

The background of the advertisement is an aerial photograph of a large container ship sailing on a body of water. The ship is heavily loaded with colorful shipping containers. In the distance, a city skyline is visible, featuring a prominent tower that resembles the Space Needle. The sky is blue with some light clouds. The overall scene is bright and clear.

3M

Novec[™]

Brand

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

**Protect what matters
– from stem to stern.**

Smart, safe and sustainable fire
suppression for marine applications

3M Science. Applied to Life.[™]



The long-term solution for protecting your vessel.

3M™ Novec™ 1230 Fire Protection Fluid delivers fast and effective fire suppression – without compromising ship systems, the safety of passengers and crew, or the environment.

On the open seas, safety is priority number one. You need a clean agent that will extinguish fires quickly, without putting your people at risk or causing excessive equipment downtime. 3M™ Novec™ 1230 Fire Protection Fluid is a smart, safe and sustainable solution for fire suppression in marine and offshore applications.

Unlike traditional clean agents used in maritime environments, Novec 1230 fluid is engineered to protect your important assets while providing the highest margin of safety for use in occupied spaces.

An ideal solution for:

- ▶ **Ocean vessels** – Cargo ships, oil tankers, cruise ships, oil & gas platforms and specialty marine vessels.
- ▶ **Inland marine applications** – River push tugs and ferries.
- ▶ **Workboats** – Novec 1230 fluid complies with Sub-Chapter M, Part 142 Standards for fire protection.
- ▶ **Military** – used by many militaries around the world.



Don't get “locked out” with CO₂

Carbon dioxide (CO₂) has a long history of use for extinguishing fires in marine applications. Unfortunately, CO₂ is a lethal and odorless gas that can quickly kill workers trapped in areas where it has deployed – an especially significant hazard in tight spaces such as engine rooms.

To reduce the risk of death and/or injury, delays are built into CO₂ fire suppression systems. A combination of pre-discharge alarms and lock-out procedures, for example, are required by NFPA 12 to evacuate personnel from protected spaces before CO₂ is discharged. For spaces greater than 170m³(6000ft³), marine standards such as SOLAS and NFPA 2001 require a manual discharge delay for “mustering” all crew.

Delays only allow fires to grow, resulting in greater risk to the vessel, crew and passengers. Choose Novec 1230 fluid, the safer solution that requires no lock-out time and discharges to reach design concentration in just 10 seconds.



We have maritime fire protection down to a science.

3M™ Novec™ 1230 Fire Protection Fluid as a clean agent is 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 sustainable performance 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 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.

Outstanding fire suppression you can trust.

Engineered for:	To give you:
Speed 	A very short agent system discharge time eliminates the delays common with CO ₂ and inert gases, so fires are extinguished quickly, before your vessel is at risk
Non-conductivity 	Unlike with water mist, a system discharge will not damage sensitive electronic equipment in engine rooms, control rooms and other critical areas of your vessel
Space savings 	The ability to bring highly effective fire suppression to challenging space constraints and design configurations common aboard compact ships and marine vessels, while requiring less storage space than other clean agents
Air transport 	Fast shipment by air almost anywhere in the world in a very short amount of time, unlike inert gases and HFCs, to refill systems quickly
Affordability 	Lower overall cost of ownership thanks to easier system maintenance, testing and recharge
Regulatory compliance 	A safe, sustainable solution that meets U.S. EPA SNAP approval guidelines and is not subject to regulatory ban or phasedown

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 @ 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 @ 1 atm, 25°C	0.0136 g/ml (0.851 lbm/ft ³)
Specific volume @ 1 atm 25°C	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	88.0 kJ/kg (37.9 BTU/lb)
Solubility of H ₂ 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 ₂ =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.

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