



Novec[™]

Brand

Protect what matters – your people and your customers.

A safer, more effective solution for fire suppression in power generation applications.

3M[™] Novec[™] 1230 Fire Protection Fluid

3M Science. Applied to Life.[™]

When it comes to keeping the lights on, there's no room for compromise.



3M™ Novec™ 1230 Fire Protection Fluid delivers fast and effective fire suppression – without putting workers, equipment or the planet at risk.

A safe and reliable supply of energy is critical to keeping our world running. Billions of people depend on having access to energy every day, and the demand for more is always growing. Delivering all that energy takes infrastructure that can stand up to tough demands, and a big part of building a reliable grid is preparing for emergencies before they happen.

Fire is one of the most significant threats to our power generation infrastructure, capable of causing significant damage and outages if not stopped before it has the chance to spread. Having robust and dependable fire suppression systems in place can help reduce the threat posed by fire. However, not all suppression systems are created equal – some utilize materials that may not be safe for people, equipment or the environment.

3M™ Novec™ 1230 Fire Protection Fluid is the smart, safe and sustainable solution for trusted and versatile fire suppression in the power generation industry. It is safe for use in occupied spaces – unlike other special hazard agents such as CO₂ and condensed aerosols. Novec 1230 fluid will not damage sensitive electronic equipment or cause turbine bearing thermal shock, a concern with water mist systems. And unlike water mist and condensed aerosol systems that leave a residue and can cause corrosion and expensive clean-up, Novec 1230 fluid leaves no residue. It's safer for the planet, too – it doesn't come with the environmental impact concerns and phasedown requirements associated with hydrofluorocarbons (HFCs).

Novec 1230 fluid is suitable for use in all these applications:

- Turbine enclosures
- Substations
- Transformer rooms
- Switchgear rooms
- Wind turbines
- Energy storage systems
- Other mission critical installations



Time is running out for HFCs—are you prepared to make the switch?

Since the global phasedown of ozone-depleting halons in the 1990s, hydrofluorocarbons (HFCs) have been one of the most widely used clean agents for protecting oil and gas installations. Unfortunately, this replacement solution has turned out to have significant environmental impacts due to the extremely high global warming potential (GWP) of HFCs.

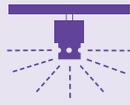
The Montreal Protocol — the same international agreement that led to the

global ban of halons — has been expanded to cover substances with high GWP. The Kigali Amendment, ratified in 2016, specifically targets HFCs for phasedown.

Because 3M™ Novec™ 1230 Fire Protection Fluid has a GWP of less than 1, it is unaffected by Montreal Protocol restrictions. Make the switch today — and choose the solution that protects your business for the long term.



Outstanding fire suppression you can trust.

Engineered for:	To give you:
Speed 	Reduced time to reach concentration levels for extinguishing the fire, faster than CO ₂ and inert gas systems
Flexible system designs 	Extended system discharge capability to help protect against leaky turbine enclosures, maintaining "hold time" during wind-down
Zero residue 	Zero residue, non-conductive, non-corrosive performance to help protect sensitive electronic equipment or controls
Worker safety 	High margin of worker safety, for use in occupied spaces without lock-out training and procedures
Space savings 	The ability to bring highly effective fire suppression to unusual spaces and design configurations while requiring less storage space than other clean agents
Affordability 	Lower overall cost of ownership due to low initial cost and easier system maintenance and testing
Regulatory compliance 	A safe, sustainable solution that meets U.S. EPA SNAP approval guidelines and is not subject to regulatory ban or phasedown

When you specify a fire suppression system using 3M™ Novec™ 1230 Fire Protection Fluid as the clean agent, you gain the peace of mind that comes with selecting a solution based on sound science and rigorous testing. And we're always standing by to provide expert support whenever you need it.

We stand by our product – and our promise to provide a long-term solution.

From the very beginning, 3M™ Novec™ 1230 Fire Protection Fluid has been developed with sustainability in mind. We're confident that Novec 1230 fluid can deliver sustainability today and in the future, and that's why we guarantee your purchase with our 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 within 20 years after installation due to its environmental properties, we'll refund* the purchase price of the fluid.

*3M warrants, for a period of 20 years after original installation and subject to noted requirements, that 3M™ Novec™ 1230 Fire Protection Fluid, installed in an approved fire suppression system, will not be restricted for use in fire protection due to its Ozone Depletion Potential (ODP) or Global Warming Potential (GWP) and is not targeted for phase-down by the Montreal Protocol, nor subject to the European F-Gas Regulations targeting the phase-down of production and import of HFCs into Europe; and will not be affected by U.S. EPA SNAP regulations which would render it either unacceptable or acceptable subject to narrow use limits. For complete terms and conditions, or to register your system for the 3M Blue Sky Warranty, visit 3M.com/blueskywarranty.

Typical physical properties of 3M™ Novec™ 1230 Fire Protection Fluid*

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

*Not for specification purposes

With third-party listings and approvals, you can trust Novec 1230 fluid to quickly extinguish a fire while helping protect people and equipment.



Smart. Safe. Sustainable.

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 in common to address the need for smart, safe, sustainable solutions in industry-specific applications. These include precision and electronics cleaning, heat transfer, fire protection, protective coatings, immersion cooling, advanced insulation media replacement solutions and several specialty chemical applications.

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

Safety Data Sheet: Consult Safety Data Sheet prior to use.

Regulatory: For regulatory information about this product, contact your 3M representative.

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use: Many factors beyond 3M's control and uniquely within user's control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

Warranty, Limited Remedy, and Disclaimer: Unless an additional warranty is specifically stated on the applicable 3M product packaging or product literature, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OR TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except where prohibited by law, 3M 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.



Electronics Materials Solutions Division

3M Center, Building 224-3N-11
St. Paul, MN 55144-1000 USA
www.3M.com/Novec1230
1-800-810-8513

Please recycle. Printed in USA.
©3M 2018. All rights reserved.
Issued: 10/18 12869HB
60-5005-0077-6

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