large margin of safety for occupied spaces



Novec 1230 fluid was created for life: for the life of your people, to help keep them safe from fire and chemical hazards; for the life of your equipment, to effectively protect it from fire; and for the life of your system, so it not only meets today's environmental regulations but those of the foreseeable future.

A  
sustainable way  
to put out  
fires



## A long-term, sustainable technology

With zero ozone depletion potential, extremely low global warming potential and short atmospheric lifetime, Novec 1230 fluid is the first chemical halon replacement to offer a viable, long-term, sustainable technology for special hazards fire protection.



Today's largest margin of safety

### Environmental Properties

	Novec 1230	Halon 1301	HFC-125	HFC-227ea
Ozone Depletion Potential <sup>1</sup>	0.0	12.0	0.0	0.0
Global Warming Potential <sup>2</sup>	1	7140	3500	3220
Atmospheric Lifetime (Years)	0.014	65	29	34.2
SNAP (Yes/No)	Yes	N/A	Yes	Yes

<sup>1</sup> World Meteorological Organization (WMO) 1998, Model-Derived Method

<sup>2</sup> Intergovernmental Panel on Climate Change (IPCC) 2007 Method, 100-year 1TH

Because its use concentration is much lower than its No Observable Adverse Effects Level (NOAEL), Novec 1230 fluid offers the largest margin of safety of any halon replacement available on the market today. Note: Industry standards require egress from a protected enclosure prior to system discharge.

### Safety Margin\*

Agent	Novec 1230	Halon 1301	HFC-125	HFC-227ea
Use Concentration	4.5-6%	5%	8.7-12.1%	6.7-8.7%
NOAEL <sup>3</sup>	10% <sup>4</sup>	5%	7.5%	9%
Safety Margin	67-122%	Nil	Nil	3-34%

\* Adjusted per 2012 NFPA 2001 requirements for minimum values (excluding halon): paragraph 5.4.2.4 and Table A.5.4.2.2(b).

<sup>3</sup> NOAEL for cardiac sensitization

<sup>4</sup> NOAEL for acute toxicity, including cardiac sensitization



Major global regulatory requirements have been achieved. Novec 1230 fluid can be easily shipped to meet global demand.

### Regulatory Status

#### 3M™ Novec™ 1230 Fire Protection Fluid

USA	TSCA: product complies with chemical notification requirements SNAP: approved for flooding (12/20/02) and streaming (1/23/03)
Europe	REACH: product complies with chemical notification requirements
Canada	CDSL: product complies with chemical notification requirements
Korea	KECI: product complies with chemical notification requirements
Australia	AICS: product complies with chemical notification requirements
Japan	METI: product complies with chemical notification requirements
China	CICS: product complies with the chemical notification requirements

# 3M™ Blue Sky™ Warranty

20-Year protection  
against regulatory bans  
or restrictions on the use  
of 3M™ Novec™ 1230  
Fire Protection Fluid

**When it comes  
to environmental  
regulations,  
3M gives you a  
clear advantage.**

3M™ Novec™ 1230 Fire Protection Fluid doesn't just put out fires. With the 3M™ Blue Sky™ Warranty, it also puts your mind at ease. Today's world is full of changes designed to help ensure a better tomorrow. But managing the risks created by these changes is challenging. Fortunately 3M understands your challenges and has the answer you're looking for with the 3M™ Blue Sky™ Warranty.

Here's how it works: if Novec 1230 fluid is banned from or restricted in use as a fire protection agent due to ozone depletion potential or global warming potential, 3M will refund the purchase price of the fluid. That's a promise and performance you can take to the bank.

For complete details on this program, please contact your 3M representative, or visit [www.3M.com/novec1230fluid](http://www.3M.com/novec1230fluid)

Put your **mind**  
at ease

## Typical Physical Properties (Not for specification purposes)

### 3M™ Novec™ 1230 Fire Protection Fluid

Chemical formula	CF <sub>3</sub> CF <sub>2</sub> C(O)CF(CF <sub>3</sub> ) <sub>2</sub>
Molecular weight	316.04
Boiling point @ 1 atm	49.2°C (120.6°F)
Freezing point	-108°C (-162.4°F)
Density, sat. liquid, 25°C	1.60 g/ml (99.9 lbm/ft <sup>3</sup> )
Density, gas @ 1 atm, 25°C	0.0136 g/ml (0.851 lbm/ft <sup>3</sup> )
Specific volume @ 1 atm, 25°C	0.0733 m <sup>3</sup> /kg (1.175 ft <sup>3</sup> /lb)
Liquid viscosity @ 0°C/25°C	0.56/0.39 centistokes
Heat of vaporization @ BP	88.0 kJ/kg (37.9 BTU/lb)
Solubility of H <sub>2</sub> O in Novec 1230 fluid	<0.001% by wt.
Vapor pressure @ 25°C	0.404 bar (5.85 psig)
Relative dielectric strength @ 1 atm (N <sub>2</sub> =1.0)	2.3



## The 3M™ Novec™ Brand Family

The Novec brand is the hallmark for a variety of proprietary 3M products. Although each has its own unique formula and performance properties, all Novec products are designed to address the need for safe, effective, sustainable solutions in industry-specific applications. These include precision and electronics cleaning, heat transfer, fire protection, lubricant deposition and several specialty chemical applications.

3M™ Novec™ Engineered Fluids • 3M™ Novec™ Aerosol Cleaners • 3M™ Novec™ 1230 Fire Protection Fluid • 3M™ Novec™ Electronic Coatings • 3M™ Novec™ Electronic Surfactants

### United States

3M EMMD  
3M Center  
Building 224-3N-11  
St. Paul, MN 55144-1000  
800 810 8513  
800 810 8514 (Fax)

### Canada

3M Canada Company  
P.O. Box 5757  
London, Ontario  
N6A 4T1  
800 364 3577

### Europe

3M Belgium N.V.  
Haven 1005, Canadastraat 11  
B-2070 Zwijndrecht  
32 3 250 7826 or  
32 3 250 7874

### Japan

Sumitomo 3M Limited  
33-1, Tamagawadai 2-chome  
Setagaya-ku, Tokyo  
158-8583 Japan  
813 3709 8250

### Great Britain

3M United Kingdom PLC  
3M House - P.O. Box 1  
Market Place  
Bracknell, Berkshire RG12 1JU  
England, United Kingdom  
01344-858000

### Asia Pacific and Latin America

Call (U.S.) 651 736 7123  
800 810 8514 (Fax)

**Product Use:** All statements, technical information and recommendations contained in this document are based on tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

**Warranty and Limited Remedy:** Unless stated otherwise in 3M's product literature, packaging inserts or product packaging for individual products, 3M warrants that each 3M product meets the applicable specifications at the time 3M ships the product. Individual products may have additional or different warranties as stated on product literature, package inserts or product packages. 3M MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's application. If the 3M product is defective within the warranty period, your exclusive remedy and 3M's and seller's sole obligation will be, at 3M's option, to replace the product or refund the purchase price.

**Limitation Of Liability:** Except where prohibited by law, 3M and seller will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental, or consequential regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.



## Electronic Markets Materials Division 3M Electronics

3M Center  
Building 224-3N-11  
St. Paul MN 55144-1000  
www.3M.com/novec1230fluid

Please recycle. Printed in USA.  
© 3M 2012. All rights reserved.  
Issued: 1/12 8414 HB  
98-0212-3705-6

3M and Novec are trademarks of 3M Company.  
Used under license by 3M subsidiaries and affiliates.