



## Safety Data Sheet

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### SECTION 1: Identification

#### 1.1. Product identifier

3M™ Novec™ 1230 Fire Protection Fluid [FK-5-1-12]

#### Product Identification Numbers

98-0212-3031-7, 98-0212-3203-2, 98-0212-3217-2, 98-0212-3371-7, 98-0212-3414-5, 98-0212-3588-6

#### 1.2. Recommended use and restrictions on use

##### Recommended use

Streaming and Flooding Fire Protection

#### 1.3. Supplier's details

|                      |   |
|----------------------|---|
| <b>MANUFACTURER:</b> | 3M                                      |
| <b>DIVISION:</b>     | Electronic Materials Solutions Division |
| <b>ADDRESS:</b>      | 3M Center, St. Paul, MN 55144-1000, USA |
| <b>Telephone:</b>    | 1-888-3M HELPS (1-888-364-3577)         |

#### 1.4. Emergency telephone number

1-800-364-3577 or (651) 737-6501 (24 hours)

### SECTION 2: Hazard identification

#### 2.1. Hazard classification

Not classified as hazardous according to OSHA Hazard Communication Standard, 29 CFR 1910.1200.

#### 2.2. Label elements

##### Signal word

Not applicable.

##### Symbols

Not applicable.

##### Pictograms

Not applicable.

#### 2.3. Hazards not otherwise classified

None.

**SECTION 3: Composition/information on ingredients**

| Ingredient   | C.A.S. No. | % by Wt |
|--|------------|---------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | 756-13-8   | > 99.9  |

**SECTION 4: First aid measures****4.1. Description of first aid measures****Inhalation:**

No need for first aid is anticipated.

**Skin Contact:**

Wash with soap and water. If signs/symptoms develop, get medical attention.

**Eye Contact:**

Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

**If Swallowed:**

Rinse mouth. If you feel unwell, get medical attention.

**4.2. Most important symptoms and effects, both acute and delayed**

See Section 11.1. Information on toxicological effects.

**4.3. Indication of any immediate medical attention and special treatment required**

Not applicable

**SECTION 5: Fire-fighting measures****5.1. Suitable extinguishing media**

Product is a fire-extinguishing agent. Material will not burn.

**5.2. Special hazards arising from the substance or mixture**

Exposure to extreme heat can give rise to thermal decomposition.

**Hazardous Decomposition or By-Products****Substance**

Carbon monoxide

Carbon dioxide

Toxic Vapor, Gas, Particulate

**Condition**

During Combustion

During Combustion

During Combustion

**5.3. Special protective actions for fire-fighters**

When fire fighting conditions are severe and total thermal decomposition of the product is possible, wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

**SECTION 6: Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Evacuate area. Ventilate the area with fresh air. Refer to other sections of this SDS for information regarding physical and

health hazards, respiratory protection, ventilation, and personal protective equipment.

### 6.2. Environmental precautions

Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

### 6.3. Methods and material for containment and cleaning up

Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Seal the container. Dispose of collected material as soon as possible.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Do not breathe thermal decomposition products. For industrial or professional use only. Do not use in a confined area with minimal air exchange. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment.

### 7.2. Conditions for safe storage including any incompatibilities

Protect from sunlight. Store in a well-ventilated place. Store away from strong bases. Store away from other materials.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Occupational exposure limits

If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

| Ingredient   | C.A.S. No. | Agency                  | Limit type              | Additional Comments |
|--|------------|-------------------------|-------------------------|---------------------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | 756-13-8   | Manufacturer determined | TWA:150 ppm(1940 mg/m3) |                     |

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

OSHA : United States Department of Labor - Occupational Safety and Health Administration

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

### 8.2. Exposure controls

#### 8.2.1. Engineering controls

Provide appropriate local exhaust when product is heated. For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local exhaust ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

#### 8.2.2. Personal protective equipment (PPE)

##### Eye/face protection

Eye protection not required.

**Skin/hand protection**

No protective gloves required.

**Respiratory protection**

Use a positive pressure supplied-air respirator if there is a potential for over exposure from an uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection. If thermal degradation products are expected, use a full facepiece supplied-air respirator.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

|  |  |
|--|--|
| <b>General Physical Form:</b>                  | Liquid   |
| <b>Specific Physical Form:</b>                 | Liquid   |
| <b>Odor, Color, Grade:</b>                     | Clear colorless liquid with low odor                         |
| <b>Odor threshold</b>                          | <i>No Data Available</i>                                     |
| <b>pH</b>                                      | <i>Not Applicable</i>  |
| <b>Melting point</b>                           | -108 °C  |
| <b>Boiling Point</b>                           | 49 °C [ @ 760 mmHg]  |
| <b>Flash Point</b>                             | No flash point   |
| <b>Evaporation rate</b>                        | > 1 [ <i>Ref Std:</i> BUOAC=1]                               |
| <b>Flammability (solid, gas)</b>               | Not Applicable   |
| <b>Flammable Limits(LEL)</b>                   | None detected  |
| <b>Flammable Limits(UEL)</b>                   | None detected  |
| <b>Vapor Pressure</b>                          | 40.4 kPa [ @ 25 °C]  |
| <b>Vapor Density</b>                           | 11.6 [ <i>Ref Std:</i> AIR=1]                                |
| <b>Specific Gravity</b>                        | 1.6 [ @ 68 °F] [ <i>Ref Std:</i> WATER=1]                    |
| <b>Solubility in Water</b>                     | Nil  |
| <b>Solubility- non-water</b>                   | <i>No Data Available</i>                                     |
| <b>Partition coefficient: n-octanol/ water</b> | <i>No Data Available</i>                                     |
| <b>Autoignition temperature</b>                | <i>Not Applicable</i>  |
| <b>Decomposition temperature</b>               | <i>No Data Available</i>                                     |
| <b>Viscosity</b>                               | 0.6 centipoise [ @ 25 °C ]                                   |
| <b>Volatile Organic Compounds</b>              | 1600 g/l [ <i>Test Method:</i> calculated SCAQMD rule 443.1] |
| <b>Percent volatile</b>                        | 100 %  |
| <b>VOC Less H2O &amp; Exempt Solvents</b>      | 1600 g/l [ <i>Test Method:</i> calculated SCAQMD rule 443.1] |

**SECTION 10: Stability and reactivity****10.1. Reactivity**

This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

**10.2. Chemical stability**

Stable.

**10.3. Possibility of hazardous reactions**

Hazardous polymerization will not occur.

**10.4. Conditions to avoid**

Light

**10.5. Incompatible materials**

Strong bases  
Amines  
Alcohols  
Water

**10.6. Hazardous decomposition products****Substance**

Hydrogen Fluoride

**Condition**

At Elevated Temperatures - extreme conditions of heat

Refer to section 5.2 for hazardous decomposition products during combustion.

If the product is exposed to extreme condition of heat from misuse or equipment failure, toxic decomposition products that include hydrogen fluoride and perfluoroisobutylene can occur. Extreme heat arising from situations such as misuse or equipment failure can generate hydrogen fluoride as a decomposition product.

**SECTION 11: Toxicological information**

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

**11.1. Information on Toxicological effects****Signs and Symptoms of Exposure**

Based on test data and/or information on the components, this material may produce the following health effects:

**Inhalation:**

No known health effects.

**Skin Contact:**

Contact with the skin during product use is not expected to result in significant irritation.

**Eye Contact:**

Contact with the eyes during product use is not expected to result in significant irritation.

**Ingestion:**

May be harmful if swallowed.

**Toxicological Data**

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

**Acute Toxicity**

| Name   | Route                      | Species | Value              |
|--|----------------------------|---------|--------------------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Dermal                     | Rat     | LD50 > 2,000 mg/kg |
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Inhalation-Vapor (4 hours) | Rat     | LC50 > 1,227 mg/l  |
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Ingestion                  | Rat     | LD50 > 2,000 mg/kg |

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

| Name   | Species | Value                     |
|--|---------|---------------------------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Rabbit  | No significant irritation |

**Serious Eye Damage/Irritation**

| Name   | Species | Value                     |
|--|---------|---------------------------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Rabbit  | No significant irritation |

**Skin Sensitization**

| Name   | Species    | Value           |
|--|------------|-----------------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Guinea pig | Not sensitizing |

**Respiratory Sensitization**

For the component/components, either no data are currently available or the data are not sufficient for classification.

**Germ Cell Mutagenicity**

| Name   | Route    | Value         |
|--|----------|---------------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | In Vitro | Not mutagenic |
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | In vivo  | Not mutagenic |

**Carcinogenicity**

For the component/components, either no data are currently available or the data are not sufficient for classification.

**Reproductive Toxicity****Reproductive and/or Developmental Effects**

| Name   | Route      | Value                            | Species | Test Result        | Exposure Duration              |
|--|------------|----------------------------------|---------|--------------------|--------------------------------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Inhalation | Not toxic to female reproduction | Rat     | NOAEL<br>3,000 ppm | prematuring & during gestation |
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Inhalation | Not toxic to male reproduction   | Rat     | NOAEL<br>3,000 ppm | prematuring & during gestation |
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Inhalation | Not toxic to development         | Rat     | NOAEL<br>3,000 ppm | prematuring & during gestation |

**Target Organ(s)****Specific Target Organ Toxicity - single exposure**

| Name   | Route      | Target Organ(s)       | Value                 | Species | Test Result               | Exposure Duration |
|--|------------|-----------------------|-----------------------|---------|---------------------------|-------------------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Inhalation | nervous system        | All data are negative | Rat     | NOAEL<br>100,000 ppm      | 2 hours           |
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Inhalation | cardiac sensitization | All data are negative | Dog     | Sensitization<br>Negative | 17 minutes        |

**Specific Target Organ Toxicity - repeated exposure**

| Name   | Route      | Target Organ(s)               | Value  | Species | Test Result        | Exposure Duration |
|--|------------|-------------------------------|--|---------|--------------------|-------------------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Inhalation | liver   kidney and/or bladder | Some positive data exist, but the data are not sufficient for classification | Rat     | NOAEL<br>3,000 ppm | 90 days           |

|  |            |   |                       |     |                    |         |
|--|------------|---|-----------------------|-----|--------------------|---------|
| 1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone | Inhalation | heart   endocrine system   hematopoietic system   muscles   nervous system   respiratory system   vascular system | All data are negative | Rat | NOAEL<br>3,000 ppm | 90 days |
|--|------------|---|-----------------------|-----|--------------------|---------|

**Aspiration Hazard**

For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

**SECTION 12: Ecological information****Ecotoxicological information****Test Organism**

Green algae, *Selenastrum capricornutum*  
Zebra Fish, *Brachydanio rerio*  
Water flea, *Daphnia magna*  
Green algae, *Selenastrum capricornutum*

**Test Type**

72 hours Effect Concentration 50%  
96 hours Lethal Concentration 50%  
48 hours Effect Concentration 50%  
72 hours No obs Effect Conc

**Result**

7.7 mg/l  
>1200 mg/l  
>1200 mg/l  
1.2 mg/l

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

**Chemical fate information**

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

**SECTION 13: Disposal considerations****13.1. Disposal methods**

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Combustion products will include halogen acid (HCl/HF/HBr). Facility must be capable of handling halogenated materials. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

**SECTION 14: Transport Information**

For Transport Information, please visit <http://3M.com/Transportinfo> or call 1-800-364-3577 or 651-737-6501.

**SECTION 15: Regulatory information****15.1. US Federal Regulations**

Contact 3M for more information.

### 311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - No Delayed Hazard - No

### 15.2. State Regulations

Contact 3M for more information.

### 15.3. Chemical Inventories

The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this material are in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of Japan Chemical Substance Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

### 15.4. International Regulations

Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## SECTION 16: Other information

### NFPA Hazard Classification

**Health:** 3 **Flammability:** 0 **Instability:** 1 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

### HMIS Hazard Classification

**Health:** 1 **Flammability:** 0 **Physical Hazard:** 1 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® III) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® III ratings are to be used with a fully implemented HMIS® III program. HMIS® is a registered mark of the American Coatings Association (ACA).

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