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

1. IDENTIFICATION

Product Name	3M™ Novec ™1230 Fire Protection Fluid (Dodecafluoro-2-methylpentan-3-one) (Fire Extinguishing Agent, Pressurized and Non-pressurized)
Recommended use of the chemical and restrictions on use	
Identified uses	Fire Extinguishing Agent
Restrictions on use	Consult applicable fire protection codes
Company Identification	Kidde-Fenwal, LLC 400 Main Street Ashland, MA 01721 USA
Customer Information Number	(508) 881-2000
Emergency Telephone Number	
CHEMTREC Number	(800) 424-9300 (703) 527-3887 (International)
Issue Date	July 9, 2024
Supersedes Date	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)

2. HAZARD IDENTIFICATION

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.

2. HAZARD IDENTIFICATION

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%

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a substance.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	Concentration
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.

4. FIRST- AID MEASURES

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.

5. FIRE - FIGHTING MEASURES

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.

6. ACCIDENTAL RELEASE MEASURES

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.

6. ACCIDENTAL RELEASE MEASURES

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.

7. HANDLING AND STORAGE

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Expellant - Nitrogen

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Lower explosive limit	Not explosive
Flammability (solid, gas)	Not flammable
Particle Characteristics	Not applicable

10. STABILITY AND REACTIVITY

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

11. TOXICOLOGICAL INFORMATION

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.

11. TOXICOLOGICAL INFORMATION

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.

12. ECOLOGICAL INFORMATION

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

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

Non-pressurized Containers

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

15. REGULATORY INFORMATION

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.

16. OTHER INFORMATION

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

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Changes made: Updated Company Name.

Information Source and References
This SDS is prepared by Kidde-Fenwal, LLC based on information provided by internal company references.

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