



Safety Data Sheet

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Document group: 09-5959-3 **Version number:** 15.00
Revision date: 14/03/2019 **Supersedes date:** 22/03/2018
Transportation version number: 1.00 (28/01/2011)

This Safety Data Sheet has been prepared in accordance with the REACH Regulation (EC) 1907/2006 and its modifications.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

3M Novec 7500 Engineered Fluid

| REACH registration number | CASRN | EC Number | Ingredient Name |
|---------------------------|-------------|------------------|--|
| 01-0000018188-64-0001 | 297730-93-9 | ELINCS 435-790-1 | 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane |

Product Identification Numbers

98-0212-2928-5 98-0212-2929-3

7100025016 7100003723

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

Identified uses

Industrial use.

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 Markets Materials Division (EMMD) 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 EMMD 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. Details of the supplier of the safety data sheet

Address: 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell, Berkshire, RG12 8HT.
Telephone: +44 (0)1344 858 000

3M Novec 7500 Engineered Fluid

E Mail: tox.uk@mmm.com
Website: www.3M.com/uk

1.4. Emergency telephone number

+44 (0)1344 858 000

SECTION 2: Hazard identification**2.1. Classification of the substance or mixture**

CLP REGULATION (EC) No 1272/2008

CLASSIFICATION:

Hazardous to the Aquatic Environment (Chronic), Category 4 - Aquatic Chronic 4; H413

For full text of H phrases, see Section 16.

2.2. Label elements

CLP REGULATION (EC) No 1272/2008

Ingredients:

| Ingredient | CAS Nbr | EC No. | % by Wt |
|--|-------------|-----------|---------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | 297730-93-9 | 435-790-1 | > 99 |

HAZARD STATEMENTS:

H413 May cause long lasting harmful effects to aquatic life.

PRECAUTIONARY STATEMENTS**Disposal:**

P501 Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

2.3. Other hazards

None known.

SECTION 3: Composition/information on ingredients

| Ingredient | CAS Nbr | EC No. | REACH Registration No. | % by Wt | Classification |
|--|-------------|------------------|---------------------------|---------|-------------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | 297730-93-9 | ELINCS 435-790-1 | | > 99 | Aquatic Chronic 4, H413 |

Please see section 16 for the full text of any H statements referred to in this section

For information on ingredient occupational exposure limits or PBT or vPvB status, see sections 8 and 12 of this SDS

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

No need for first aid is anticipated.

Skin contact

No need for first aid is anticipated.

Eye contact

No need for first aid is anticipated.

If swallowed

No need for first aid is anticipated.

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. Extinguishing media

Use a fire fighting agent suitable for the surrounding fire.

5.2. Special hazards arising from the substance or mixture

None inherent in this product.

5.3. Advice 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, tunic and trousers (leggings), 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

Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapours, in accordance with good industrial hygiene practice. 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 dykes 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 authorised person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and Safety Data Sheet. Seal the container. Dispose of collected material as soon as possible.

6.4. Reference to other sections

Refer to Section 8 and Section 13 for more information

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid inhalation of thermal decomposition products. Avoid release to the environment.

7.2. Conditions for safe storage including any incompatibilities

Store away from strong bases.

7.3. Specific end use(s)

See information in Section 7.1 and 7.2 for handling and storage recommendations. See Section 8 for exposure controls and personal protection recommendations.

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 | CAS Nbr | Agency | Limit type | Additional comments |
|--|-------------|-------------------------|-------------|---------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | 297730-93-9 | Manufacturer determined | TWA:100 ppm | |

UK HSC : UK Health and Safety Commission

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

Biological limit values

No biological limit values exist for any of the components listed in Section 3 of this safety data sheet.

Derived no effect level (DNEL)

| Ingredient | Degradation Product | Population | Human exposure pattern | DNEL |
|--|---------------------|------------|--|-------------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | | Worker | Dermal, Long-term exposure (8 hours), Systemic effects | 3.3 mg/kg bw/d |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | | Worker | Inhalation, Long-term exposure (8 hours), Systemic effects | 1,135 mg/m ³ |

Predicted no effect concentrations (PNEC)

| Ingredient | Degradation Product | Compartment | PNEC |
|--|-----------------------------------|-------------------|------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | | Agricultural soil | 0.89 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Hydrogen Fluoride (CAS 7664-39-3) | Agricultural soil | 12 mg/kg d.w. |
| 3-Ethoxy- | Perfluorobutyric | Agricultural soil | 0.541 mg/kg d.w. |

3M Novec 7500 Engineered Fluid

| | | | |
|--|--------------------------------------|----------------------|-------------------|
| 1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | acid (CAS 375-22-4) | | |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Trifluoroacetic acid (CAS 76-05-1) | Agricultural soil | 0.0013 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | | Freshwater | 0.01 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Hydrogen Fluoride (CAS 7664-39-3) | Freshwater | 0.4 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Perfluorobutyric acid (CAS 375-22-4) | Freshwater | 2.6 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Trifluoroacetic acid (CAS 76-05-1) | Freshwater | 0.0064 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | | Freshwater sediments | 7.6 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Hydrogen Fluoride (CAS 7664-39-3) | Freshwater sediments | 1.44 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Perfluorobutyric acid (CAS 375-22-4) | Freshwater sediments | 9.61 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Trifluoroacetic acid (CAS 76-05-1) | Freshwater sediments | 0.023 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | | Grassland average | 0.89 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Hydrogen Fluoride (CAS 7664-39-3) | Grassland average | 12 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Perfluorobutyric acid (CAS 375-22-4) | Grassland average | 0.541 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Trifluoroacetic acid (CAS 76-05-1) | Grassland average | 0.0113 mg/kg d.w. |

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|---------------------------------------|
| 3M Novec 7500 Engineered Fluid |
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| | | | |
|--|--------------------------------------|------------------------|-------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | | Marine water | 0.001 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Hydrogen Fluoride (CAS 7664-39-3) | Marine water | 0.04 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Perfluorobutyric acid (CAS 375-22-4) | Marine water | 0.26 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Trifluoroacetic acid (CAS 76-05-1) | Marine water | 0.00064 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | | Marine water sediments | 0.76 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Hydrogen Fluoride (CAS 7664-39-3) | Marine water sediments | 0.144 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Perfluorobutyric acid (CAS 375-22-4) | Marine water sediments | 0.961 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Trifluoroacetic acid (CAS 76-05-1) | Marine water sediments | 0.0023 mg/kg d.w. |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | | Sewage Treatment Plant | 10 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Hydrogen Fluoride (CAS 7664-39-3) | Sewage Treatment Plant | 51 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Perfluorobutyric acid (CAS 375-22-4) | Sewage Treatment Plant | 100 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Trifluoroacetic acid (CAS 76-05-1) | Sewage Treatment Plant | 1 mg/l |

8.2. Exposure controls

In addition, refer to the annex for more information.

8.2.1. Engineering controls

No engineering controls required.

8.2.2. Personal protective equipment (PPE)**Eye/face protection**

None required.

Skin/hand protection

No chemical protective gloves are required.

Respiratory protection

None required.

8.2.3. Environmental exposure controls

Refer to Annex

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

| | |
|--|--------------------------------------|
| Physical state | Liquid. |
| Specific Physical Form: | Liquid. |
| Appearance/Odour | Clear, colourless, odourless |
| Odour threshold | <i>No data available.</i> |
| pH | <i>Not applicable.</i> |
| Boiling point/boiling range | 129 °C |
| Melting point | -100 °C |
| Flammability (solid, gas) | Not applicable. |
| Explosive properties | Not classified |
| Oxidising properties | Not classified |
| Flash point | No flash point |
| Autoignition temperature | 330 °C |
| Flammable Limits(LEL) | <i>Not applicable.</i> |
| Flammable Limits(UEL) | <i>Not applicable.</i> |
| Vapour pressure | 2.1 kPa [@ 25 °C] |
| Relative density | 1.63 [Ref Std: WATER=1] |
| Water solubility | < 0.004 ppm |
| Solubility- non-water | <i>No data available.</i> |
| Partition coefficient: n-octanol/water | 5.75 |
| Evaporation rate | <i>No data available.</i> |
| Vapour density | approximately 14.3 [Ref Std: AIR=1] |
| Decomposition temperature | <i>No data available.</i> |
| Viscosity | 0.8 mm ² /sec [@ 25 °C] |
| Density | 1.63 g/ml [@ 20 °C] |

9.2. Other information

| | |
|-------------------------------|---------------------------|
| EU Volatile Organic Compounds | 1,630 g/l |
| Molecular weight | <i>No data available.</i> |
| Percent volatile | 100 % |

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 polymerisation will not occur.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Strong bases.

10.6 Hazardous decomposition products

| <u>Substance</u> | <u>Condition</u> |
|---------------------------------|--|
| Hydrogen Fluoride | At elevated temperatures. - extreme conditions of heat |
| Irritant vapours or gases. | At elevated temperatures. - extreme conditions of heat |
| Toxic vapour, gas, particulate. | At elevated temperatures. - extreme conditions of heat |

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 agree with the EU material classification in Section 2 and/or the ingredient classifications in Section 3 if specific ingredient classifications are mandated by a competent authority. In addition, statements and data presented in Section 11 are based on UN GHS calculation rules and classifications derived from 3M assessments.

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

No known health effects.

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

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| Name | Route | Species | Value |
|--|-----------------------------|---------|--------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Dermal | Rat | LD50 > 2,000 mg/kg |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Inhalation-Vapour (4 hours) | Rat | LC50 > 50 mg/l |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Ingestion | Rat | LD50 > 2,000 mg/kg |

ATE = acute toxicity estimate

Skin Corrosion/Irritation

| Name | Species | Value |
|--|---------|---------------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Rabbit | No significant irritation |

Serious Eye Damage/Irritation

| Name | Species | Value |
|--|---------|---------------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Rabbit | No significant irritation |

Skin Sensitisation

| Name | Species | Value |
|--|------------|----------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Guinea pig | Not classified |

Respiratory Sensitisation

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

Germ Cell Mutagenicity

| Name | Route | Value |
|--|----------|---------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | In Vitro | Not mutagenic |

Carcinogenicity

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

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

| Name | Route | Value | Species | Test result | Exposure Duration |
|--|-----------|--|---------|-----------------------|------------------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Ingestion | Not classified for female reproduction | Rat | NOAEL 1,000 mg/kg/day | premating & during gestation |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Ingestion | Not classified for male reproduction | Rat | NOAEL 1,000 mg/kg/day | premating & during gestation |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Ingestion | Not classified for development | Rat | NOAEL 1,000 mg/kg/day | premating & during gestation |

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

| Name | Route | Target Organ(s) | Value | Species | Test result | Exposure Duration |
|--|------------|------------------------|----------------|---------|----------------|-------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Inhalation | respiratory irritation | Not classified | Rat | NOAEL 207 mg/l | 5 days |

3M Novec 7500 Engineered Fluid**Specific Target Organ Toxicity - repeated exposure**

| Name | Route | Target Organ(s) | Value | Species | Test result | Exposure Duration |
|--|------------|--|----------------|---------|-----------------------|-------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Inhalation | liver kidney and/or bladder | Not classified | Rat | NOAEL 169 mg/l | 5 days |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | Ingestion | liver heart endocrine system hematopoietic system immune system nervous system kidney and/or bladder | Not classified | Rat | NOAEL 1,000 mg/kg/day | 28 days |

Aspiration Hazard

For the component/components, either no data is currently available or the data is 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

The information below may not agree with the EU material classification in Section 2 and/or the ingredient classifications in Section 3 if specific ingredient classifications are mandated by a competent authority. In addition, statements and data presented in Section 12 are based on UN GHS calculation rules and classifications derived from 3M assessments.

12.1. Toxicity**Acute aquatic hazard:**

Aquatic Toxicity classification is based on HFE-7500 LC50 (fish) data > 100 mg/L, Log Pow > 4 and PFBA, (ultimate degradation product): Fish 96hr EC50 > 4149 mg/L, Daphnia 48 hr EC50 3475 mg/L, Algae 96 hr EC50 (growth rate) >= 500 mg/L, 28 days BOD 1% (OECD 301D)

No product test data available.

| Material | CAS # | Organism | Type | Exposure | Test endpoint | Test result |
|--|-------------|----------|--------------|----------|---------------|-------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | 297730-93-9 | Ricefish | Experimental | 96 hours | LC50 | >100 mg/l |

12.2. Persistence and degradability

| Material | CAS Nbr | Test type | Duration | Study Type | Test result | Protocol |
|--|-------------|-----------------------------|----------|-------------------------------|-------------------|--------------------------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | 297730-93-9 | Estimated Photolysis | | Photolytic half-life (in air) | 1.5 years (t 1/2) | Other methods |
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | 297730-93-9 | Experimental Biodegradation | 28 days | BOD | 1 % BOD/ThBOD | OECD 301D - Closed bottle test |

12.3 : Bioaccumulative potential

| Material | Cas No. | Test type | Duration | Study Type | Test result | Protocol |
|----------|---------|-----------|----------|------------|-------------|----------|
|----------|---------|-----------|----------|------------|-------------|----------|

3M Novec 7500 Engineered Fluid

| | | | | | | |
|--|-------------|-------------------------------|--|---------|---|---------------|
| 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane | 297730-93-9 | Experimental Bioconcentration | | Log Kow | 6 | Other methods |
|--|-------------|-------------------------------|--|---------|---|---------------|

12.4. Mobility in soil

Please contact manufacturer for more details

12.5. Results of the PBT and vPvB assessment

This material does not contain any substances that are assessed to be a PBT or vPvB

12.6. Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1 Waste treatment 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.

The coding of a waste stream is based on the application of the product by the consumer. Since this is out of the control of 3M, no waste code(s) for products after use will be provided. Please refer to the European Waste Code (EWC - 2000/532/EC and amendments) to assign the correct waste code to your waste stream. Ensure national and/or regional regulations are complied with and always use a licensed waste contractor.

EU waste code (product as sold)

070103* Organic halogenated solvents, washing liquids and mother liquors
14 06 02* Other halogenated solvents and solvent mixtures

SECTION 14: Transportation information

98-0212-2928-5, 98-0212-2929-3

Not hazardous for transportation

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Global inventory status

Contact 3M for more information. 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. The components of this material are in compliance with the provisions of the Korea Chemical Control Act. Certain restrictions may apply. Contact the selling division for additional information. This product complies with Measures on Environmental Management of New Chemical Substances. All ingredients are listed on or exempt from on China IECSC inventory. 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.

15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out for this substance/mixture in accordance with Regulation (EC) No 1907/2006, as amended.

SECTION 16: Other information

List of relevant H statements

H413 May cause long lasting harmful effects to aquatic life.

Revision information:

Section 1: Product use information information was modified.
 Section 4: First aid for eye contact information information was modified.
 Section 4: First aid for ingestion (swallowing) information information was modified.
 Section 4: First aid for inhalation information information was modified.
 Section 4: First aid for skin contact information information was modified.
 Section 5: Fire - Extinguishing media information information was modified.
 Section 6: Accidental release personal information information was modified.
 Section 7: Conditions safe storage information was modified.
 Section 7: Precautions safe handling information information was modified.
 Section 8: Appropriate Engineering controls information information was modified.
 Section 8: Eye protection information information was added.
 Section 8: Eye/face protection information information was deleted.
 Section 8: Personal Protection - Eye information information was deleted.
 Section 8: Personal Protection - Respiratory Information information was deleted.
 Section 8: Respiratory protection information information was added.
 Section 9: Vapour pressure value information was modified.
 Section 11: Reproductive and/or Developmental Effects text information was deleted.
 Section 12: No PBT/vPvB information available warning information was modified.
 Section 13: 13.1. Waste disposal note information was modified.
 Section 13: Standard Phrase Category Waste GHS information was modified.
 Section 15: Chemical Safety Assessment information was added.
 Section 15: Regulations - Inventories information was modified.

Annex

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| 1. Title | |
| Substance identification | 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane; EC No. 435-790-1; CAS Nbr 297730-93-9; |
| Exposure Scenario Name | Industrial Use in Closed Systems |
| Lifecycle Stage | Use at industrial sites |
| Contributing activities | PROC 01 -Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. PROC 08a -Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC 08b -Transfer of substance or mixture (charging and discharging) at dedicated facilities ERC 01 -Manufacture of the substance ERC 07 -Use of functional fluid at industrial site |
| Processes, tasks and activities covered | Charging material in closed systems with minimal opportunity for exposure. Use as heat transfer fluids. |
| 2. Operational conditions and risk management measures | |
| Operating Conditions | Physical state: Liquid. |

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| 3M Novec 7500 Engineered Fluid |
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| | General operating conditions: Continuous release; Emission days per year: 300 days/year; |
| Risk management measures | Under the operational conditions described above the following risk management measures apply: General risk management measures: Human health: None needed; Environmental: None needed; |
| Waste management measures | Do not release to waterways or sewers; Incinerate in a permitted hazardous waste incinerator; |
| 3. Prediction of exposure | |
| Prediction of exposure | Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted. Contact 3M at the address or phone number listed on the first page of the SDS for information on exposure estimation. |

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| 1. Title | |
| Substance identification | 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane; EC No. 435-790-1; CAS Nbr 297730-93-9; |
| Exposure Scenario Name | Professional Use in Closed Systems |
| Lifecycle Stage | Widespread use by professional workers |
| Contributing activities | PROC 01 -Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. PROC 08a -Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC 08b -Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC 20 -Use of functional fluids in small devices ERC 09a -Widespread use of functional fluid (indoor) ERC 09b -Widespread use of functional fluid (outdoor) |
| Processes, tasks and activities covered | Draining material from open systems. |
| 2. Operational conditions and risk management measures | |
| Operating Conditions | Physical state: Liquid. General operating conditions: Continuous release; Emission days per year: 300 days/year; |
| Risk management measures | Under the operational conditions described above the following risk management measures apply: General risk management measures: Human health: None needed; Environmental: None needed; |
| Waste management measures | Do not release to waterways or sewers; Incinerate in a permitted hazardous waste incinerator; |
| 3. Prediction of exposure | |
| Prediction of exposure | Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted. Contact 3M at the address or phone number listed on the first page of the SDS for information on |

3M Novec 7500 Engineered Fluid

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| | exposure estimation. |
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| 1. Title | |
| Substance identification | 3-Ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl)-hexane; EC No. 435-790-1; CAS Nbr 297730-93-9; |
| Exposure Scenario Name | Widespread Use in Cooling Applications |
| Lifecycle Stage | Consumer |
| Contributing activities | PROC 0 -Other Process or activity ERC 10a -Widespread use of articles with low release (outdoor) ERC 11a -Widespread use of articles with low release (indoor) |
| Processes, tasks and activities covered | Passive system losses to environment. Use as heat transfer fluids. |
| 2. Operational conditions and risk management measures | |
| Operating Conditions | Physical state: Liquid. General operating conditions: Discharge volume of sewage treatment plant: <= 0 ; Emission days per year: 365 days/year; Flow rate of receiving surface water:: <= 0.00018 cubic meters per day; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ; |
| Risk management measures | Under the operational conditions described above the following risk management measures apply: General risk management measures: Human health: None needed; Environmental: None needed; |
| Waste management measures | No use-specific waste management measures are required for this product. Refer to Section 13 of main SDS for disposal instructions: |
| 3. Prediction of exposure | |
| Prediction of exposure | Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted.Contact 3M at the address or phone number listed on the first page of the SDS for information on exposure estimation. |

DISCLAIMER: The information on this Safety Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.

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