



## Safety Data Sheet

Copyright,2020, 3M Company All rights reserved. Copying and/or downloading of this information for the purpose of properly utilizing 3M products is allowed provided that: (1) the information is copied in full with no changes unless prior written agreement is obtained from 3M, and (2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

**Document group:** 09-3827-4 **Version number:** 21.02  
**Revision date:** 12/02/2020 **Supersedes date:** 17/10/2018  
**Transportation version number:** 1.00 (19/12/2011)

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™ 8200 Engineered Fluid

REACH registration number	CASRN	EC Number	Ingredient Name
01-0000017174-74-0003		425-340-0	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane

#### Product Identification Numbers

98-0212-2775-0      98-0212-2776-8

7100037069      7100044164

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

##### Identified uses

For industrial use only. Not intended for use as a medical device or drug.

##### 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

## 3M™ Novec™ 8200 Engineered Fluid

**Address:** 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell, Berkshire, RG12 8HT.  
**Telephone:** +44 (0)1344 858 000  
**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
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane		425-340-0	95 - 100

#### HAZARD STATEMENTS:

H413 May cause long lasting harmful effects to aquatic life.

#### PRECAUTIONARY STATEMENTS

#### Prevention:

P260A Do not breathe vapours.

#### Disposal:

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

#### SUPPLEMENTAL INFORMATION:

#### Supplemental Hazard Statements:

EUH018 In use, may form flammable/explosive vapour-air mixture.

100% of the mixture consists of components of unknown acute oral toxicity.

### 2.3. Other hazards

None known.

## SECTION 3: Composition/information on ingredients

Ingredient	CAS Nbr	EC No.	REACH	% by Wt	Classification
------------	---------	--------	-------	---------	----------------

**3M™ Novec™ 8200 Engineered Fluid**

			Registration No.		
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane		425-340-0		95 - 100	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**

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. Extinguishing media**

Non-combustible. Use a fire fighting agent suitable for surrounding fire.

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

Exposure to extreme heat can give rise to thermal decomposition.

**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**

Evacuate area. 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. Warning! A motor could be an ignition source and could cause flammable gases or vapours in the spill area to burn or explode. Refer to other sections of this SDS

## 3M™ Novec™ 8200 Engineered Fluid

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. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapours, in accordance with good industrial hygiene practice. 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 skin contact with hot material. 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. 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.

### 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

No occupational exposure limit values exist for any of the components listed in Section 3 of this Safety Data Sheet.

#### 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
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane		Worker	Inhalation, Long-term exposure (8 hours), Systemic effects	1,764 mg/m <sup>3</sup>

**Predicted no effect concentrations (PNEC)**

Ingredient	Degradation Product	Compartment	PNEC
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane		Agricultural soil	0.0041 mg/kg d.w.
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane		Freshwater	0.00237 mg/l
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane		Freshwater sediments	0.0393 mg/kg d.w.
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane		Grassland average	0.0041 mg/kg d.w.
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane		Marine water	0.000237 mg/l
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane		Marine water sediments	0.00393 mg/kg d.w.

**Recommended monitoring procedures:** Information on recommended monitoring procedures can be obtained from UK HSC

**8.2. Exposure controls**

In addition, refer to the annex for more information.

**8.2.1. Engineering controls**

Provide appropriate local exhaust when product is heated. 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/vapours/spray. If ventilation is not adequate, use respiratory protection equipment.

**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:

Material	Thickness (mm)	Breakthrough Time
Neoprene.	No data available	No data available

*Applicable Norms/Standards*

Use gloves tested to EN 374

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: Neoprene apron.

**Respiratory protection**

During heating:

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.

**Thermal hazards**

Wear heat insulating gloves when handling hot material to prevent thermal burns.

*Applicable Norms/Standards*

Use gloves tested to EN 407

**8.2.3. Environmental exposure controls**

Refer to Annex

**SECTION 9: Physical and chemical properties**

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

**Appearance**

**Physical state**

Liquid.

**Colour**

Colourless

**Specific Physical Form:**

Liquid.

**Odor**

Faint Odor

**Odour threshold**

No data available.

**pH**

Not applicable.

**Boiling point/boiling range**

76 °C

**Melting point**

-138 °C

**Flammability (solid, gas)**

Not applicable.

**Explosive properties**

Not classified

**Oxidising properties**

Not classified

**Flash point**

No flash point

**Autoignition temperature**

375 °C [Details:ASTM E659-78 Method]

<b>Flammable Limits(LEL)</b>	210 g/m <sup>3</sup> [ <i>Details: ASTM E681-94 Method</i> ]
<b>Flammable Limits(UEL)</b>	1,070 g/m <sup>3</sup> [ <i>Details: ASTM E681-94 Method</i> ]
<b>Vapour pressure</b>	14,532.1 Pa [ <i>@ 25 °C</i> ]
<b>Relative density</b>	1.43 [ <i>Ref Std: WATER=1</i> ]
<b>Water solubility</b>	Nil
<b>Solubility- non-water</b>	<i>No data available.</i>
<b>Partition coefficient: n-octanol/water</b>	4.2 [ <i>Details: at 30 °C</i> ]
<b>Evaporation rate</b>	33 [ <i>Ref Std: BUOAC=1</i> ]
<b>Vapour density</b>	9.1 [ <i>Ref Std: AIR=1</i> ]
<b>Decomposition temperature</b>	<i>Not applicable.</i>
<b>Viscosity</b>	0.4 mm <sup>2</sup> /sec
<b>Density</b>	1.43 g/ml

**9.2. Other information**

<b>EU Volatile Organic Compounds</b>	1,430 g/l
<b>Molecular weight</b>	<i>No data available.</i>
<b>Percent volatile</b>	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>
Carbon monoxide	At elevated temperatures.
Carbon dioxide.	At elevated temperatures.
Hydrogen Fluoride	At elevated temperatures. - extreme conditions of heat
Perfluoroisobutylene (PFIB).	At elevated temperatures. - extreme conditions of heat

If the product is exposed to extreme conditions 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 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 health effects are expected.

#### Skin contact

May be harmful in contact with skin.

#### 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
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane	Dermal		LD50 estimated to be 2,000 - 5,000 mg/kg
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane	Inhalation-Vapour (4 hours)	Rat	LC50 > 989 mg/l
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane	Ingestion	Rat	> 2,000 mg/kg

ATE = acute toxicity estimate

#### Skin Corrosion/Irritation

Name	Species	Value
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane	Rabbit	No significant irritation

#### Serious Eye Damage/Irritation

Name	Species	Value
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane	Rabbit	No significant irritation

#### Skin Sensitisation

Name	Species	Value
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane	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
------	-------	-------



**3M™ Novec™ 8200 Engineered Fluid**

Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	In Vitro	Not mutagenic
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	In vivo	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
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	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
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	Inhalation	cardiac sensitisation	Some positive data exist, but the data are not sufficient for classification	Dog	NOAEL 204 mg/l	17 minutes
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	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
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	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
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	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 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

No product test data available.

Material	CAS #	Organism	Type	Exposure	Test endpoint	Test result
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	425-340-0	Green algae	Endpoint not reached	72 hours	EC50	>100 mg/l
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	425-340-0	Fathead minnow	Experimental	96 hours	LC50	>100 mg/l
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	425-340-0	Water flea	Experimental	48 hours	EC50	>100 mg/l
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	425-340-0	Green algae	Experimental	72 hours	Effect Concentration 10%	2.37 mg/l

### 12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	425-340-0	Experimental Photolysis		Photolytic half-life (in air)	0.55 years (t <sub>1/2</sub> )	Other methods
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	425-340-0	Experimental Biodegradation	28 days	BOD	0 % BOD/ThBOD	OECD 301D - Closed bottle test

### 12.3 : Bioaccumulative potential

Material	Cas No.	Test type	Duration	Study Type	Test result	Protocol
Reaction Mass of 2-	425-340-0	Data not available	N/A	N/A	N/A	N/A

## 3M™ Novec™ 8200 Engineered Fluid

(ethoxydifluoromethyl)- 1,1,1,2,3,3,3- heptafluoropropane and 1- ethoxy-1,1,2,2,3,3,4,4,4- nonafluoro-butane		or insufficient for classification				
--	--	---------------------------------------	--	--	--	--

### 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. 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

98-0212-2775-0, 98-0212-2776-8

Not hazardous for transportation

## SECTION 15: Regulatory information

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

### 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:**

Industrial Handling of Heat Transfer, Cooling, and Dielectric Fluid: Section 16: Annex information was modified.

Industrial Laboratory Use: Section 16: Annex information was modified.

Industrial Use as a Solvent: Section 16: Annex information was modified.

Industrial Use in Vapour Degreasing Systems: Section 16: Annex information was modified.

Laboratory Use: Section 16: Annex information was deleted.

Professional Handling of Heat Transfer Fluid: Section 16: Annex information was modified.

Professional Laboratory Use: Section 16: Annex information was added.

Professional Use as a Solvent: Section 16: Annex information was modified.

CLP: Ingredient table information was modified.

Label: CLP Percent Unknown information was deleted.

Label: CLP Percent Unknown information was modified.

Section 3: Composition/ Information of ingredients table information was modified.

Section 8: PNEC table row information was modified.

Section 09: Color information was added.

Section 09: Odor information was added.

Sections 3 and 9: Odour, colour, grade information information was deleted.

Section 10: Hazardous decomposition or by-products table information was modified.

Section 11: Reproductive and/or Developmental Effects text information was deleted.

Section 12: Component ecotoxicity information information was modified.

Section 15: Regulations - Inventories information was deleted.

Section 16: UK disclaimer information was deleted.

**Annex**

<b>1. Title</b>	
<b>Substance identification</b>	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
<b>Exposure Scenario Name</b>	Industrial Handling of Heat Transfer, Cooling, and Dielectric Fluid
<b>Lifecycle Stage</b>	Use at industrial sites
<b>Contributing activities</b>	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 07 -Use of functional fluid at industrial site
<b>Processes, tasks and activities covered</b>	Draining process equipment. Transfers with dedicated controls, including loading, filling, dumping, bagging. Transfers without dedicated controls, including loading, filling, dumping, bagging. Use as heat transfer fluids.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<b>Physical state:</b> Liquid. <b>General operating conditions:</b> Continuous process; Discharge volume of sewage treatment plant: <= 2,000,000 liters per day; Emission days per year: 365 days/year; Flow rate of receiving surface water: <= 18,000 cubic meters per day; Fraction of applied product lost from process/use to solid waste in percent: 99.95 %; Fraction of applied product lost from process/use to waste: 0.0001 ; Fraction of applied product lost from process/use to waste gas: 0.0001 ;

**3M™ Novec™ 8200 Engineered Fluid**

	Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
<b>Risk management measures</b>	Under the operational conditions described above the following risk management measures apply: <b>General risk management measures:</b> <b>Human health:</b> None needed; <b>Environmental:</b> None needed;
<b>Waste management measures</b>	Incinerate in a facility capable of handling halogenated waste;
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	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.

<b>1. Title</b>	
<b>Substance identification</b>	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
<b>Exposure Scenario Name</b>	Industrial Laboratory Use
<b>Lifecycle Stage</b>	Use at industrial sites
<b>Contributing activities</b>	PROC 15 -Use a laboratory reagent ERC 04 -Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
<b>Processes, tasks and activities covered</b>	Use as a laboratory reagent.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<b>Physical state:</b> Liquid. <b>General operating conditions:</b> Discharge volume of sewage treatment plant: <= 2,000,000 liters per day; Emission days per year: 300 days/year; Flow rate of receiving surface water:: <= 18,000 cubic meters per day; Fraction of applied product lost from process/use to solid waste in percent: 50 %; Fraction of applied product lost from process/use to waste: 1 ; Fraction of applied product lost from process/use to waste gas: 0.5 ; Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
<b>Risk management measures</b>	Under the operational conditions described above the following risk management measures apply: <b>General risk management measures:</b> <b>Human health:</b> None needed; <b>Environmental:</b> None needed;
<b>Waste management measures</b>	Incinerate in a facility capable of handling halogenated waste;
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted. Contact 3M at

**3M™ Novec™ 8200 Engineered Fluid**

	the address or phone number listed on the first page of the SDS for information on exposure estimation.
--	---

<b>1. Title</b>	
<b>Substance identification</b>	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
<b>Exposure Scenario Name</b>	Industrial Use as a Solvent
<b>Lifecycle Stage</b>	Use at industrial sites
<b>Contributing activities</b>	PROC 07 -Industrial spraying PROC 13 -Treatment of articles by dipping and pouring ERC 04 -Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
<b>Processes, tasks and activities covered</b>	Mixing operations (open systems). Transfer of substance/mixture with dedicated engineering controls. Transfer of substances/mixtures into small containers e.g. tubes , bottles or small reservoirs.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<b>Physical state:</b> Liquid. <b>General operating conditions:</b> Discharge volume of sewage treatment plant: <= 2,000,000 liters per day; Emission days per year: 20 days per year; Flow rate of receiving surface water:: <= 18,000 cubic meters per day; Fraction of applied product leaving the site with products: 0 ; Fraction of applied product lost from process/use to solid waste in percent: 0 %; Fraction of applied product lost from process/use to waste: 1 ; Fraction of applied product lost from process/use to waste gas: 1 ; Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
<b>Risk management measures</b>	Under the operational conditions described above the following risk management measures apply: <b>General risk management measures:</b> <b>Human health:</b> None needed; <b>Environmental:</b> None needed;
<b>Waste management measures</b>	Incinerate in a facility capable of handling halogenated waste;
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	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.

<b>1. Title</b>	
<b>Substance identification</b>	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
<b>Exposure Scenario Name</b>	Industrial Use in Vapour Degreasing Systems
<b>Lifecycle Stage</b>	Use at industrial sites
<b>Contributing activities</b>	PROC 04 -Chemical production where opportunity for exposure arises PROC 08b -Transfer of substance or mixture (charging and discharging) at dedicated facilities ERC 04 -Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

<b>Processes, tasks and activities covered</b>	Transfers with dedicated controls, including loading, filling, dumping, bagging.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<p><b>Physical state:</b>Liquid.</p> <p><b>General operating conditions:</b>  Discharge volume of sewage treatment plant: &lt;= 2,000,000 liters per day;  Emission days per year: 300 days/year;  Flow rate of receiving surface water:: &lt;= 18,000 cubic meters per day;  Fraction of applied product lost from process/use to solid waste in percent: 64.2 %;  Fraction of applied product lost from process/use to waste: 100 %;  Fraction of applied product lost from process/use to waste gas: 0.358 ;  Fraction of applied product lost from process/use to waste water: 0 ;  Fraction of product consumed in process/use: 0 ;  Local freshwater dilution factor: 10 ;  Local marine water dilution factor: 100 ;  Partially open and partially closed process;</p>
<b>Risk management measures</b>	<p>Under the operational conditions described above the following risk management measures apply:</p> <p><b>General risk management measures:</b>  <b>Human health:</b>  None needed;  <b>Environmental:</b>  None needed;</p>
<b>Waste management measures</b>	Incinerate in a facility capable of handling halogenated waste;
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	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.

<b>1. Title</b>	
<b>Substance identification</b>	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
<b>Exposure Scenario Name</b>	Professional Handling of Heat Transfer Fluid
<b>Lifecycle Stage</b>	Widespread use by professional workers
<b>Contributing activities</b>	PROC 08a -Transfer of substance or mixture (charging and discharging) at non-dedicated facilities ERC 09a -Widespread use of functional fluid (indoor)
<b>Processes, tasks and activities covered</b>	Transfers without dedicated controls, including loading, filling, dumping, bagging.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<p><b>Physical state:</b>Liquid.</p> <p><b>General operating conditions:</b>  Continuous release;  Discharge volume of sewage treatment plant: &lt;= 2,000,000 liters per day;  Emission days per year: 365 days/year;  Flow rate of receiving surface water:: &lt;= 18,000 cubic meters per day;  Fraction of applied product lost from process/use to solid waste in percent: 99.95 %;  Fraction of applied product lost from process/use to waste: 0.0001 ;  Fraction of applied product lost from process/use to waste gas: 0.0001 ;  Fraction of applied product lost from process/use to waste water: 0 ;  Fraction of product consumed in process/use: 0 ;  Local freshwater dilution factor: 10 ;  Local marine water dilution factor: 100 ;</p>

<b>Risk management measures</b>	Under the operational conditions described above the following risk management measures apply: <b>General risk management measures:</b> <b>Human health:</b> None needed; <b>Environmental:</b> None needed;
<b>Waste management measures</b>	Incinerate in a facility capable of handling halogenated waste;
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	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.

<b>1. Title</b>	
<b>Substance identification</b>	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
<b>Exposure Scenario Name</b>	Professional Laboratory Use
<b>Lifecycle Stage</b>	Widespread use by professional workers
<b>Contributing activities</b>	PROC 15 -Use a laboratory reagent ERC 08a -Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
<b>Processes, tasks and activities covered</b>	Use as a laboratory reagent.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<b>Physical state:</b> Liquid. <b>General operating conditions:</b> Discharge volume of sewage treatment plant: <= 2,000,000 liters per day; Emission days per year: 300 days/year; Flow rate of receiving surface water:: <= 18,000 cubic meters per day; Fraction of applied product lost from process/use to solid waste in percent: 50 %; Fraction of applied product lost from process/use to waste: 1 ; Fraction of applied product lost from process/use to waste gas: 0.5 ; Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
<b>Risk management measures</b>	Under the operational conditions described above the following risk management measures apply: <b>General risk management measures:</b> <b>Human health:</b> None needed; <b>Environmental:</b> None needed;
<b>Waste management measures</b>	Incinerate in a facility capable of handling halogenated waste;
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	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.

<b>1. Title</b>	
<b>Substance identification</b>	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and



**3M™ Novec™ 8200 Engineered Fluid**

	1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
<b>Exposure Scenario Name</b>	Professional Use as a Solvent
<b>Lifecycle Stage</b>	Widespread use by professional workers
<b>Contributing activities</b>	PROC 10 -Roller application or brushing PROC 11 -Non industrial spraying PROC 13 -Treatment of articles by dipping and pouring ERC 08a -Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
<b>Processes, tasks and activities covered</b>	Cleaning surfaces by wiping, brushing. Immersion operations. Spraying of substances/mixtures. Transfer of substance/mixture with dedicated engineering controls. Transfer of substances/mixtures into small containers e.g. tubes , bottles or small reservoirs.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<b>Physical state:</b> Liquid. <b>General operating conditions:</b> Discharge volume of sewage treatment plant: <= 2,000,000 liters per day; Emission days per year: 20 days per year; Flow rate of receiving surface water:: <= 18,000 cubic meters per day; Fraction of applied product leaving the site with products: 0 ; Fraction of applied product lost from process/use to solid waste in percent: 0 %; Fraction of applied product lost from process/use to waste: 1 ; Fraction of applied product lost from process/use to waste gas: 1 ; Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
<b>Risk management measures</b>	Under the operational conditions described above the following risk management measures apply: <b>General risk management measures:</b> <b>Human health:</b> None needed; <b>Environmental:</b> None needed;
<b>Waste management measures</b>	Incinerate in a facility capable of handling halogenated waste;
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	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. In addition, this SDS is being provided to convey health and safety information. If you are the importer of record of this product into the European Union, you are responsible for all regulatory requirements, including, but not limited to, product registrations/notifications, substance volume tracking, and potential substance registration.

**3M United Kingdom MSDSs are available at [www.3M.com/uk](http://www.3M.com/uk)**