Safety Data Sheet

Document group:	30-0260-7	**Version number:**	1.01
Issue Date:	13/01/2021	**Supersedes date:**	31/03/2020

This Safety Data Sheet has been prepared in accordance with the GHS guidelines & India Hazardous substances (Classification, Labeling & Packaging) Draft Rules 2011.

SECTION 1: Identification

1.1. Product identifier
3M™ Fluorosurfactant FC-4430

Product Identification Numbers
UU-0100-7696-4 UU-0100-7697-2

1.2. Recommended use and restrictions on use

Recommended use
Industrial use.

1.3. Supplier's details
Address: 3M India Limited, plot-48-51, Electronic city, Hosur road, Bangalore-560100
Telephone: 080-45543000, contact Product EHS team
E Mail: productehs.in@mmm.com
Website: http://solutions.3mindia.co.in

1.4. Emergency telephone number
080-45543000 (Contact hours: 8:00 AM to 5:00 PM)

SECTION 2: Hazard identification

Under MSIHC Rules, information is noted below on flammability, acute toxicity and explosivity relevant to this product. In line with international standards, information on other hazard classes and associated precautionary statements relevant to this product are included as well.

2.1. Classification of the substance or mixture
Acute Toxicity (oral): Category 5.
Acute Toxicity (dermal): Category 5.
Reproductive Toxicity: Category 1B.
Specific Target Organ Toxicity (single exposure): Category 2.
Specific Target Organ Toxicity (repeated exposure): Category 2.
Acute Aquatic Toxicity: Category 2.
Chronic Aquatic Toxicity: Category 2.

2.2. Label elements

Signal Word
DANGER!

Symbols
Health Hazard |Environment |

Pictograms

HAZARD STATEMENTS:

H303	May be harmful if swallowed.
H313	May be harmful in contact with skin.
H360	May damage fertility or the unborn child.
H371	May cause damage to organs: nervous system
H373	May cause damage to organs through prolonged or repeated exposure: liver
H411	Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

Prevention:

P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280E	Wear protective gloves.
P273	Avoid release to the environment.

Response:

P308 + P313	IF exposed or concerned: Get medical advice/attention.

Storage:

P405	Store locked up.

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

This material is a mixture.

Ingredient	CAS Nbr	% by Wt
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino] Ethyl Ester, Telomer With Methyloxirane	1017237-78-3	85 - 95

Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate		
Polyether Polymer (NJTSRN 04499600-6417P)	Trade Secret	5 - 10
(2-Methoxymethylethoxy)propanol	34590-94-8	0 - 5
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide	34454-97-2	<= 1
Toluene	108-88-3	< 1
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	<= 0.5
2-[Methyl[(nonafluorobutyl)sulphonyl]amino] ethyl acrylate	67584-55-8	<= 0.5

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
No critical symptoms or effects. 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. Suitable 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. Special protective actions for fire-fighters

Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, 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 vapors, 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 in accordance with applicable local/regional/national/international regulations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid inhalation of thermal decomposition products. Avoid skin contact with hot material. Not intended for use as a medical device or drug. 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
No special storage requirements.

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	ACGIH	TWA:20 ppm	A4: Not class. as human carcin, Ototoxicant
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)	
(2-Methoxymethylethoxy)propanol	34590-94-8	ACGIH	TWA:100 ppm;STEL:150 ppm	Danger of cutaneous absorption
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	Manufacturer determined	TWA:3 mg/m3(0.24 ppm)	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines

TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

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

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. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity.
Gloves made from the following material(s) are recommended: Polymer laminate

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: Apron - polymer laminate

Respiratory 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:
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.

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.

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

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid.
Specific Physical Form:	Viscous. liquid
Color	Amber
Odor	Mercaptan

Odour threshold	*No data available.*
pH	*Not applicable.*
Melting point/Freezing point: NA	*Not applicable.*
Boiling point/Initial boiling point/Boiling range	>=200 ºC
Flash point	Flash point > 93 °C (200 °F)
Evaporation rate	*No data available.*
Flammability (solid, gas)	Not applicable.
Flammable Limits(LEL)	*No data available.*
Flammable Limits(UEL)	*No data available.*
Vapour pressure	<=38.7 Pa [@ 20 ºC]
Vapor Density and/or Relative Vapor Density	5.7 [@ 20 ºC] [*Ref Std:*AIR=1]
Density	1.15 g/ml
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.*
Autoignition temperature	*Not applicable.*
Decomposition temperature	*No data available.*
Viscosity/Kinematic Viscosity	2,000 mPa-s - 10,000 mPa-s
Volatile organic compounds (VOC)	34.5 g/l [*Test Method:*calculated SCAQMD rule 443.1]
Percent volatile	<=3 %
VOC less H2O & exempt solvents	*No data available.*
Molecular weight	*No data available.*

Nanoparticles
This material does not contain nanoparticles.

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 be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labelling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

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
No known health effects.

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[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate	Dermal	Rat	LD50 > 2,000 mg/kg
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and	Ingestion	Rat	LD50 > 2,000 mg/kg

Methyloxirane Polymer With Oxirane Mono-Propenoate			
Polyether Polymer (NJTSRN 04499600-6417P)	Dermal	Professional judgement	LD50 estimated to be > 5,000 mg/kg
Polyether Polymer (NJTSRN 04499600-6417P)	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-Vapor (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	Rat	LD50 > 2,000 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

Sensitization:

Skin Sensitisation

Name	Species	Value
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-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 are currently available or the data are not sufficient for classification.

Germ Cell Mutagenicity

Name	Route	Value
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-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
2-[Methyl[(nonafluorobutyl)sulphonyl]amino] ethyl acrylate	Ingestion	Not classified for development	Rat	NOAEL 100 mg/kg/day	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[(Nonafluorobutyl) Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-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 | eyes | olfactory system	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
Toluene	Inhalation	nervous system	May cause damage to organs though 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	Inhalation	gastrointestinal tract	Not classified	Multiple animal species	NOAEL 11.3 mg/l	15 weeks
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
2-[Methyl[(nonafluorobutyl)	Ingestion	liver | kidney and/or bladder	Some positive data exist, but the data are not sufficient for	Rat	NOAEL 100 mg/kg/day	

sulphonyl]amino]ethyl acrylate			classification			
2-[Methyl[(nonafluorobutyl) sulphonyl]amino]ethyl acrylate	Ingestion	endocrine system | gastrointestinal tract | hematopoietic system | immune system | heart | bone, teeth, nails, and/or hair | nervous system | eyes | respiratory system | vascular system	Not classified	Rat	NOAEL 600 mg/kg/day	

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 be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. Additional information leading to material classification in Section 2 is available upon request. In addition, environmental fate and effects data on ingredients may not be reflected in this section because an ingredient is present below the threshold for labelling, an ingredient is not expected to be available for exposure, or the data is considered not relevant to the material as a whole.

12.1. Toxicity

Acute aquatic hazard:
GHS Acute 2: Toxic to aquatic life.

Chronic aquatic hazard:
GHS Chronic 2: Toxic to aquatic life with long lasting effects.

No product test data available.

Material	CAS Nbr	Organism	Type	Exposure	Test endpoint	Test result
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate	1017237-78-3	Activated sludge	Experimental	3 hours	EC50	786.2 mg/l
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sul	1017237-78-3	Copepods	Experimental	48 hours	EC50	132 mg/l

fonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate						
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate	1017237-78-3	Diatom	Experimental	72 hours	EC50	3.24 mg/l
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate	1017237-78-3	Fathead minnow	Experimental	96 hours	LC50	765 mg/l
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate	1017237-78-3	Fish	Experimental	96 hours	LC50	>3.2 mg/l

2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate	1017237-78-3	Green algae	Experimental	72 hours	EC50	>1,000 mg/l
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate	1017237-78-3	Water flea	Experimental	48 hours	EC50	99 mg/l
Polyether Polymer (NJTSRN 04499600-6417P)	Trade Secret		Data not available or insufficient for classification			N/A
(2-Methoxymethylethoxy)propanol	34590-94-8	Bacteria	Experimental	18 hours	Effect Concentration 10%	4,168 mg/l
(2-Methoxymethylethoxy)propanol	34590-94-8	Fathead minnow	Experimental	96 hours	LC50	>10,000 mg/l
(2-Methoxymethylethoxy)propanol	34590-94-8	Green Algae	Experimental	72 hours	EC50	>969 mg/l
(2-Methoxymethylethoxy)propanol	34590-94-8	Water flea	Experimental	48 hours	LC50	1,919 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	Activated sludge	Experimental	3 hours	EC50	>1,000 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	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	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
Toluene	108-88-3	Activated sludge	Experimental	12 hours	IC50	292 mg/l
Toluene	108-88-3	Bacteria	Experimental	3 hours	EC50	193 mg/l
Toluene	108-88-3	Coho Salmon	Experimental	96 hours	LC50	5.5 mg/l
Toluene	108-88-3	Fish other	Experimental	96 hours	LC50	6.41 mg/l
Toluene	108-88-3	Green Algae	Experimental	72 hours	EC50	12.5 mg/l
Toluene	108-88-3	Water flea	Experimental	48 hours	EC50	3.78 mg/l
Toluene	108-88-3	Coho salmon	Experimental	40 days	NOEC	3.2 mg/l
Toluene	108-88-3	Water flea	Experimental	7 days	NOEC	0.74 mg/l
1-butanesulphonamide, 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-	68298-12-4	Activated sludge	Experimental	3 hours	EC50	>1,000 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	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	Green Algae	Experimental	96 hours	NOEC	1.9 mg/l
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	67584-55-8	Activated sludge	Experimental	3 hours	EC50	>1,000 mg/l
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	67584-55-8	Water flea	Experimental	48 hours	EC50	1.2 mg/l
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate	67584-55-8	Green algae	Experimental	72 hours	NOEC	0.34 mg/l

12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane	1017237-78-3	Experimental Hydrolysis		Hydrolytic half-life	48.5 years (t 1/2)	Non-standard method

Polymer With Oxirane Mono-Propenoate						
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate	1017237-78-3	Experimental Biodegradation	28 days	BOD	3 % weight	OECD 301D - Closed bottle test
Polyether Polymer (NJTSRN 04499600-6417P)	Trade Secret	Data not available-insufficient			N/A	
(2-Methoxymethylethoxy)propanol	34590-94-8	Experimental Biodegradation	28 days	BOD	75 % BOD/ThBOD	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
Toluene	108-88-3	Experimental Photolysis		Photolytic half-life (in air)	5.2 days (t 1/2)	Non-standard method
Toluene	108-88-3	Experimental Biodegradation	20 days	BOD	80 % BOD/ThBOD	
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)	Non-standard method
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
2-[Methyl[(nonafluorobutyl)sulphonyl]amino]et	67584-55-8	Experimental Hydrolysis		Hydrolytic half-life	0.6 years (t 1/2)	Non-standard method

hyl acrylate						
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

12.3 : Bioaccumulative potential

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
2-Propenoic Acid, 2-[Methyl[(Nonafluorobutyl)Sulfonyl]Amino]Ethyl Ester, Telomer With Methyloxirane Polymer With Oxirane Di-2-Propenoate and Methyloxirane Polymer With Oxirane Mono-Propenoate	1017237-78-3	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Polyether Polymer (NJTSRN 04499600-6417P)	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	Non-standard method
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
Toluene	108-88-3	Experimental Bioconcentration		Log Kow	2.73	Non-standard method
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]et	67584-55-8	Estimated Bioconcentration		Bioaccumulation factor	5	Non-standard method

hyl acrylate						

12.4. Mobility in soil
Please contact manufacturer for more details

12.5 Other Adverse effects
No information available.

SECTION 13: Disposal considerations

13.1. Disposal methods
Dispose of contents/ container in accordance with the local/regional/national/international regulations.

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.

SECTION 14: Transport Information

Air Transport (IATA)Regulations

UN No UN3082
Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUOROACRYLATE COPOLYMER)
Hazard Classs/Division 9
Subsidiary Risk Not applicable
Packing Group: III

Marine Transport (IMDG)
UN No UN3082
Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUOROACRYLATE COPOLYMER)
Hazard Classs/Division 9
Subsidiary Risk Not applicable
Packing Group: III
Environmental Hazards: Marine Pollutant: Yes

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. 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. 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.

Applicable Environmental, Health and Safety Regulations
The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989
Hazardous Waste(Management , Handling & Transboundary) Rules, 2008
Hazardous Chemicals (Classification, Packaging and Labelling Draft Rules), 2011

The following ingredients are listed as hazardous on Part II of Schedule I of the India Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) rules
(2-Methoxymethylethoxy)propanol
Propanol, 1(or 2)-(2-methoxymethylethoxy)-
Toluene

The following ingredients are classified as hazardous based on the criteria listed under Part I of Schedule I of the India Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) rules:
The product is classified as Non-Hazardous as per MSIHC Rules, 1989.

SECTION 16: Other information

NFPA Hazard Classification
Health: 3 **Flammability:** 1 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Revision information:
Section 14: Packing group (IMO) information was modified.
Section 04: Information on toxicological effects information was deleted.
Section 8: Occupational exposure limit table information was modified.
Section 09: Nanoparticle information was added.
Section 09: Percent Volatile information was added.
Section 9: Property description for optional properties information was added.
Section 9: Property description for optional properties information was deleted.
Section 09: Vapor Density Value information was added.
Section 9: Vapour density value information was deleted.
Section 9: Viscosity information information was deleted.
Section 09: Viscosity information was added.
Section 09: VOC Less H2O & Exempt Solvents information was added.
Section 09: Volatile Organic Compounds information was added.
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 14: Environmental hazards information was modified.
Section 14: IATA transport hazard classes information was modified.
Section 14: IMO transport hazard classes information was modified.
Section 14: Packing group (IATA) information was modified.
Section 14: Proper Shipping Name (IATA) information was modified.
Section 14: Proper Shipping Name (IMO) information was modified.
Section 14: Proper Shipping Name n.o.s. ingredients information was added.
Section 14: Transportation Information information was deleted.
Section 14: UN Number (IATA) information was modified.
Section 14: UN Number (IMO) 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 India SDSs are available at http://solutions.3mindia.co.in