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**1. IDENTIFICATION**

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<b>Product Name</b>	3M™ Novec™ 1230 Fire Protection Fluid (Dodecafluoro-2-methylpentan-3-one) (Fire Extinguishing Agent, Pressurized and Non-pressurized)
<b>Recommended use of the chemical and restrictions on use</b>	
<b>Identified uses</b>	Fire Extinguishing Agent
<b>Restrictions on use</b>	Consult applicable fire protection codes
<b>Company Identification</b>	Kidde-Fenwal, Inc. 400 Main Street Ashland, MA 01721 USA
<b>Customer Information Number</b>	(508) 881-2000
<b>Emergency Telephone Number</b>	
<b>CHEMTREC Number</b>	(800) 424-9300 (703) 527-3887 (International)
<b>Issue Date</b>	March 13, 2024
<b>Supersedes Date</b>	September 11, 2022

*Safety Data Sheet prepared in accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200) and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*

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**2. HAZARD IDENTIFICATION**

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This SDS covers the product listed above as sold in pressurized and non-pressurized containers. GHS classifications for both forms are listed below.

**GHS Classification – Pressurized**

**Hazard Classification**

Chronic hazard to the aquatic environment - Category 3 (This classification not adopted by OSHA)  
Gas under pressure – Compressed gas

**Label Elements**

Hazard Symbols



Signal Word: Warning

**Hazard Statements**

Harmful to aquatic life with long lasting effects.  
Contents under pressure; may explode if heated.

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## 2. HAZARD IDENTIFICATION

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### Precautionary Statements

#### Prevention

Avoid release to the environment.

#### Response

None

#### Storage

Protect from sunlight.

Store in well-ventilated place.

#### Disposal

Dispose of contents/container in accordance with local regulation.

### GHS Classification: Non - pressurized

### Hazard Classification

Chronic hazard to the aquatic environment - Category 3 (This classification not adopted by OSHA)

### Label Elements

Hazard Symbols

None

Signal Word: None

### Hazard Statements

Harmful to aquatic life with long lasting effects.

### Precautionary Statements

#### Prevention

Avoid release to the environment.

#### Response

None

#### Storage

None

#### Disposal

Dispose of contents/container in accordance with local regulation.

### Other Hazards

None identified.

### Specific Concentration Limits

The values listed below represent the percentages of ingredients of unknown toxicity.

Acute oral toxicity 0%

Acute dermal toxicity 0%

Acute inhalation toxicity 0%

Acute aquatic toxicity 0%

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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

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This product is a substance.

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

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<b>Component</b>	<b>CAS Number</b>	<b>Concentration</b>
1,1,1,2,2,4,5,5,5,-Nonafluoro-4-(trifluoromethyl)-3-pentanone	756-13-8	>99.9%

**Note: Pressurized product uses nitrogen as the expellant.**

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**4. FIRST-AID MEASURES**

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**Description of necessary first-aid measures**

**Eyes**

Immediately flood the eye with plenty of water for several minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

**Skin**

Wash skin thoroughly with soap and water. Obtain medical attention if irritation persists.

**Ingestion**

Rinse mouth. Obtain medical attention if you feel unwell.

**Inhalation**

Move victim to fresh air. Obtain medical attention immediately for any breathing difficulty.

**Most important symptoms/effects, acute and delayed**

Aside from the information found under Description of necessary first aid measures (above) and Indication of immediate medical attention and special treatment needed, no additional symptoms and effects are anticipated.

**Indication of immediate medical attention and special treatment needed**

**Notes to Physicians**

Treat symptomatically.

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**5. FIRE - FIGHTING MEASURES**

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**Suitable Extinguishing Media**

This preparation is used as an extinguishing agent and therefore is not a problem when trying to control a blaze. Use extinguishing agent appropriate to other materials involved. Keep pressurized containers and surroundings cool with water spray as they may rupture or burst in the heat of a fire

**Specific hazards arising from the chemical**

Predominant decomposition product is hydrogen fluoride in fire situations. By-products are irritating and potentially toxic. Pressurized containers may explode in heat of fire.

**Special Protective Actions for Fire-Fighters**

Wear full protective clothing and self-contained breathing apparatus as appropriate for specific fire conditions.

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**6. ACCIDENTAL RELEASE MEASURES**

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**Personal precautions, protective equipment and emergency procedures**

Wear appropriate protective clothing. Prevent skin and eye contact. Remove leaking container to a safe place. Ventilate the area.

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**6. ACCIDENTAL RELEASE MEASURES**

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**Environmental Precautions**

Prevent large quantities of the material from entering drains or watercourses.

**Methods and materials for containment and cleaning up**

Contain and absorb using earth, sand or other inert material. Transfer into suitable containers for recovery or disposal.

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**7. HANDLING AND STORAGE**

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**Precautions for safe handling**

Wear appropriate protective clothing.

**Conditions for safe storage**

Store at temperatures not exceeding 38°C/100°F. Pressurized containers should be properly stored and secured to prevent falling or being knocked over. Do not drag, slide or roll pressurized containers. Do not drop pressurized containers or permit them to strike against each other. Never apply flame or localized heat directly to any part of the pressurized or plastic container. Store pressurized and plastic containers away from high heat sources. Storage area should be: - cool - dry - well ventilated - under cover - out of direct sunlight

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

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**Control parameters**

Exposure limits are listed below, if they exist.

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

Manufacturer's recommended exposure limit: 150 ppm, 8 hr TWA

**Appropriate engineering controls**

Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (dilution and local exhaust), and control of process conditions.

**Individual protection measures**

**Respiratory Protection**

Wear respiratory protection if there is a risk of exposure to high vapor concentrations, aerosols or if material is exposed to extreme overheating. The specific respirator selected must be based on the airborne concentration found in the workplace and must not exceed the working limits of the respirator.

**Skin Protection**

Gloves

**Eye/Face Protection**

Chemical goggles or safety glasses with side shields.

**Body Protection**

Normal work wear.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Non- Pressurized**

**Appearance**

	<b>Physical State</b>	Liquid
	<b>Color</b>	Colorless
<b>Odor</b>		Slight
<b>Odor Threshold</b>		No data available
<b>pH</b>		Not applicable
<b>Specific Gravity</b>		1.6
<b>Boiling Range/Point (°C/F)</b>		49.2 °C/120.6 °F
<b>Melting Point (°C/F)</b>		-108 °C/-162.4 °F
<b>Flash Point (PMCC) (°C/F)</b>		Not flammable
<b>Vapor Pressure</b>		0.404 bar (5.87 psig) @ 25 °C
<b>Evaporation Rate (BuAc=1)</b>		>1
<b>Solubility in Water</b>		Nil
<b>Relative Vapor Density (Air = 1)</b>		11.6
<b>VOC (g/l)</b>		1600 g/l
<b>VOC (%)</b>		100%
<b>Partition coefficient (n-octanol/water)</b>		No data available
<b>Kinematic Viscosity</b>		0.6 centipoise @ 25 °C
<b>Auto-ignition Temperature</b>		Not applicable
<b>Decomposition Temperature</b>		No data available
<b>Upper explosive limit</b>		None detected
<b>Lower explosive limit</b>		None detected
<b>Flammability (solid, gas)</b>		No data available
<b>Particle Characteristics</b>		Not applicable

**Expellant - Nitrogen**

**Appearance**

	<b>Physical State</b>	Compressed gas
	<b>Color</b>	Colorless
<b>Odor</b>		None
<b>Odor Threshold</b>		No data available
<b>pH</b>		Not applicable
<b>Specific Gravity</b>		No data available
<b>Gas Density</b>		0.075 lb/ft <sup>3</sup> @70°F as vapor
<b>Boiling Range/Point (°C/F)</b>		-196°C/-321 °F
<b>Melting Point (°C/F)</b>		-210°C/-346 °F
<b>Flash Point (PMCC) (°C/F)</b>		Not flammable
<b>Vapor Pressure</b>		No data available
<b>Evaporation Rate (BuAc=1)</b>		No data available
<b>Solubility in Water</b>		0.2 g/l
<b>Vapor Density (Air = 1)</b>		0.97
<b>VOC (g/l)</b>		None
<b>VOC (%)</b>		None
<b>Partition coefficient (n-octanol/water)</b>		No data available
<b>Viscosity</b>		Not applicable
<b>Auto-ignition Temperature</b>		No data available
<b>Decomposition Temperature</b>		No data available
<b>Upper explosive limit</b>		Not explosive

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

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<b>Lower explosive limit</b>	Not explosive
<b>Flammability (solid, gas)</b>	Not flammable
<b>Particle Characteristics</b>	Not applicable

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**10. STABILITY AND REACTIVITY**

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**Reactivity**

Pressurized containers may rupture or explode if exposed to heat.

**Chemical Stability**

Stable under normal conditions.

**Possibility of hazardous reactions**

Hazardous polymerization will not occur.

**Conditions to Avoid**

Exposure to direct sunlight - ultraviolet light - contact with incompatible materials

**Incompatible Materials**

Strong bases - amines - alcohols - water

**Hazardous Decomposition Products**

Oxides of carbon - hydrogen fluoride - perfluoroisobutylene

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**11. TOXICOLOGICAL INFORMATION**

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**Acute Toxicity**

3M™ Novec™ 1230 Fire Protection Fluid  
Oral LD50 (rat) >5000 mg/kg (estimated)  
Dermal LD50 (rat) >5000mg/kg (estimated)  
Inhalation LC50 (rat) >1227 mg/l 4hr

Nitrogen

Simple asphyxiant

**Specific Target Organ Toxicity (STOT) – single exposure**

3M™ Novec™ 1230 Fire Protection Fluid: All data were negative in a 2 hour rat inhalation study (nervous system). The NOAEL was determined to be 10,000ppm. All data were negative in a 17 minute dog inhalation study (cardiac sensitization).

Nitrogen: Exposure to nitrogen gas at high concentrations can cause suffocation by reducing oxygen available for breathing. Breathing very high concentrations can cause dizziness, shortness of breath, unconsciousness or asphyxiation.

**Specific Target Organ Toxicity (STOT) – repeat exposure**

3M™ Novec™ 1230 Fire Protection Fluid: NOAEL from 90-day inhalation study was determined to be 3000ppm. Results indicate 3M™ Novec™ 1230 Fire Protection Fluid is not expected to cause target organ effects after repeat exposure.

**Serious Eye damage/Irritation**

3M™ Novec™ 1230 Fire Protection Fluid: No significant irritation to eyes in rabbit study.

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## 11. TOXICOLOGICAL INFORMATION

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### **Skin Corrosion/Irritation**

3M™ Novec™ 1230 Fire Protection Fluid: No significant irritation to skin in rabbit study.

### **Respiratory or Skin Sensitization**

3M™ Novec™ 1230 Fire Protection Fluid: Did not cause skin sensitization in guinea pig study.

### **Carcinogenicity**

Not considered carcinogenic by NTP, IARC, and OSHA.

### **Germ Cell Mutagenicity**

3M™ Novec™ 1230 Fire Protection Fluid: Not mutagenic in both in vivo and in vitro testing.

### **Reproductive Toxicity**

3M™ Novec™ 1230 Fire Protection Fluid: Not toxic to male reproduction, female reproduction or development in rat inhalation study. The NOAEL was determined to be 3000ppm.

### **Aspiration Hazard**

Not an aspiration hazard.

### **Quality**

The NFPA 2001 purity specifications and cardiac sensitization NOAEL help to address the safety of agents included in the standard. Historically, the unstated safety assumptions have been as follows:

1. The NOAEL for cardiac sensitization will be protective for all other end points of acute toxicity.
2. 99 percent purity precludes the presence of impurities that could impact the NOAEL for agent acute toxicity. However, there are some impurities that, when present at less than 1 percent by weight in the liquid agent, could result in acute toxicity at agent concentrations below the NOAEL for cardiac sensitization. Hexafluoropropylene (HFP) thermodynamic and kinetic dimers are examples of such impurities. For these dimers, a 5-minute exposure to a concentration in air greater than 10 ppm by volume for the HFP thermodynamic dimer or greater than 300 ppm by volume for the HFP kinetic dimer could cause toxicological effects. [Maranion, 2020] For FK-5-1-12 at a use concentration of 10 percent by volume in air, these levels would translate to 95 ppm (0.0095 percent) by weight in the liquid agent for the thermodynamic dimer and 2850 ppm (0.2850 percent) by weight in the liquid agent for the kinetic dimer.

**Note:** Each batch of FK-5-1-12 is tested to ensure the PPM for these Dimers is lower than these upper threshold limits.

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## 12. ECOLOGICAL INFORMATION

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### **Ecotoxicity**

3M™ Novec™ 1230 Fire Protection Fluid

LC50 Zebra fish >1200mg/l 96h

EC50 Daphnia magna >1200mg/l 48h

EC50 Green algae 7.7mg/l 72h

Classified by ECHA as Aquatic Chronic 3: Harmful to aquatic life with long lasting effects.

### **Mobility in soil**

3M™ Novec™ 1230 Fire Protection Fluid: Product is highly insoluble in water and volatile.

**Persistence/Degradability**

3M™ Novec™ 1230 Fire Protection Fluid: Photolytic half-life: 3 - 5 days. Persistent Photolytic degradation product: trifluoroacetic acid.

**Bioaccumulative Potential**

No relevant studies identified.

**Other adverse effects**

No relevant studies identified.

**13. DISPOSAL CONSIDERATIONS**

**Disposal Methods**

Dispose of container in accordance with all applicable local and national regulations.

**14. TRANSPORT INFORMATION**

Safety Data Sheet information is intended to address a specific material and not various forms or states of containment.

**Pressurized Containers**

<b>DOT CFR 172.101 Data</b>	Fire extinguishers, 2.2, UN1044
<b>UN Proper Shipping Name</b>	Fire extinguishers
<b>UN Class</b>	(2.2)
<b>UN Number</b>	UN1044
<b>UN Packaging Group</b>	Not applicable
<b>Classification for AIR Transportation (IATA)</b>	Consult current IATA Regulations prior to shipping by air.
<b>Classification for Water Transport IMDG</b>	Consult current IMDG Regulations prior to shipping by water. Fire extinguishers, 2.2, UN1044

**Non-pressurized Containers**

<b>DOT CFR 172.101 Data</b>	Not Regulated
<b>UN Proper Shipping Name</b>	Not Regulated
<b>UN Class</b>	None.
<b>UN Number</b>	None.
<b>UN Packaging Group</b>	None.
<b>Classification for AIR Transportation (IATA)</b>	Consult current IATA Regulations prior to shipping by air.
<b>Classification for Water Transport IMDG</b>	Consult current IMDG Regulations prior to shipping by water.

This section is believed to be accurate at the time of preparation. It is not intended to be a complete statement or summary of the applicable laws, rules, or hazardous material regulations, and is subject to change. Users have the responsibility to confirm compliance with all laws, rules, and hazardous material regulations in effect at the time of shipping.



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**15. REGULATORY INFORMATION**

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**United States TSCA Inventory**

This product contains ingredients that are listed on or exempt from listing on the EPA Toxic Substance Control Act Chemical Substance Inventory.

**Canada DSL Inventory**

All ingredients in this product are listed on the Domestic Substance List (DSL) or the Non-Domestic Substance List (NDSL) or are exempt from listing.

**SARA Title III Sect. 311/312 Categorization: Pressurized**

Gas under pressure

**SARA Title III Sect. 311/312 Categorization: Non-pressurized**

None

**SARA Title III Sect. 313**

This product does not contain any chemicals that are listed in Section 313 at or above de minimis concentrations.

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**16. OTHER INFORMATION**

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**NFPA Ratings**

NFPA Code for Health - 3

NFPA Code for Flammability - 0

NFPA Code for Reactivity - 1

NFPA Code for Special Hazards - None

**Legend**

ACGIH: American Conference of Governmental Industrial Hygienists

CAS#: Chemical Abstracts Service Number

ECHA: European Chemicals Agency

EC50: Effect Concentration 50%

IARC: International Agency for Research on Cancer

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

N/A: Denotes no applicable information found or available

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit

TLV: Threshold Limit Value

TSCA: Toxic Substance Control Act

Revision Date: March 13, 2024

Replaces: September 11, 2022



**SAFETY DATA SHEET**  
**3M™ Novec™ 1230 Fire Protection Fluid**  
**(Dodecafluoro-2-methylpentan-3-one)**  
**(Fire Extinguishing Agent, Pressurized**  
**and Non-pressurized)**

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