# Safety Data Sheet



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| **Document Group:** | 43-8362-6 | **Version Number:** | 3.01 |
| **Issue Date:** | 08/30/24 | **Supercedes Date:** | 08/15/22 |

## SECTION 1: Identification

**1.1. Product identifier**
3M™ Novec™ 7200DL Engineered Fluid

**Product Identification Numbers**
70-2134-0508-0, 98-0212-1160-6, 98-0212-1162-2, 98-0212-2864-2
7100260445, 7100064006, 7100064008, 7100003722

**1.2. Recommended use and restrictions on use**

**Recommended use**
For Industrial Use Only. Not Intended For Use As A Medical Device Or Drug., Specialized Cleaning and Coating Applications
**Restrictions on use**

Novec™ Engineered Fluids are used in a wide variety of applications, including but not limited to precision cleaning of medical devices and as lubricant deposition solvents for medical devices. When the product is used for applications where the finished device is implanted into the human body, no residual Novec solvent may remain on the parts. It is highly recommended that the supporting test results and protocol be cited during FDA registration.

3M Electronics Materials Solutions Division (EMSD) will not knowingly sample, support, or sell its products for incorporation in medical and pharmaceutical products and applications in which the 3M product will be temporarily or permanently implanted into humans or animals. The customer is responsible for evaluating and determining that a 3M EMSD product is suitable and appropriate for its particular use and intended application. The conditions of evaluation, selection, and use of a 3M product can vary widely and affect the use and intended application of a 3M product. Because many of these conditions are uniquely within the user's knowledge and control, it is essential that the user evaluate and determine whether the 3M product is suitable and appropriate for a particular use and intended application, and complies with all local applicable laws, regulations, standards, and guidance.

**1.3. Supplier's details**

| | |
|---|---|
| **MANUFACTURER:** | 3M |
| **DIVISION:** | Electronics Materials Solutions Division |
| **ADDRESS:** | 3M Center, St. Paul, MN 55144-1000, USA |
| **Telephone:** | 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**
In use, may form flammable/explosive vapour-air mixture.

## SECTION 3: Composition/information on ingredients

| Ingredient | C.A.S. No. | % by Wt |
|---|---|---|
| Ethyl nonafluoroisobutyl ether | 163702-06-5 | 55 - 90 |
| Ethyl nonafluorobutyl ether | 163702-05-4 | 10 - 45 |

## SECTION 4: First aid measures

**4.1. Description of first aid measures**

**Inhalation:**
No need for first aid is anticipated. If symptoms develop, remove the affected person to fresh air. Get medical attention.

**Skin Contact:**
Wash with soap and water. If you feel unwell, get medical attention.

**Eye Contact:**
If exposed, flush eyes with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms develop, 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**
No critical symptoms or effects. 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**
Use a fire fighting agent suitable for the surrounding fire.

**5.2. Special hazards arising from the substance or mixture**
Exposure to extreme heat can give rise to thermal decomposition. Material displays no closed-cup flash point but may form flammable/explosive vapor air mixture.

**Hazardous Decomposition or By-Products**

| Substance | Condition |
|---|---|
| Carbon monoxide | During Combustion |
| Carbon dioxide | During Combustion |
| Hydrogen Fluoride | During Combustion |

**5.3. Special protective actions for fire-fighters**
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**
Keep away from sparks, flames, and extreme heat. Evacuate area. Ventilate the area with fresh air. Observe precautions from other sections.

**6.2. Environmental precautions**
Avoid release to the environment.

**6.3. Methods and material for containment and cleaning up**
Eliminate all potential ignition sources when cleaning up spill. 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 in accordance with applicable local/regional/national/international regulations.

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling**
Do not breathe thermal decomposition products. For industrial/occupational use only. Not for consumer sale or use. Store work clothes separately from other clothing, food and tobacco products. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of hazardous decomposition products. Keep away from sparks, flames, and extreme heat.

**7.2. Conditions for safe storage including any incompatibilities**
Store away from acids. Store away from strong bases. Store away from oxidizing agents.

## 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 |
|---|---|---|---|---|
| Ethyl nonafluorobutyl ether | 163702-05-4 | Manufacturer determined | TWA(as total isomers):200 ppm(2160 mg/m3) | |
| Ethyl nonafluoroisobutyl ether | 163702-06-5 | Manufacturer determined | TWA(as total isomers):200 ppm(2160 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**
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. Provide ventilation adequate to maintain vapor concentration below lower explosive concentration.

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

**Eye/face protection**
None required.

**Skin/hand protection**
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.
Gloves made from the following material(s) are recommended: Neoprene

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Apron - Neoprene

**Respiratory protection**

For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use a positive pressure supplied-air respirator.

## SECTION 9: Physical and chemical properties

**9.1. Information on basic physical and chemical properties**

| | |
|---|---|
| **Appearance** | |
| **Physical state** | Liquid |
| **Color** | Colorless |
| **Specific Physical Form:** | liquid |
| **Odor** | Faint Solvent |
| **Odor threshold** | *No Data Available* |
| **pH** | *Not Applicable* |
| **Melting point** | -138 ºC |
| **Boiling Point** | 76 ºC |
| **Flash Point** | No flash point |
| **Evaporation rate** | 33 [*Ref Std:*BUOAC=1] |
| **Flammability (solid, gas)** | Not Applicable |
| **Flammable Limits(LEL)** | 210 g/m3 [*Details:*ASTM E681-94 Method] |
| **Flammable Limits(UEL)** | 1070 g/m3 [*Details:*ASTM E681-94 Method] |

| | |
|---|---|
| **Vapor Pressure** | 109 mmHg [@ 25 ºC] |
| **Vapor Density** | 9.1 [*Ref Std:*AIR=1] |
| **Density** | 1.43 g/ml |
| **Specific Gravity** | 1.43 [*Ref Std:*WATER=1] |
| **Solubility in Water** | Nil |
| **Solubility- non-water** | *No Data Available* |
| **Partition coefficient: n-octanol/ water** | 4.2 [*Details:*at 30 °C] |
| **Autoignition temperature** | 375 ºC [*Details:*ASTM E659-78 Method] |
| **Decomposition temperature** | *Not Applicable* |
| **Viscosity** | 0.4 centistoke |
| **Molecular weight** | *No Data Available* |
| **Percent volatile** | 100 % |

## SECTION 10: Stability and reactivity

**10.1. Reactivity**
This material is considered to be non reactive under normal use conditions.

**10.2. Chemical stability**
Stable.

**10.3. Possibility of hazardous reactions**
Hazardous polymerization will not occur.

**10.4. Conditions to avoid**
Sparks and/or flames

**10.5. Incompatible materials**
Strong acids
Strong bases
Strong oxidizing agents

**10.6. Hazardous decomposition products**

| Substance | Condition |
|---|---|
| Carbon monoxide | At Elevated Temperatures - extreme conditions of heat |
| Carbon dioxide | At Elevated Temperatures - extreme conditions of heat |
| Hydrogen Fluoride | At Elevated Temperatures - extreme conditions of heat |
| Perfluoroisobutylene (PFIB) | At Elevated Temperatures - extreme conditions of heat |
| Toxic Vapor, Gas, Particulate | 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.

## 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 health effects are expected.

**Skin Contact:**
May be harmful in contact with skin.
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 |
|---|---|---|---|
| Ethyl nonafluoroisobutyl ether | Dermal | | LD50 estimated to be 2,000 - 5,000 mg/kg |
| Ethyl nonafluoroisobutyl ether | Inhalation-Vapor (4 hours) | Rat | LC50 > 989 mg/l |
| Ethyl nonafluoroisobutyl ether | Ingestion | Rat | LD50 > 2,000 mg/kg |
| Ethyl nonafluorobutyl ether | Dermal | | LD50 estimated to be 2,000 - 5,000 mg/kg |
| Ethyl nonafluorobutyl ether | Inhalation-Vapor (4 hours) | Rat | LC50 > 989 mg/l |
| Ethyl nonafluorobutyl ether | Ingestion | Rat | LD50 > 2,000 mg/kg |

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

| Name | Species | Value |
|---|---|---|
| Ethyl nonafluoroisobutyl ether | Rabbit | No significant irritation |
| Ethyl nonafluorobutyl ether | Rabbit | No significant irritation |

**Serious Eye Damage/Irritation**

| Name | Species | Value |
|---|---|---|
| Ethyl nonafluoroisobutyl ether | Rabbit | No significant irritation |
| Ethyl nonafluorobutyl ether | Rabbit | No significant irritation |

**Skin Sensitization**

| Name | Species | Value |
|---|---|---|
| Ethyl nonafluoroisobutyl ether | Guinea pig | Not classified |
| Ethyl nonafluorobutyl ether | Guinea pig | Not classified |

**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 |
|---|---|---|
| Ethyl nonafluoroisobutyl ether | In Vitro | Not mutagenic |
| Ethyl nonafluoroisobutyl ether | In vivo | Not mutagenic |
| Ethyl nonafluorobutyl ether | In Vitro | Not mutagenic |
| Ethyl nonafluorobutyl ether | 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 |
|---|---|---|---|---|---|
| Ethyl nonafluoroisobutyl ether | Inhalation | Not classified for development | Rat | NOAEL 260 mg/l | during gestation |
| Ethyl nonafluorobutyl ether | Inhalation | Not classified for development | Rat | NOAEL 260 mg/l | during gestation |

**Target Organ(s)**

**Specific Target Organ Toxicity - single exposure**

| Name | Route | Target Organ(s) | Value | Species | Test Result | Exposure Duration |
|---|---|---|---|---|---|---|
| Ethyl nonafluoroisobutyl ether | Inhalation | cardiac sensitization | Some positive data exist, but the data are not sufficient for classification | Dog | NOAEL 204 mg/l | 17 minutes |
| Ethyl nonafluoroisobutyl ether | Inhalation | respiratory irritation | Not classified | Rat | NOAEL 989 mg/l | 4 hours |
| Ethyl nonafluorobutyl ether | Inhalation | cardiac sensitization | Some positive data exist, but the data are not sufficient for classification | Dog | NOAEL 204 mg/l | 17 minutes |
| Ethyl nonafluorobutyl ether | Inhalation | respiratory irritation | Not classified | Rat | NOAEL 989 mg/l | 4 hours |

**Specific Target Organ Toxicity - repeated exposure**

| Name | Route | Target Organ(s) | Value | Species | Test Result | Exposure Duration |
|---|---|---|---|---|---|---|
| Ethyl nonafluoroisobutyl ether | Inhalation | liver \| kidney and/or bladder \| respiratory system \| heart \| endocrine system \| gastrointestinal tract \| bone marrow \| hematopoietic system \| immune system \| nervous system | Not classified | Rat | NOAEL 263.4 mg/l | 4 weeks |
| Ethyl nonafluoroisobutyl ether | Ingestion | blood \| liver \| kidney and/or bladder \| heart \| endocrine system \| bone marrow \| hematopoietic system \| immune system \| nervous system \| respiratory | Not classified | Rat | NOAEL 1,000 mg/kg/day | 28 days |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | system | | | | |
| Ethyl nonafluorobutyl ether | Inhalation | liver \| kidney and/or bladder \| respiratory system \| heart \| endocrine system \| gastrointestinal tract \| bone marrow \| hematopoietic system \| immune system \| nervous system | Not classified | Rat | NOAEL 263.4 mg/l | 4 weeks |
| Ethyl nonafluorobutyl ether | Ingestion | blood \| liver \| kidney and/or bladder \| heart \| endocrine system \| bone marrow \| hematopoietic system \| immune system \| nervous system \| respiratory system | Not classified | Rat | NOAEL 1,000 mg/kg/day | 28 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

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 HF. 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

Not regulated per U.S. DOT, IATA or IMO.

These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. 3M transportation classifications are based on product formulation, packaging, 3M policies and 3M understanding of applicable current regulations. 3M does not guarantee the accuracy of this classification information. This information applies only to transportation classification and not the packaging, labeling, or marking requirements. The original 3M package is certified for U.S. ground shipment only. If you are shipping by air or ocean, the package may not meet applicable regulatory requirements.

# SECTION 15: Regulatory information

## 15.1. US Federal Regulations

Contact 3M for more information.

**EPCRA 311/312 Hazard Classifications:**

| **Physical Hazards** |
|---|
| Not applicable |

| **Health Hazards** |
|---|
| Not applicable |

## 15.2. State Regulations

Contact 3M for more information.

## 15.3. Chemical Inventories

The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information.

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. All required components of this product are listed on the active portion of the TSCA Inventory.

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:** 1 **Instability:** 0 **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.

The NFPA Health code of 3 is due to emergency situations where the material may thermally decompose and release Hydrogen Fluoride and Perfluoroisobutylene (PFIB). During normal use conditions, please reference Section 2 and Section 11 of the SDS for additional health hazard information.

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

Hazardous Material Identification System (HMIS® IV) 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® IV ratings are to be used with a fully implemented HMIS® IV program. HMIS® is a registered mark of the American Coatings Association (ACA).

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