



## Material Safety Data Sheet

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### SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** 3M™ Novec™ 7500 Engineered Fluid

**MANUFACTURER:** 3M

**DIVISION:** Electronics Markets Materials Division

**ADDRESS:** 3M Center  
St. Paul, MN 55144-1000

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

**Issue Date:** 02/19/10

**Supersedes Date:** 06/18/08

**Document Group:** 09-5959-3

**Product Use:**

Intended Use: FOR INDUSTRIAL USE ONLY. NOT INTENDED FOR USE AS A MEDICAL DEVICE OR DRUG.  
Specific Use: HEAT TRANSFER

### SECTION 2: INGREDIENTS

<u>Ingredient</u>	<u>C.A.S. No.</u>	<u>% by Wt</u>
3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-trifluoromethyl-hexane	297730-93-9	> 99

### SECTION 3: HAZARDS IDENTIFICATION

#### 3.1 EMERGENCY OVERVIEW

**Specific Physical Form:** liquid

**Odor, Color, Grade:** clear colorless, very faint sweet odor

**General Physical Form:** Liquid

**Immediate health, physical, and environmental hazards:**

#### 3.2 POTENTIAL HEALTH EFFECTS

**Eye Contact:**

Mild Eye Irritation: Signs/symptoms may include redness, pain, and tearing.

**Skin Contact:**

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

**Inhalation:**

If thermal decomposition occurs:

May be harmful if inhaled.

**Ingestion:**

No health effects are expected.

### 3.3 POTENTIAL ENVIRONMENTAL EFFECTS

This substance has chemical moieties that are resistant to biodegradation and is likely to only undergo partial biodegradation in the environment.

The high potential of this substance to move from water to the atmosphere means its potential to bioconcentrate is likely to disappear rapidly from aerobic environments. AQUATIC TOXICITY:

Testing results indicate that this product has insignificant toxicity to aquatic organisms at its saturation point (Lowest LC50, EC50, or IC50 > substance water solubility).

This substance is highly volatile and has a high Henry's Law constant and is thus expected to move rapidly through vaporization from solution in an aquatic compartment or from a soil surface in a terrestrial compartment to the atmosphere.

ATMOSPHERIC FATE:

Zero Oxone Depletion Potential (ODP).

Atmospheric Lifetime: ~2.2 years (based on reaction with OH radicals)

Global Warming Potential (GWP): 90 (100 year ITH) (IPCC1995 method)

Global Warming Potential (GWP): 100 (100 year ITH) (IPCC2001 method)

## SECTION 4: FIRST AID MEASURES

### 4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

**Eye Contact:** Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

**Skin Contact:** Wash affected area with soap and water. If signs/symptoms develop, get medical attention.

**Inhalation:** If signs/symptoms develop, remove person to fresh air. If signs/symptoms persist, get medical attention.

If Swallowed: No need for first aid is anticipated.

## SECTION 5: FIRE FIGHTING MEASURES

### 5.1 FLAMMABLE PROPERTIES

Autoignition temperature	332 °C
Flash Point	<i>Not Applicable</i>
Flammable Limits - LEL	<i>Not Applicable</i>
Flammable Limits - UEL	<i>Not Applicable</i>

### 5.2 EXTINGUISHING MEDIA

Material will not burn.

### 5.3 PROTECTION OF FIRE FIGHTERS

**Special Fire Fighting Procedures:** Water may be used to blanket the fire. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA). Exposure to extreme heat can give rise to thermal decomposition.

**Unusual Fire and Explosion Hazards:** No unusual fire or explosion hazards are anticipated. No unusual effects are anticipated during fire extinguishing operations. Avoid breathing the products and substances that may result from the thermal decomposition of the product or the other substances in the fire zone. Keep containers cool with water spray when exposed to fire to avoid rupture.

**Note:** See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### Accidental Release Measures:

Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Place in a metal container approved for transportation by appropriate authorities. Dispose of collected material as soon as possible. Observe precautions from other sections. Call 3M- HELPS line (1-800-364-3577) for more information on handling and managing the 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. Collect as much of the spilled material as possible. Clean up residue. Seal the container.

**In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.**

## SECTION 7: HANDLING AND STORAGE

### 7.1 HANDLING

Avoid breathing of vapors, mists or spray. Avoid skin contact with hot material. Do not breathe thermal decomposition products. No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of the hazardous decomposition products mentioned in the Reactivity Data section of this MSDS. Store work clothes separately from other clothing, food and tobacco products. Avoid continuous exposure of the material to extreme conditions of heat, i.e., above 150 C (welding, open flame, misuse or equipment failure). Avoid exceeding a watt density of 50 watts/inch<sup>2</sup> from a heater surface. Continuous exposure to 150 C results in very slight decomposition of this product and therefore, is a very conservative use

temperature threshold. Applications involving exposure of the fluid to temperatures exceeding 150 C or watt densities exceeding 50 watts/inch<sup>2</sup> have been safely implemented. Applications which may exceed these use parameters should be reviewed with 3M Technical Service.

**7.2 STORAGE**

Keep container tightly closed. Keep container in well-ventilated area. Store away from heat. Store away from strong bases.

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 ENGINEERING CONTROLS**

Use with appropriate local exhaust ventilation. Provide local exhaust ventilation at transfer points. Provide appropriate local exhaust when product is heated. For those situations where the fluid 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.

**8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**8.2.1 Eye/Face Protection**

Avoid eye contact.

The following eye protection(s) are recommended: Safety Glasses with side shields.

**8.2.2 Skin Protection**

Avoid skin contact with hot material.

Wear appropriate gloves when handling hot material to prevent thermal burns.

**8.2.3 Respiratory Protection**

Avoid breathing of vapors, mists or spray. Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection. Use a positive pressure supplied-air respirator if there is a potential for 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 decomposition products are expected, use fullface supplied air respirator.

**8.2.4 Prevention of Swallowing**

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

**8.3 EXPOSURE GUIDELINES**

<u>Ingredient</u>	<u>Authority</u>	<u>Type</u>	<u>Limit</u>	<u>Additional Information</u>
3-ethoxy-1,1,1,2,3,4,4,5,5,6,6-dodecafluoro-2-trifluoromethyl-hexane	3M	TWA	100 ppm	

**SOURCE OF EXPOSURE LIMIT DATA:**

ACGIH: American Conference of Governmental Industrial Hygienists

CMRG: Chemical Manufacturer Recommended Guideline

OSHA: Occupational Safety and Health Administration

AIHA: American Industrial Hygiene Association Workplace Environmental Exposure Level (WEEL)

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Specific Physical Form:</b>	liquid
<b>Odor, Color, Grade:</b>	clear colorless, very faint sweet odor
<b>General Physical Form:</b>	Liquid
<b>Autoignition temperature</b>	332 °C
<b>Flash Point</b>	<i>Not Applicable</i>
<b>Flammable Limits - LEL</b>	<i>Not Applicable</i>
<b>Flammable Limits - UEL</b>	<i>Not Applicable</i>
<b>Boiling point</b>	130 °C
<b>Density</b>	1.61 g/ml
<b>Vapor Density</b>	Approximately 14.3 [ <i>Ref.Std:</i> AIR=1]
<b>Vapor Pressure</b>	6 mmHg [@ 20 °C]
<b>Specific Gravity</b>	1.61 [ <i>Ref.Std:</i> WATER=1]
<b>pH</b>	<i>Not Applicable</i>
<b>Melting point</b>	-100 °C
<b>Solubility In Water</b>	[ <i>Details:</i> <6 PPB]
<b>Evaporation rate</b>	<i>No Data Available</i>
<b>Volatile Organic Compounds</b>	100 %
<b>Kow - Oct/Water partition coef</b>	<i>No Data Available</i>
<b>Percent volatile</b>	100 %
<b>VOC Less H2O &amp; Exempt Solvents</b>	100 %
<b>Viscosity</b>	.77 centistoke [@ 25 °C]

## SECTION 10: STABILITY AND REACTIVITY

**Stability:** Stable.

**Materials and Conditions to Avoid:**

**10.1 Conditions to avoid**

None known

**10.2 Materials to avoid**

Strong bases

Additional Information: Avoid continuous exposure to temperatures exceeding 150C

**Hazardous Polymerization:** Hazardous polymerization will not occur.

### Hazardous Decomposition or By-Products

<u>Substance</u>	<u>Condition</u>
Hydrogen Fluoride	At Elevated Temperatures - extreme conditions of heat
Irritant Vapors or Gases	At Elevated Temperatures - extreme conditions of heat
Toxic Vapor, Gas, Particulate	At Elevated Temperatures - extreme conditions of heat

**Hazardous Decomposition:** Hydrogen fluoride has an ACGIH Threshold Limit Value of 3 parts per million (as fluoride) as a Ceiling Limit and an OSHA PEL of 3 ppm of fluoride as an eight hour Time-Weighted Average and 6 ppm of fluoride as a Short Term Exposure Limit. The odor threshold for HF is 0.04 ppm, providing good warning properties for exposure.

## SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

## SECTION 12: ECOLOGICAL INFORMATION

### ECOTOXICOLOGICAL INFORMATION

<u>Test Organism</u>	<u>Test Type</u>	<u>Result</u>
Ricefish, <i>Oryzias latipes</i>	48 hours Lethal Concentration 50%	>50* micrograms/liter *See 3.3

### CHEMICAL FATE INFORMATION

See Section 3.3 - Potential Environmental Effects

## SECTION 13: DISPOSAL CONSIDERATIONS

**Waste Disposal Method:** Reclaim if feasible. As a disposal alternative, incinerate in an industrial or commercial facility in the presence of a combustible material. Combustion products will include HF. Facility must be capable of handling halogenated materials.

**EPA Hazardous Waste Number (RCRA):** Not regulated

Since regulations vary, consult applicable regulations or authorities before disposal.

## SECTION 14: TRANSPORT INFORMATION

**ID Number(s):**

98-0212-2928-5, 98-0212-2929-3, 98-0212-2930-1, 98-0212-2932-7, 98-0212-3465-7

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's transportation classifications are based on product formulation, packaging, 3M policies and 3M's 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

## US FEDERAL REGULATIONS

Contact 3M for more information.

### 311/312 Hazard Categories:

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

## STATE REGULATIONS

Contact 3M for more information.

## CHEMICAL INVENTORIES

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

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

One or more of the components of this product have been notified to ELINCS (European List of Notified or New Chemical Substances). Certain restrictions apply. Contact the selling division for additional information.

All the components of this product are listed on China's Inventory of Chemical Substances.

The components of this material are in compliance with the new chemical notification requirements for the Korean Existing Chemicals Inventory.

Contact 3M for more information.

## INTERNATIONAL REGULATIONS

Contact 3M for more information.

This MSDS 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 Reactivity: 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.

**HMIS Hazard Classification**

**Health: 1 Flammability: 1 Reactivity: 0 Protection: X - See PPE section.**

Hazardous Material Identification System (HMIS(r)) 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(r) ratings are to be used with a fully implemented HMIS(r) program. HMIS(r) is a registered mark of the National Paint and Coatings Association (NPCA).

**Revision Changes:**

Section 1: Product name was modified.

Section 16: HMIS hazard classification for health was modified.

Copyright was modified.

Section 14: Transportation legal text was modified.

Page Heading: Product name was modified.

Section 5: Flammable limits (UE) information was modified.

Section 5: Flammable limits (LEL) information was modified.

Section 9: Property description for optional properties was modified.

Section 9: Flammable limits (LEL) information was modified.

Section 9: Flammable limits (UEL) information was modified.

Section 10.1 Conditions to avoid was added.

Section 10.2 Materials to avoid was added.

Section 6: Release measures information was added.

Section 6: Release measures information was added.

Section 6: Release measures information was added.

Section 10: Materials to avoid physical property was added.

Section 10: Conditions to avoid physical property was added.

Section 6: Release measures information was deleted.

Section 10: Materials and conditions to avoid physical property was deleted.

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