1: Identification of substance / mixture

1. Product Identifier

<table>
<thead>
<tr>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
</tr>
<tr>
<td>HFE-7500 3M (TM) Novec (TM) Engineered fluid</td>
</tr>
<tr>
<td><strong>Product Code</strong></td>
</tr>
<tr>
<td>051243</td>
</tr>
<tr>
<td><strong>CAS Number</strong></td>
</tr>
<tr>
<td>297730-93-9</td>
</tr>
<tr>
<td><strong>Other Names</strong></td>
</tr>
<tr>
<td>2-(Trifluoromethyl)-3-ethoxydodecafluorohexane</td>
</tr>
<tr>
<td><strong>IUPAC</strong></td>
</tr>
<tr>
<td><strong>MFCD Number</strong></td>
</tr>
<tr>
<td>MFCD04038367</td>
</tr>
<tr>
<td><strong>EC/EINECS</strong></td>
</tr>
<tr>
<td>435-790-1</td>
</tr>
<tr>
<td><strong>REACH Number</strong></td>
</tr>
</tbody>
</table>

2. Relevant identified uses of the substance or mixture and uses advised against

Research and Development

3. Details of the supplier of the safety data sheet

Fluorochem Ltd
Unit 14, Graphite Way
Hadfield
Derbyshire SK13 1QH UK
Telephone: +44(0)1457 860111
Fax: +44(0)1457 892799
Email: sds@fluorochem.co.uk

4. Emergency telephone number

+44(0)7855 268577

2. Hazards Identification

1. Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Hazard Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H315</td>
<td>Skin Irrit. 2</td>
</tr>
<tr>
<td>H319</td>
<td>Eye Irrit. 2</td>
</tr>
<tr>
<td>H335</td>
<td>STOT SE 3a</td>
</tr>
<tr>
<td>H413</td>
<td>Aquatic Chronic 4</td>
</tr>
</tbody>
</table>

2. Label elements

Signal Word **Warning**

Hazard Statements

<table>
<thead>
<tr>
<th>Hazard Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H315</td>
<td>Causes skin irritation.</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>H413</td>
<td>May cause long lasting harmful effects to aquatic life.</td>
</tr>
</tbody>
</table>

Precautionary Phrases

<table>
<thead>
<tr>
<th>Hazard Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P264</td>
<td>Wash hands thoroughly after handling.</td>
</tr>
<tr>
<td>P273</td>
<td>Avoid release to the environment.</td>
</tr>
<tr>
<td>P302 + P352</td>
<td>IF ON SKIN: Wash with plenty of soap and water.</td>
</tr>
<tr>
<td>P304 + P340</td>
<td>IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</td>
</tr>
<tr>
<td>P305 + P351 + P338</td>
<td>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>P332 + P313</td>
<td>If skin irritation occurs: Get medical advice/attention.</td>
</tr>
<tr>
<td>P337 + P313</td>
<td>If eye irritation persists: Get medical advice/attention.</td>
</tr>
</tbody>
</table>

3. Other Hazards
3. Composition / Information on Ingredients

1. Substances

HFE-7500 3M (TM) Novec (TM) Engineered fluid

Assay: 100%  CAS Number: 297730-93-9

2. Mixtures

Not Relevant

4. First Aid Measures

1. Description of first aid measures

**Skin Contact**
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P332 + P313: If skin irritation occurs: Get medical advice/attention.

**Eye Contact**
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313: If eye irritation persists: Get medical advice/attention.

**Ingestion**
Wash out mouth with water.

**Inhalation**
P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

2. Most important symptoms and effects

No symptoms.

3. Indication of any immediate medical attention

P312: Call a POISON CENTER or doctor/physician if you feel unwell.

No additional measures required.

5. Firefighting measures

1. Extinguishing Media

**Suitable**
Carbon dioxide.
Dry chemical powder.
Water.

**Unsuitable**
Do not use water with a full water jet.

2. Special Hazards arising from the substance or mixture

In combustion toxic fumes may form.

3. Advice for Fire Fighters

Wear protective clothing to prevent contact with skin and eyes.
Wear self-contained breathing apparatus.

6. Accidental Release Measures

1. Personal Precautions

Refer to section 8 of SDS for personal protection details.

2. Environmental Precautions

Do not discharge into drains or rivers.

3. Methods & Materials

Mix with sand or vermiculite.
Transfer to a suitable container.

4. Preventing the occurrence of secondary hazards

No Special Measures Required.
7. Handling and Storage

1. Personal Precautions
   **Safe Handling**
   Handle in fume hood.
   Wash hands immediately after contamination.
   P264: Wash hands thoroughly after handling.
   P273: Avoid release to the environment.

   **Protection against explosions and fires**
   P362: Take off contaminated clothing and wash before reuse.
   normal measures for preventive fire protection

2. Conditions for safe storage, including any incompatibilities
   **Managing Storage Risks**
   Keep container tightly closed.
   Store in cool, well ventilated area.

   **Storage Controls**
   No special requirements

   **Maintaining Integrity**
   Keep in tightly closed container in cool area away from direct sunlight or heat sources.

   **Other advice**
   P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

3. Specific End Uses
   The end use(s) have not been fully determined. The substance is supplied for Research and Development purposes by professionals only.

8. Exposure Controls/Personal Protection

1. Control Parameters
   No Data Available

2. Exposure Controls
   **General protective and hygiene measures**
   P280: Wear protective gloves/protective clothing/eye protection/face protection.
   The standard precautionary measures should be adhered to when handling
   Wash hands during breaks and at the end of handling the material
   Immediately remove any contaminated clothing

   **Engineering measures**
   P271: Use only outdoors or in a well-ventilated area.
   Ensure there is sufficient ventilation of the area.

   **Eye / Face Protection**
   Safety Glasses.

   **Hand protection**
   Protective gloves.

   **Respiratory protection**
   P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
   Respiratory protection not required.

   **Skin protection**
   Protective clothing.

   **Other personal protection advice**
   no data

9. Physical and Chemical Properties

1. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No Data Available</td>
</tr>
<tr>
<td>PH</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Melting point / Freezing point</td>
<td>-100°C</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>130°C</td>
</tr>
<tr>
<td>Flash point</td>
<td>36.1°C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Flammability(solid,gas)</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>No Data Available</td>
</tr>
</tbody>
</table>
1. Reactivity
no unusual reactivity

2. Stability
Stable under normal conditions.

3. Possibility of Hazardous Reactions
no hazardous reactions known

4. Conditions to Avoid
no specific conditions to avoid

5. Incompatible Materials
Strong oxidizing agents.

6. Hazardous Decomposition Products
In combustion emits toxic fumes.

11. Toxicology Information

1. Information

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute Toxicity</strong></td>
<td>no data</td>
</tr>
<tr>
<td><strong>Skin corrosion/irritation</strong></td>
<td>irritant for skin and mucous membranes</td>
</tr>
<tr>
<td><strong>Serious eye Damage/irritation</strong></td>
<td>irritant effect</td>
</tr>
<tr>
<td><strong>Respiratory or skin sensitisation</strong></td>
<td>No sensitizing effect known</td>
</tr>
<tr>
<td><strong>Germ Cell mutagenicity</strong></td>
<td>not known</td>
</tr>
<tr>
<td><strong>Carcinogenicity</strong></td>
<td>not known</td>
</tr>
<tr>
<td><strong>Reproductive toxicity</strong></td>
<td>not known</td>
</tr>
<tr>
<td><strong>STOT-single exposure</strong></td>
<td>not known</td>
</tr>
<tr>
<td><strong>STOT-repeated exposure</strong></td>
<td>not known</td>
</tr>
<tr>
<td><strong>Aspiration hazard</strong></td>
<td>not known</td>
</tr>
</tbody>
</table>

2. Additional
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
12. Ecological Information

1. Toxicity
   not known

2. Persistence and degradability
   not known

3. Bio-Accumulative Potential
   not known

4. Mobility and Soil
   not known

5. Results of PBT & vPvB assessment
   not known

6. Other adverse effects
   May cause long lasting harmful effects to aquatic life.

13. Disposal Considerations

1. Waste Treatment Methods
   Consult state, local or national regulations for proper disposal.
   Hand over to authorised disposal company as hazardous waste.

   Disposal Operations
   Disposal of Packaging
   Disposal must be made according to official regulations.

14. Transport Information

Air (ICAO)

1. UN Number:
2. Shipping Name: Non Hazardous
3. Transport hazard class(es): Sub Class :

Road (ADR)

1. UN Number:
2. Shipping Name: None Hazardous
3. Transport hazard class(es): Sub Class :

Sea (IMDG)

1. UN Number:
2. **Shipping Name:** Non Hazardous

3. **Transport hazard class(es):** Sub Class:

4. **Packing group:**

5. **Environmental hazards:**

6. **Special Precautions for user:**

7. **Transport in bulk:**

15. **Safety, health, environmental and national regulations**

1. **Safety, health, environmental and national regulations:**
   product is not subject to any additional regulations or provisions

2. **Safety Assessment**
   No Chemical Safety Assessment

16. **Other Information**

1. **Other Information:**
   - ADR: Accord European sur le transport des marchandises Dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by road)
   - RID: Reglement International concernant le transport des marchandises dangereuses par chemin de fer (Regulations concerning the International transport of Dangerous Goods by Rail)
   - IMDG: International Maritime Code for Dangerous Goods
   - IATA: International Air Transport Association
   - IATA-DGR: Dangerous Goods Regulations by the International Air Transport Association
   - ICAO: International Civil Aviation Organization
   - ICAO-TI: Technical Instructions by the ICAO
   - GHS: Globally Harmonized System of Classification and Labelling of Chemicals
   - CAS: Chemical Abstracts Service

2. **Associated risk phrases according to European directive 67/548/EEC**

3. **Disclaimer**

   The product listed is for research and development purposes only and not for human or animal use. As such, in most cases, the toxicological, ecological and physicochemical properties have not been fully determined and the product should be treated with respect and always handled under suitable conditions by appropriately qualified personnel. The responsible party shall use this datasheet only in conjunction with other sources of information gathered by them, and should make an independent judgement of suitability, to ensure proper use and protect the health and safety of employees. This information is furnished without warranty and any use of the product not in conformance with this material safety data sheet, or in combination with any other product or process, is the responsibility of the user.