Safety Data Sheet

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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™ Fluorosurfactant FC-4430

Product Identification Numbers
98-0212-3628-0 98-0212-3629-8

7000006317 7100034640

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

Identified uses
Industrial use.

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
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 2 - Aquatic Chronic 2; H411

For full text of H phrases, see Section 16.

2.2. Label elements
CLP REGULATION (EC) No 1272/2008

Symbols:
GHS09 (Environment) |

Pictograms

HAZARD STATEMENTS:

H411	Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

Prevention:

P273	Avoid release to the environment.

Disposal:

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

SUPPLEMENTAL INFORMATION

Supplemental Hazard Statements:

EUH208	Contains 2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate. May produce an allergic reaction.

Contains 10% of components with unknown hazards to the aquatic environment.

2.3. Other hazards

None known.

SECTION 3: Composition/information on ingredients

Ingredient	CAS Nbr	EC No.	REACH Registration No.	% by Wt	Classification
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	1017237-78-3			85 - 95	Aquatic Chronic 2, H411
Polyether Polymer	Trade Secret			5 - 10	Substance not classified as hazardous
(2-Methoxymethylethoxy)propanol	34590-94-8	252-104-2	01-2119450011-60	0 - 5	Substance with a Community level exposure limit in the workplace
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4			< 1	Acute Tox. 4, H302; Eye Irrit. 2, H319; Repr. 2, H361df; Aquatic Chronic 2, H411

2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	67584-55-8	266-733-5		< 1	Skin Sens. 1B, H317; Aquatic Chronic 2, H411
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	34454-97-2	252-043-1		0 - 1	Repr. 2, H361d; STOT SE 2, H371; STOT RE 2, H373
Toluene	108-88-3	203-625-9		0 - 0.9	Flam. Liq. 2, H225; Asp. Tox. 1, H304; Skin Irrit. 2, H315; Repr. 2, H361d; STOT SE 3, H336; STOT RE 2, H373 Aquatic Chronic 3, H412 Eye Irrit. 2, H319

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
Remove person to fresh air. If you feel unwell, get medical attention.

Skin contact
Wash with soap and water. If you feel unwell, 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
In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

5.2. Special hazards arising from the substance or mixture
Exposure to extreme heat can give rise to thermal decomposition.

Hazardous Decomposition or By-Products

Substance	Condition
Carbonyl fluoride.	During combustion.
Carbon monoxide.	During combustion.
Carbon dioxide.	During combustion.
Hydrogen Fluoride	During combustion.

Toxic vapour, gas, particulate.	During combustion.

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. 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 water. 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. Not intended for use as a medical device or drug. Do not use in a confined area with minimal air exchange. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Use personal protective equipment (eg. gloves, respirators…) as required.

7.2. Conditions for safe storage including any incompatibilities
Store away from heat.

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
Toluene	108-88-3	UK HSC	TWA: 191 mg/m³ (50 ppm); STEL: 384 mg/m³ (100 ppm)	SKIN

1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	34454-97-2	Manufacturer determined	TWA:1 mg/m3(0.07 ppm)	SKIN
(2-Methoxymethylethoxy)propanol	34590-94-8	UK HSC	TWA:308 mg/m3(50 ppm)	SKIN
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	Manufacturer determined	TWA:0.5 mg/m3(0.04 ppm)	SKIN

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.

8.2. Exposure controls

8.2.1. Engineering controls
Provide appropriate local exhaust when product is heated. For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local exhaust ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapours/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Safety glasses with side shields.

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
Nitrile rubber.	No data available	No data available

Respiratory protection

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. An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for organic vapours and particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid.
Specific Physical Form:	Viscous. liquid
Appearance/Odour	Viscous amber liquid with mercaptan odour.
Odour threshold	*No data available.*
pH	*Not applicable.*
Boiling point/boiling range	>=200 ºC
Melting point	*Not applicable.*
Flammability (solid, gas)	Not applicable.
Explosive properties	Not classified
Oxidising properties	Not classified
Flash point	Flash point > 93 °C (200 °F)
Autoignition temperature	*Not applicable.*
Flammable Limits(LEL)	*No data available.*
Flammable Limits(UEL)	*No data available.*
Vapour pressure	<=38.7 Pa [@ 20 ºC]
Relative density	1.15 [*Ref Std:*WATER=1]
Water solubility	Complete
Solubility- non-water	*No data available.*
Partition coefficient: n-octanol/water	*No data available.*
Evaporation rate	*No data available.*
Vapour density	5.7 [@ 20 ºC] [*Ref Std:*AIR=1]
Decomposition temperature	*No data available.*
Viscosity	2,000 mPa-s - 10,000 mPa-s
Density	1.15 g/ml

9.2. Other information

EU Volatile Organic Compounds	79.4 g/l
Molecular weight	*No data available.*
Percent volatile	<=3 %

SECTION 10: Stability and reactivity

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

10.2 Chemical stability
Stable.

10.3 Possibility of hazardous reactions
Hazardous polymerisation will not occur.

10.4 Conditions to avoid
None known.

10.5 Incompatible materials
None known.

10.6 Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

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
May cause additional health effects (see below).

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.
Gastrointestinal irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhoea.
May cause additional health effects (see below).

Additional Health Effects:

Single exposure may cause target organ effects:
Neurological effects: Signs/symptoms may include personality changes, lack of coordination, sensory loss, tingling or numbness of the extremities, weakness, tremors, and changes in blood pressure and heart rate.

Prolonged or repeated exposure may cause target organ effects:
Liver effects: Signs/symptoms may include loss of appetite, weight loss, fatigue, weakness, abdominal tenderness and jaundice.

Reproductive/Developmental Toxicity:
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

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
Overall product	Dermal		No data available; calculated ATE2,000 - 5,000 mg/kg
Overall product	Ingestion		No data available; calculated ATE2,000 - 5,000 mg/kg
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-	Dermal	Rat	LD50 > 2,000 mg/kg

nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,			
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	Ingestion	Rat	LD50 > 2,000 mg/kg
Polyether Polymer	Dermal	Professional judgement	LD50 estimated to be > 5,000 mg/kg
Polyether Polymer	Ingestion	Rat	LD50 5,700 mg/kg
(2-Methoxymethylethoxy)propanol	Dermal	Rabbit	LD50 > 19,000 mg/kg
(2-Methoxymethylethoxy)propanol	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 50 mg/l
(2-Methoxymethylethoxy)propanol	Ingestion	Rat	LD50 5,180 mg/kg
Toluene	Dermal	Rat	LD50 12,000 mg/kg
Toluene	Inhalation-Vapour (4 hours)	Rat	LC50 30 mg/l
Toluene	Ingestion	Rat	LD50 5,550 mg/kg
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Dermal		LD50 estimated to be 2,000 - 5,000 mg/kg
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Ingestion	Rat	LD50 > 2,000 mg/kg
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	Ingestion	Rat	LD50 200-2000 mg/kg
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	Dermal	Rat	LD50 > 2,000 mg/kg
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	Ingestion	Rat	LD50 > 2,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
(2-Methoxymethylethoxy)propanol	Human and animal	No significant irritation
Toluene	Rabbit	Irritant
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Rabbit	No significant irritation
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	Rabbit	No significant irritation
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
(2-Methoxymethylethoxy)propanol	Rabbit	Mild irritant
Toluene	Rabbit	Moderate irritant
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Rabbit	Mild irritant
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	Rabbit	Severe irritant
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	Rabbit	Mild irritant

Skin Sensitisation

Name	Species	Value
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	Guinea pig	Not classified
(2-Methoxymethylethoxy)propanol	Human	Not classified
Toluene	Guinea pig	Not classified
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Guinea pig	Not classified

1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	Guinea pig	Not classified
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	Guinea pig	Sensitising

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
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	In Vitro	Not mutagenic
(2-Methoxymethylethoxy)propanol	In Vitro	Not mutagenic
Toluene	In Vitro	Not mutagenic
Toluene	In vivo	Not mutagenic
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	In Vitro	Not mutagenic
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	In Vitro	Not mutagenic
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	In Vitro	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
Toluene	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
Toluene	Ingestion	Rat	Some positive data exist, but the data are not sufficient for classification
Toluene	Inhalation	Mouse	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
(2-Methoxymethylethoxy)propanol	Inhalation	Not classified for development	Multiple animal species	NOAEL 1.82 mg/l	during organogenesis
Toluene	Inhalation	Not classified for female reproduction	Human	NOAEL Not available	occupational exposure
Toluene	Inhalation	Not classified for male reproduction	Rat	NOAEL 2.3 mg/l	1 generation
Toluene	Ingestion	Toxic to development	Rat	LOAEL 520 mg/kg/day	during gestation
Toluene	Inhalation	Toxic to development	Human	NOAEL Not available	poisoning and/or abuse
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Ingestion	Not classified for female reproduction	Rat	NOAEL 250 mg/kg/day	premating & during gestation
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Ingestion	Not classified for male reproduction	Rat	NOAEL 250 mg/kg/day	premating & during gestation
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Ingestion	Toxic to development	Rat	NOAEL 50 mg/kg/day	premating & during gestation
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	Ingestion	Toxic to female reproduction	Rat	NOAEL 150 mg/kg/day	premating & during gestation
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	Ingestion	Toxic to male reproduction	Rat	NOAEL 150 mg/kg/day	28 days
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	Ingestion	Toxic to development	Rat	NOAEL 150 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
(2-Methoxymethylethoxy)propanol	Dermal	central nervous system depression	Not classified	Rabbit	NOAEL 2,850 mg/kg	
(2-Methoxymethylethoxy)propanol	Inhalation	central nervous system depression	Not classified	Rat	LOAEL 3.07 mg/l	7 hours
(2-Methoxymethylethoxy)propanol	Ingestion	central nervous system depression	Not classified	Rat	LOAEL 5,000 mg/kg	
Toluene	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Toluene	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	
Toluene	Inhalation	immune system	Not classified	Mouse	NOAEL 0.004 mg/l	3 hours
Toluene	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	poisoning and/or abuse
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Ingestion	nervous system	May cause damage to organs	Rat	LOAEL 2,000 mg/kg	not applicable
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	Ingestion	nervous system	Not classified	Rat	NOAEL 200 mg/kg	not applicable

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	Ingestion	heart | endocrine system | hematopoietic system | liver | immune system | nervous system | kidney and/or bladder | respiratory system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
(2-Methoxymethylethoxy)propanol	Dermal	kidney and/or bladder | heart | endocrine system | hematopoietic system | liver | respiratory system	Not classified	Rabbit	NOAEL 9,500 mg/kg/day	90 days
(2-Methoxymethylethoxy)propanol	Inhalation	heart | hematopoietic system | liver | immune system | nervous system | eyes | kidney and/or bladder	Not classified	Rat	NOAEL 1.21 mg/l	90 days
(2-Methoxymethylethoxy)propanol	Ingestion	liver | heart | endocrine system | bone, teeth, nails, and/or hair | hematopoietic system | immune system | nervous system | kidney and/or bladder |	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days

		respiratory system				
Toluene	Inhalation	auditory system | nervous system | eyes | olfactory system	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
Toluene	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 2.3 mg/l	15 months
Toluene	Inhalation	heart | liver | kidney and/or bladder	Not classified	Rat	NOAEL 11.3 mg/l	15 weeks
Toluene	Inhalation	endocrine system	Not classified	Rat	NOAEL 1.1 mg/l	4 weeks
Toluene	Inhalation	immune system	Not classified	Mouse	NOAEL Not available	20 days
Toluene	Inhalation	bone, teeth, nails, and/or hair	Not classified	Mouse	NOAEL 1.1 mg/l	8 weeks
Toluene	Inhalation	hematopoietic system | vascular system	Not classified	Human	NOAEL Not available	occupational exposure
Toluene	Ingestion	nervous system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 625 mg/kg/day	13 weeks
Toluene	Ingestion	heart	Not classified	Rat	NOAEL 2,500 mg/kg/day	13 weeks
Toluene	Ingestion	liver | kidney and/or bladder	Not classified	Multiple animal species	NOAEL 2,500 mg/kg/day	13 weeks
Toluene	Ingestion	hematopoietic system	Not classified	Mouse	NOAEL 600 mg/kg/day	14 days
Toluene	Ingestion	endocrine system	Not classified	Mouse	NOAEL 105 mg/kg/day	28 days
Toluene	Ingestion	immune system	Not classified	Mouse	NOAEL 105 mg/kg/day	4 weeks
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Ingestion	liver	May cause damage to organs though prolonged or repeated exposure	Rat	NOAEL 50 mg/kg/day	28 days
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Ingestion	immune system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 50 mg/kg/day	28 days
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	Ingestion	kidney and/or bladder | heart | endocrine system | hematopoietic system | nervous system | respiratory system	Not classified	Rat	NOAEL 250 mg/kg/day	28 days
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	Ingestion	nervous system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 150 mg/kg/day	premating & during gestation
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	Ingestion	hematopoietic system | liver | immune system | heart | endocrine system | kidney and/or bladder | respiratory system	Not classified	Rat	NOAEL 1,000 mg/kg/day	premating & during gestation

Aspiration Hazard

Name	Value
Toluene	Aspiration hazard

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 Nbr	Organism	Type	Exposure	Test endpoint	Test result
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	1017237-78-3	Water flea	Experimental	48 hours	EC50	99 mg/l
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	1017237-78-3	Diatom	Experimental	72 hours	EC50	3.24 mg/l
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	1017237-78-3	Fish	Experimental	96 hours	LC50	>3.2 mg/l
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	1017237-78-3	Green algae	Experimental	72 hours	EC50	>1,000 mg/l
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-	1017237-78-3	Fathead minnow	Experimental	96 hours	LC50	765 mg/l

propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,						
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	1017237-78-3	Copepods	Experimental	48 hours	EC50	132 mg/l
Polyether Polymer	Trade Secret		Data not available or insufficient for classification			
(2-Methoxymethylethoxy) propanol	34590-94-8	Fathead minnow	Experimental	96 hours	LC50	>10,000 mg/l
(2-Methoxymethylethoxy) propanol	34590-94-8	Water flea	Experimental	48 hours	EC50	1,919 mg/l
(2-Methoxymethylethoxy) propanol	34590-94-8	Green Algae	Experimental	72 hours	EC50	>969 mg/l
(2-Methoxymethylethoxy) propanol	34590-94-8	Green Algae	Experimental	72 hours	Effect Concentration 10%	133 mg/l
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	34454-97-2	Fathead minnow	Experimental	96 hours	LC50	25 mg/l
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	34454-97-2	Crustacea other	Experimental	96 hours	EC50	4.4 mg/l
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	34454-97-2	Green Algae	Experimental	72 hours	EC50	79 mg/l
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	34454-97-2	Green Algae	Experimental	72 hours	NOEC	21 mg/l
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	Green Algae	Experimental	96 hours	EC50	13 mg/l
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	Mysid Shrimp	Experimental	96 hours	EC50	2.4 mg/l
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	Fathead minnow	Experimental	96 hours	LC50	44 mg/l
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	Green Algae	Experimental	96 hours	NOEC	1.9 mg/l
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	67584-55-8	Water flea	Experimental	48 hours	EC50	1.2 mg/l
2-[Methyl[(nonafluorobut	67584-55-8	Green algae	Experimental	72 hours	NOEC	0.34 mg/l

yl)sulphonyl]amino]ethyl acrylate						
Toluene	108-88-3	Coho Salmon	Experimental	96 hours	LC50	5.5 mg/l
Toluene	108-88-3	Water flea	Experimental	48 hours	EC50	3.78 mg/l
Toluene	108-88-3	Green Algae	Experimental	72 hours	EC50	12.5 mg/l
Toluene	108-88-3	Fish other	Experimental	96 hours	LC50	6.41 mg/l
Toluene	108-88-3	Coho salmon	Experimental	40 days	NOEC	1.39 mg/l
Toluene	108-88-3	Water flea	Experimental	7 days	NOEC	0.74 mg/l

12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	1017237-78-3	Experimental Hydrolysis		Hydrolytic half-life	48.5 years (t 1/2)	Other methods
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	1017237-78-3	Experimental Biodegradation	28 days	BOD	3 % weight	OECD 301D - Closed bottle test
Polyether Polymer	Trade Secret	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
(2-Methoxymethylethoxy)propanol	34590-94-8	Experimental Biodegradation	28 days	BOD	75 % weight	OECD 301F - Manometric respirometry
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	34454-97-2	Experimental Biodegradation	28 days	CO2 evolution	2 % weight	OECD 301B - Modified sturm or CO2
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	Estimated Biodegradation	28 days	BOD	0 % weight	Estimated: MITI biodegradibility tests
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	Estimated Photolysis		Photolytic half-life (in air)	25.2 days (t 1/2)	Other methods
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	67584-55-8	Experimental Aquatic Biodegrad. - Aerobic	28 days	% CO2 produced	2 % weight	OECD 301B - Modified sturm or CO2
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	67584-55-8	Experimental Hydrolysis		Hydrolytic half-life	0.6 years (t 1/2)	Other methods
Toluene	108-88-3	Experimental Biodegradation	20 days	BOD	80 % weight	
Toluene	108-88-3	Experimental Photolysis		Photolytic half-life (in air)	5.2 days (t 1/2)	Other methods

12.3 : Bioaccumulative potential

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
2-Propenoic acid, 2-[methyl[(1,1,2,2,3,3,4,4,4-nonafluorobutyl)sulfonyl]amino]ethyl ester,telomer with 3-mercapto-1,2-propanediol, 2-methyloxirane polymer with oxirane di-2-propenoate,	1017237-78-3	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Polyether Polymer	Trade Secret	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
(2-Methoxymethylethoxy)propanol	34590-94-8	Experimental Bioconcentration		Log Kow	0.0061	Other methods
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	34454-97-2	Estimated Bioconcentration		Log Kow	2.83	Estimated: Bioconcentration factor
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	Estimated Bioconcentration		Bioaccumulation factor	970	Estimated: Bioconcentration factor
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	67584-55-8	Estimated Bioconcentration		Bioaccumulation factor	5	Other methods
Toluene	108-88-3	Experimental Bioconcentration		Log Kow	2.73	Other methods

12.4. Mobility in soil
Please contact manufacturer for more details

12.5. Results of the PBT and vPvB assessment

No information available at this time, contact manufacturer for more details

12.6. Other adverse effects
No information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
See Section 11.1 Information on toxicological effects

Contact your sales representative for information on reclaiming this product. 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. As a disposal alternative, utilize an acceptable permitted waste disposal 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

SECTION 14: Transportation information

98-0212-3628-0

ADR/RID: UN3082, NOT RESTRICTED AS PER SPECIAL PROVISION 375, ENVIRONMENTALLY HAZARDOUS SUBSTANCE EXEMPTION, III, --.
IMDG-CODE: UN3082, NOT RESTRICTED AS PER IMDG CODE 2.10.2.7, MARINE POLLUTANT EXCEPTION, III, IMDG-Code segregation code: NONE, EMS: --.
ICAO/IATA: UN3082, NOT RESTRICTED AS PER SPECIAL PROVISION A197, ENVIRONMENTALLY HAZARDOUS SUBSTANCE EXCEPTION, III.

98-0212-3629-8

ADR/RID: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE,LIQUID,N.O.S., 9, III, (-), ENVIRONMENTALLY HAZARDOUS, ADR Classification Code: M6.
IMDG-CODE: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE,LIQUID, N.O.S., 9., III, IMDG-Code segregation code: NONE, Marine Pollutant, EMS: FA,SF.
ICAO/IATA: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9., III, fish and tree marking may be required (> 5kg/l).

SECTION 15: Regulatory information

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

Carcinogenicity

Ingredient	CAS Nbr	Classification	Regulation
Toluene	108-88-3	Gr. 3: Not classifiable	International Agency for Research on Cancer

Global inventory status
Contact 3M for more 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. The components of this material are in compliance with the provisions of Japan Industrial Safety and Health Law. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information. The components of this product are in compliance with the new substance notification requirements of CEPA. The components of this product are in compliance with the chemical notification requirements of TSCA. This product complies with Measures on Environmental Management of New Chemical Substances. All ingredients are listed on or exempt from on China IECSC inventory.

15.2. Chemical Safety Assessment
Not applicable

SECTION 16: Other information

List of relevant H statements

H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.

H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H361d	Suspected of damaging the unborn child.
H361df	Suspected of damaging fertility. Suspected of damaging the unborn child.
H371	May cause damage to organs.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Revision information:
Section 3: Composition/ Information of ingredients table information was added.
Section 3: Composition/ Information of ingredients table information was deleted.
Section 11: Reproductive Toxicity Table information was modified.
Section 11: Skin Sensitization Table information was modified.
Section 11: Target Organs - Repeated Table information was modified.
Section 11: Target Organs - Single Table information was modified.
Section 12: Component ecotoxicity information information was modified.
Section 12: Persistence and Degradability information information was modified.
Section 12:Bioccumulative potential information information was modified.
Section 13: Standard Phrase Category Waste GHS information was modified.

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.

3M United Kingdom MSDSs are available at www.3M.com/uk