

Reduce risk. Protect what matters.

3M™ Novec™ 1230 Fire Protection Fluid vs. ECARO-25®

Clean agent fire suppression is a key strategy for reducing risk to vital computer and data systems. But all clean agents are not equal in that there is considerable variability in safety to occupants and environmental impact. Choosing the right clean agent provides business owners the opportunity to minimize risks to their most valuable assets – their people – while preserving continuity of business operations.

Protecting what matters.

The NFPA 2001 standard governing clean agent fire suppression requires specific safety testing of clean agents and the results are included in the standard. It is clear from Table 1 that HFC-125 — sold as DuPont™ FE-25™ or ECARO-25® — does not provide any margin of safety between the design concentration and the No Observed Adverse Effect Level (NOAEL) for cardiac sensitization. The required ECARO-25 design concentrations exceed the NOAEL limit of 7.5%.

The concern with a negative safety margin increases when one considers that fire suppression systems are designed for empty spaces, which is never the reality of mission critical rooms that house computers, electronics, and sensitive equipment. The NFPA standard provides guidance on the time beyond which various concentrations of ECARO-25 present

an unacceptable risk to people. However, this analysis increases the burden on end users to assess and manage the risk to their employees.

In contrast, testing of 3M™ Novec™ 1230 Fire Protection Fluid validated that Novec 1230 fluid provides the largest margin of safety among clean agents for Class A, B, or C hazards.

HFCs following the path of halon.

The differences between clean agents extends beyond safety margins. While protecting people and businesses, we must also protect the environment. And there are clear differences among clean agents when we look at environmental sustainability. For example, HFC-125, sold under the ECARO® brand, is a hydrofluorocarbon (HFC) clean agent – which is a potent greenhouse gas. Table 2 illustrates the high global warming potential (GWP) of ECARO-25®. Due to their high GWPs, time is running out for HFCs, including ECARO-25.

To understand the regulatory path of HFCs, we only need to look back in time to the phase-out of halon. The path for HFCs looks very similar. In fact, in December 2015 a collective group of 197 countries at the 27th Meeting of the Parties to the Montreal Protocol committed to act in 2016 to put HFCs on a global phase-down schedule similar to the path taken

by halon. All this activity is on the heels of the European Union's F-gas regulation phasing down production and import of HFCs and the U.S. EPA advancing discussions to change the status of HFCs under the Significant New Alternatives Program (SNAP) regulations.

Avoid unnecessary risks.

What do these regulations mean to users of fire suppression systems? In the event of a future ECARO-25 system discharge, facility owners will face the uncertainty and risk of the supply and costs of ECARO-25 to continue to protect their valued assets. Thankfully there are system options that do not use HFCs. Novec 1230 fluid is NOT an HFC. Novec 1230 fluid is a sustainable clean agent enabling a transition from ECARO-25 and halon to a more environmentally sound solution without compromising performance. In fact, 3M is so confident that Novec 1230 fluid will continue to meet environmental standards far into the future that 3M backs Novec 1230 fluid with 20-year protection: the 3M™ Blue Sky™ Warranty. The U.S. Environmental Protection Agency (EPA) stated that Novec 1230 fluid “*provides an improvement over.....hydrofluorocarbons (HFCs) in fire protection.*” Novec 1230 fluid “*is acceptable because it reduces overall risk to public health and the environment in the end use listed.*”

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Unfazed by the HFC phasedown.

3M™ Novec™ 1230 Fire Protection Fluid revolutionized the clean agent market in 2001 and now sets a new standard for sustainable clean agent fire suppression. Its unique dielectric properties and low vapor pressure yield design advantages to satisfy your top priorities – protecting your people and your assets. These advantages include ease of handling and the flexibility for higher pressure system innovation that is not practical for halons and HFCs. Specifying Novec 1230 fluid leverages these advances in fire suppression and minimizes future risks associated with ECARO-25.

Choose a safer, more sustainable solution.

Fire suppression is all about reducing risk. Do not compromise – choose a high performing solution that not only extinguishes fires with a large margin of safety but has a small environmental footprint as well. That peace of mind – backed by an environmental guarantee – only comes from choosing a system using Novec 1230 fluid.

Table 1 – Comparison of concentrations and safety margins - Novec 1230 fluid and ECARO-25

Properties	3M™ Novec™ 1230 Fire Protection Fluid	ECARO-25® (HFC-125)
Class A MDC NFPA 2001 (%)	4.5 ¹	8.7
Class B MDC NFPA 2001 (%)	5.9	11.3
Class C MDC <480V per NFPA 2001 para. 5.4.2.5 (%)	4.5 ¹	9.0
NOAEL (%)	10.0	7.5
Class C Safety Margin ² (%) empty room	122	-17
Class C Safety Margin (%) with room filled 25% by volume with equipment	78	-33

¹ Based on submitted and accepted data as a 1st Revision by the NFPA-GFE technical committee for the Fall 2017 publication cycle of NFPA 2001

² Safety Margin equals (NOAEL-Design Concentration)/Design Concentration

Table 2 – Environmental Properties of Novec 1230 fluid and ECARO-25

Properties	3M™ Novec™ 1230 Fire Protection Fluid	ECARO-25® (HFC-125)
ODP - Ozone Depletion Potential ¹	0	0
GWP - Global Warming Potential ²	<1	3,170
Atmospheric Lifetime (Years)	0.019	28.2
Global Environmental Warranty on Agent (Years)	Yes 3M™ Blue Sky™ Warranty (20 Years)	None
Subject to Phase-Down under EU F-Gas Regulation	No	Yes
Subject to U.S. Proposals for Global Phase-Down under Montreal Protocol	No	Yes
Subject to Potential U.S. EPA SNAP Status Change Proposals Directed at HFCs	No	Yes
Manufacturer Advocating for Global HFC Phase-Down	Yes	Yes

¹ World Meteorological Organization (WMO) 1998, Model-Derived Method

² Intergovernmental Panel on Climate Change (IPCC) 2013 Method, 100-year 1TH

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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 safe, effective, 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™ Dielectric Fluids

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