

3M

Novec[™]

Brand

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



Smart. Safe. Sustainable.

3M Science. Applied to Life.[™]

**Safe, sustainable fire protection.
for your peace of mind.**



3M™ Novec™ 1230 Fire Protection Fluid is a next-generation synthetic clean agent, designed to balance concerns for human safety, performance and the environment.

Novec 1230 fluid has an outstanding environmental profile:

- ▶ Zero Ozone Depletion Potential
- ▶ A Global Warming Potential of less than one
- ▶ Five-day atmospheric lifetime
- ▶ A wide margin of safety for occupied spaces



Protection of your most critical assets.

3M™ Novec™ 1230 Fire Protection Fluid is mainly used in stationary extinguishing systems for the protection of critical assets in enclosed areas. It has a very fast extinguishing time, is electrically non-conductive and leaves no residue. This makes it ideal for applications where it's important to maintain the operation of electronic equipment during and after system discharge to prevent damage to valuable and critical assets.

Novec 1230 fluid provides the largest margin of safety relative to all other clean agents, making it the ideal solution for occupied spaces.

**From control rooms to museum archives...
we've got them covered.**

Data Processing Centres

- ▶ Computer Rooms
- ▶ Data Storage Facilities
- ▶ Control Centres (e.g. Airports)

Industrial & Energy Sector

- ▶ Control rooms, Switchgear rooms
- ▶ Turbine rooms

Hospitals & Labs

- ▶ CT and MRI rooms
- ▶ Clean Rooms, Laboratories

Marine & Aviation

- ▶ Machine/Engine rooms
- ▶ Control and Paint rooms
- ▶ Storage rooms

Oil & Gas

Petrochemical Facilities

- ▶ Pumping facilities
- ▶ Gas compressor rooms
- ▶ Offshore oil exploitation rigs

Transportation

- ▶ Merchant marine vessels
- ▶ Mass transit vehicles
- ▶ Race cars

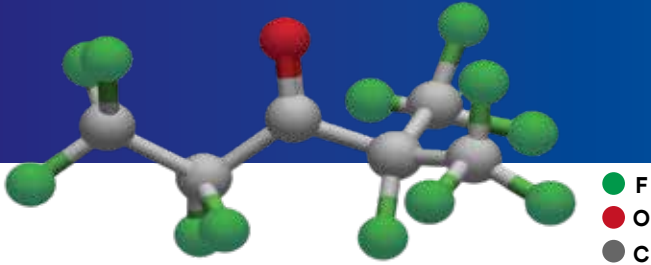
Cultural Facilities

- ▶ Archives, Libraries, Museums

Telecommunications

- ▶ Cellular Sites, Switch Rooms

Stopping fires. Before they start.



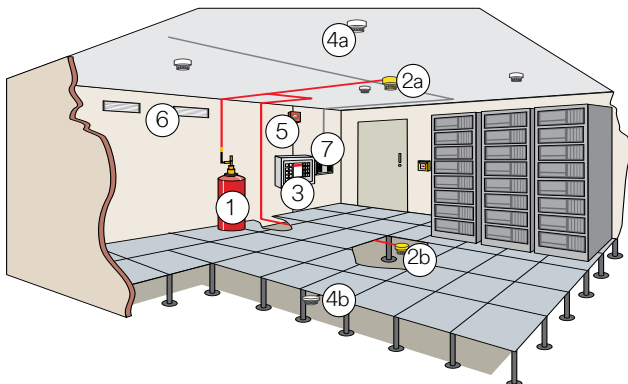
3M™ Novec™ 1230 Fire Protection Fluid is a C6-fluoroketone with the chemical formula $CF_3CF_2C(O)CF(CF_3)_2$. It is a liquid at room temperature with a boiling point of 49°C. Upon release through a specially designed extinguishing nozzle, Novec 1230 fluid vapourises immediately and distributes as a gas within seconds.

Novec 1230 fluid distributes 3-dimensionally and diffuses very rapidly in all critical areas (e.g. server cabinets).

The **extinguishing effect** of Novec 1230 fluid is solely based on cooling and not, as with inert gases, on the principle of air displacement (and oxygen reduction). If Novec 1230 fluid comes into contact with fire, it removes the heat so combustion reactions can no longer occur.

A fire extinguishing system using Novec 1230 fluid

- | | |
|--|---|
| 1 Extinguishing agent cylinder(s) | 4 Automatic fire detector
a) ceiling b) double floor |
| 2 Nozzle
a) Ceiling b) double floor | 5 Alarm siren |
| 3 Fire detection and control device | 6 Pressure relief |
| | 7 Aspirating smoke detector device |



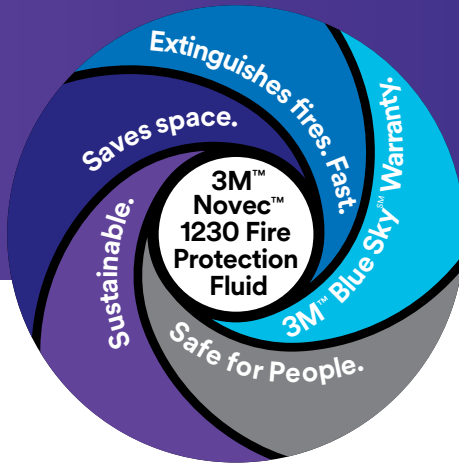
Key features at a glance.

- ▶ Very fast extinguishing time
- ▶ Wide safety margin for humans
- ▶ No damage to the exposed assets/materials
- ▶ Electrically non-conductive and non-corrosive
- ▶ Minimises downtime, helping business continuity
- ▶ Negligible Global Warming Potential (GWP = 1)
- ▶ No Ozone Depletion Potential
- ▶ Not subject to the F-gas Regulation or any other international regulation or directive, therefore high investment security
- ▶ Space efficiency – limited floor space requirements
- ▶ Easy to transport and refill

Approvals



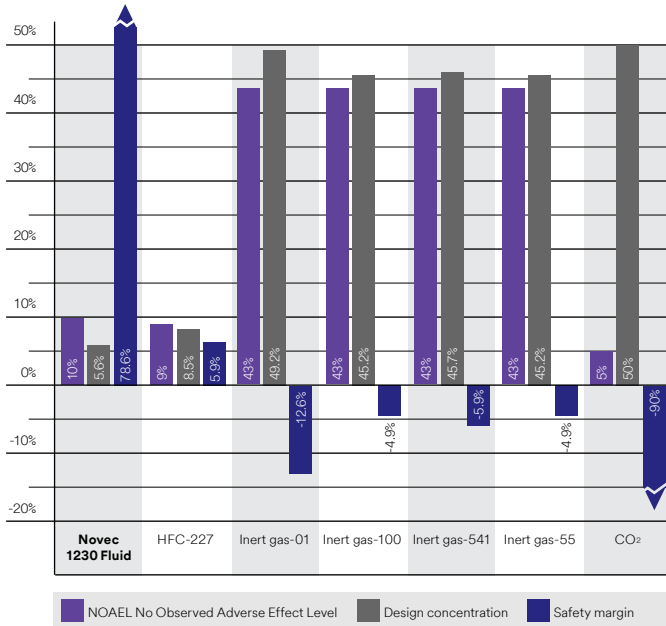
Safe for people.



Fire extinguishing agents are not equal in the safety provided for occupants. Reviewing the permitted limit for humans and the design concentration gives the best guide to an agent's potentially hazardous effect. The **NOAEL** (No Observed Adverse Effect Level) is the internationally established limit for the various extinguishing agents. The **design concentration** is the amount of extinguishing agent required to extinguish the fire safely. The **margin of safety for humans** arises from the relative difference between the design concentration and the specific NOAEL.

Novec 1230 fluid provides widest safety margin for use in occupied spaces

Based on EN 15004 Higher Hazard Class A, and NFPA 12 for CO₂



Extinguishes fires. Fast.

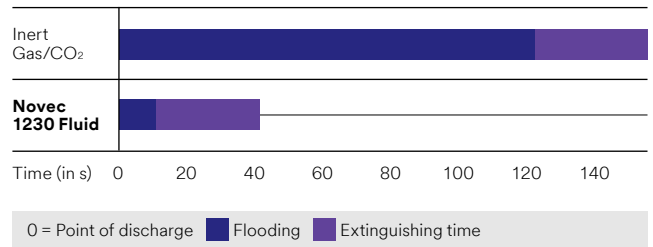


Within seconds, the full extinguishing effect of 3M™ Novec™ 1230 Fire Protection Fluid unfolds... When released in a properly designed system, Novec 1230 fluid rapidly vapourises and evenly distributes throughout the protected space within 10 seconds. It absorbs the heat from the fire, thus interrupting the chain reaction and **within a maximum of 40 seconds the fire is extinguished.**

And since the fire extinguishing system using Novec 1230 fluid extinguishes fire much faster compared to inert gas or CO₂ based systems, damage to high value assets is significantly reduced. Meaning business can carry on as normal.

Novec 1230 fluid extinguishes fires faster than inert gas/CO₂

Discharge Time Comparison (seconds)*



Extinguishing may already occur during the flooding phase.

* To achieve 95% of the minimum design concentration for Higher Hazard Class A fires. Source: NFPA

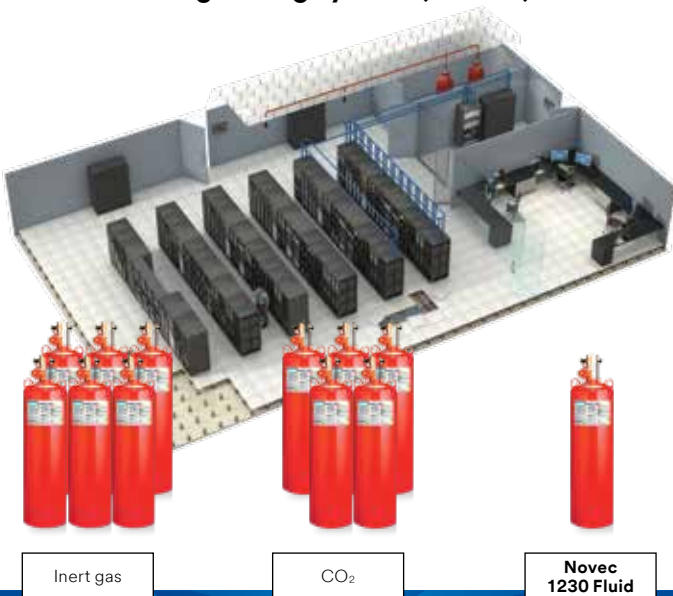
Saves space.



When space is at a premium, fire extinguishing systems requiring multiple cylinders can present a challenge. 3M™ Novec™ 1230 Fire Protection Fluid is stored as a liquid, whereas inert gases or CO₂ are stored as a gas. This means you need significantly less cylinders to store Novec 1230 fluid, enabling more flexible site selection. For confined spaces, the cylinders can be installed within the protected area, removing the need for a separate storage room.

In the long run Novec 1230 fluid can help save space and associated cost.

Required cylinders for a typical Higher Hazard Class A extinguishing system (200 m³)



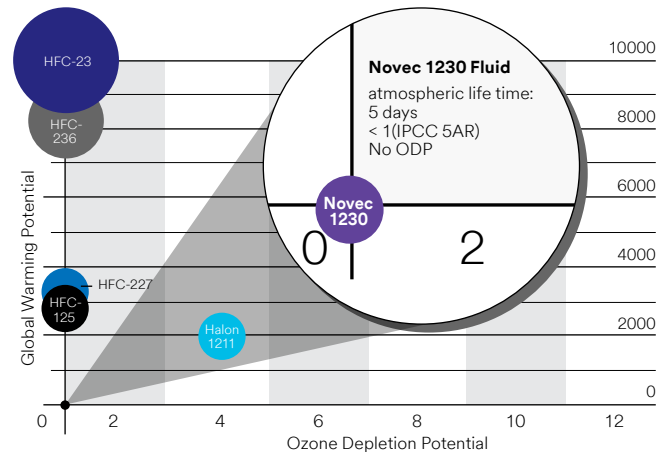
Helping to protect your business. And the environment.



3M™ Novec™ 1230 Fire Protection Fluid has the highest environmental profile of synthetic clean agents available today. With zero Ozone Depletion Potential and a Global Warming Potential of less than 1 due to a five day atmospheric lifetime, Novec 1230 fluid helps protect the environment, as well as your valuable assets.

Novec 1230 fluid is not subject to the European F-gas Regulation or any other International Directive or Regulation.

Environmental footprint comparison



Size of the bubble corresponds to the atmospheric life time of the agent.

3M™ Blue Sky™ Warranty.



Our 3M™ Blue Sky™ Warranty gives you peace of mind that your investment in 3M™ Novec™ 1230 Fire Protection Fluid remains safe in the future. If Novec 1230 fluid is banned or restricted as a fire protection agent within 20 years after installation due to its environmental properties, we'll refund the purchase price of the fluid.

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.

www.3M.eu/Novec1230



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