



Safety Data Sheet

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This Safety Data Sheet has been prepared in accordance with the Malaysia Occupational Safety and Health (Chemical Classification, Labelling and Safety Data Sheets) Regulations 2013.

SECTION 1: Identification

1.1. Product identifier

3M™ Foam Fast 74 Cylinder Spray Adhesive, Orange

Product Identification Numbers

62-4912-8030-1 62-4912-8150-7 62-4912-8300-8

1.2. Recommended use and restrictions on use

Recommended use

Adhesive, Industrial use

1.3. Supplier's details

ADDRESS: 3M Malaysia Sdn. Bhd., Level 8, Block F, Oasis Square, No.2, Jalan PJU 1A/7A, Ara Damansara 47301
Petaling, Jaya, Selangor
Telephone: 03-7884 2888
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1.4. Emergency telephone number

+60 03-7884 2888

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Flammable Liquid: Category 1.
Serious Eye Damage/Irritation: Category 1.
Reproductive Toxicity: Category 1B.
Specific Target Organ Toxicity (single exposure): Category 2.

2.2. Label elements

Signal word

Danger

Symbols

Flame | Corrosion | Health Hazard |

Pictograms



Hazard Statements

- H224 Extremely flammable liquid and vapor.
- H318 Causes serious eye damage.
- H360 May damage fertility or the unborn child.
- H371 May cause damage to organs:
cardiovascular system |

Precautionary statements

General:

- P102 Keep out of reach of children.
- P101 If medical advice is needed, have product container or label at hand.

Prevention:

- P201 Obtain special instructions before use.
- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P233 Keep container tightly closed.
- P260 Do not breathe dust/fume/gas/mist/vapors/spray.
- P280B Wear protective gloves and eye/face protection.
- P281 Use personal protective equipment as required.

Response:

- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a POISON CENTER or doctor/physician.
- P308 + P313 IF exposed or concerned: Get medical advice/attention.
- P370 + P378G In case of fire: Use a fire fighting agent suitable for flammable liquids such as dry chemical or carbon dioxide to extinguish.

Storage:

- P403 + P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

Disposal:

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

2.3. Other hazards

All or part of the classification is based on toxicity test data. May displace oxygen and cause rapid suffocation. May cause drowsiness or dizziness.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	C.A.S. No.	% by Wt
Non-Volatile Components	Trade Secret	5 - 40

Acetone	67-64-1	10 - 30
Dimethyl Ether	115-10-6	10 - 30
Bicyclo[3.1.1]Hept-2-Ene,2,6,6-Trimethyl-,Polymer With 6,6-Dimethyl-2-Methylenebicyclo[3.1.1]Heptane	31393-98-3	5 - 15
Pentane	109-66-0	7 - 13
Isobutane	75-28-5	5 - 10
Methyl Acetate	79-20-9	5 - 10
Propane	74-98-6	5 - 10
Cyclohexane	110-82-7	1 - 5
Hydrotreated Heavy Naphtha (Petroleum)	64742-48-9	1 - 5
Toluene	108-88-3	< 1

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:

Remove person to fresh air. Get medical attention.

Skin Contact:

Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

Eye Contact:

Immediately flush with large amounts of water for at least 15 minutes. Remove contact lenses if easy to do. Continue rinsing. Immediately 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

Serious damage to the eyes (corneal cloudiness, severe pain, tearing, ulcerations, and significantly impaired or loss of vision). Central nervous system depression (headache, dizziness, drowsiness, incoordination, nausea, slurred speech, giddiness, and unconsciousness). Target organ effects. See Section 11 for additional details.

4.3. Indication of any immediate medical attention and special treatment required

Exposure may increase myocardial irritability. Do not administer sympathomimetic drugs unless absolutely necessary.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

In case of fire: Use a fire fighting agent suitable for flammable liquids such as dry chemical or carbon dioxide to extinguish.

5.2. Special hazards arising from the substance or mixture

Closed containers exposed to heat from fire may build pressure and explode.

Hazardous Decomposition or By-Products

Substance

Aldehydes
Hydrocarbons
Formaldehyde
Carbon monoxide
Carbon dioxide

Condition

During Combustion
During Combustion
During Combustion
During Combustion
During Combustion

5.3. Special protective actions for fire-fighters

Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. 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. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only non-sparking tools. 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. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. 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 dikes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up

Contain spill. Cover spill area with a fire-extinguishing foam. 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 using non-sparking tools. Place in a metal container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. 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

For industrial/occupational use only. Not for consumer sale or use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapors/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. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) Wear low static or properly grounded shoes. Use personal protective equipment (gloves, respirators, etc.) as required. To minimize the risk of ignition, determine applicable electrical classifications for the process using this product and select specific local exhaust ventilation equipment to avoid flammable vapor accumulation. Ground/bond container and receiving equipment if there is potential for static electricity accumulation during transfer.

7.2. Conditions for safe storage including any incompatibilities

Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store away from heat. Store away from acids. Store away from oxidizing agents.

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	C.A.S. No.	Agency	Limit type	Additional Comments
Toluene	108-88-3	ACGIH	TWA:20 ppm	A4: Not class. as human

				carcin, Ototoxicant
Toluene	108-88-3	Malaysia OELs	TWA(8 hours):188 mg/m3(50 ppm)	SKIN
Pentane	109-66-0	ACGIH	TWA:1000 ppm	
Pentane, all isomers	109-66-0	Malaysia OELs	TWA(8 hours):1770 mg/m3(600 ppm)	
Cyclohexane	110-82-7	ACGIH	TWA:100 ppm	
Cyclohexane	110-82-7	Malaysia OELs	TWA(8 hours):1030 mg/m3(300 ppm)	
Acetone	67-64-1	ACGIH	TWA:250 ppm;STEL:500 ppm	A4: Not class. as human carcin
Acetone	67-64-1	Malaysia OELs	TWA(8 hours):1187 mg/m3(500 ppm)	
Propane	74-98-6	ACGIH	Limit value not established:	simple asphyxiant
Propane	74-98-6	Malaysia OELs	TWA(8 hours):2500 ppm	
Isobutane	75-28-5	ACGIH	STEL:1000 ppm	
Methyl Acetate	79-20-9	ACGIH	TWA:200 ppm;STEL:250 ppm	
Methyl Acetate	79-20-9	Malaysia OELs	TWA(8 hours):606 mg/m3(200 ppm)	

ACGIH : American Conference of Governmental Industrial Hygienists

CMRG : Chemical Manufacturer's Recommended Guidelines

Malaysia OELs : Malaysia. Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls

Do not remain in area where available oxygen may be reduced. 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/vapors/spray. If ventilation is not adequate, use respiratory protection equipment. Use explosion-proof ventilation 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:

Full Face Shield

Indirect Vented Goggles

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

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:

Half facepiece or full facepiece air-purifying respirator suitable for organic vapors and particulates

Half facepiece or full facepiece supplied-air respirator
Organic vapor respirators may have short service life.

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
Color	Orange
Odor	Mild Solvent
Odor threshold	<i>No Data Available</i>
pH	<i>Not Applicable</i>
Melting point/Freezing point	<i>Not Applicable</i>
Boiling point/Initial boiling point/Boiling range	<=20 °C
Flash Point	-40 °C [<i>Test Method: Closed Cup</i>] [<i>Details: Flammable Gas</i>]
Evaporation rate	<i>No Data Available</i>
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	1.2 % volume
Flammable Limits(UEL)	27 % volume
Vapor Pressure	583985.9 Pa [<i>@ 20 °C</i>]
Vapor Density and/or Relative Vapor Density	>=1 [<i>Ref Std: AIR=1</i>]
Density	0.749 g/ml
Relative Density	0.749 [<i>Ref Std: WATER=1</i>]
Water solubility	Nil
Solubility- non-water	<i>No Data Available</i>
Partition coefficient: n-octanol/ water	<i>No Data Available</i>
Autoignition temperature	<i>No Data Available</i>
Decomposition temperature	<i>Not Applicable</i>
Viscosity/Kinematic Viscosity	<i>Not Applicable</i>
Volatile Organic Compounds	
Percent volatile	
VOC Less H ₂ O & Exempt Solvents	<=553 g/l [<i>Test Method: calculated SCAQMD rule 443.1</i>]
Molecular weight	<i>No Data Available</i>
Solids Content	10 - 30 % weight

Nanoparticles

This material does not contain nanoparticles.

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 polymerization will not occur.

10.4. Conditions to avoid

Heat
Sparks and/or flames

10.5. Incompatible materials

Strong oxidizing agents

10.6. Hazardous decomposition products

<u>Substance</u>	<u>Condition</u>
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

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 labeling, 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:

Simple Asphyxiation: Signs/symptoms may include increased heart rate, rapid respirations, drowsiness, headache, incoordination, altered judgement, nausea, vomiting, lethargy, seizures, coma, and may be fatal.

Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

May cause additional health effects (see below).

Skin Contact:

Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness.

Eye Contact:

Corrosive (Eye Burns): Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Ingestion:

Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May cause additional health effects (see below).

Additional Health Effects:

Single exposure may cause target organ effects:

Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

Single exposure, above recommended guidelines, may cause: Cardiac Sensitization: Signs/symptoms may include irregular heartbeat (arrhythmia), faintness, chest pain, and may be fatal.

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 ATE >5,000 mg/kg
Overall product	Inhalation-Vapor(4 hr)		No data available; calculated ATE >50 mg/l
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Dimethyl Ether	Inhalation-Gas (4 hours)	Rat	LC50 164,000 ppm
Acetone	Dermal	Rabbit	LD50 > 15,688 mg/kg
Acetone	Inhalation-Vapor (4 hours)	Rat	LC50 76 mg/l
Acetone	Ingestion	Rat	LD50 5,800 mg/kg
Isobutane	Inhalation-Gas (4 hours)	Rat	LC50 276,000 ppm
Pentane	Dermal	Rabbit	LD50 3,000 mg/kg
Pentane	Inhalation-Vapor (4 hours)	Rat	LC50 > 18 mg/l
Pentane	Ingestion	Rat	LD50 > 2,000 mg/kg
Propane	Inhalation-Gas (4 hours)	Rat	LC50 > 200,000 ppm
Bicyclo[3.1.1]Hept-2-Ene,2,6,6-Trimethyl-,Polymer With 6,6-Dimethyl-2-Methylenebicyclo[3.1.1]Heptane	Dermal		LD50 estimated to be > 5,000 mg/kg
Bicyclo[3.1.1]Hept-2-Ene,2,6,6-Trimethyl-,Polymer With 6,6-Dimethyl-2-Methylenebicyclo[3.1.1]Heptane	Ingestion	Rat	LD50 > 34,000 mg/kg
Non-Volatile Components	Dermal	Rabbit	LD50 > 2,000 mg/kg
Non-Volatile Components	Ingestion	Rat	LD50 > 5,000 mg/kg
Methyl Acetate	Dermal	Rat	LD50 > 2,000 mg/kg
Methyl Acetate	Inhalation-Vapor (4 hours)	Rat	LC50 > 49 mg/l
Methyl Acetate	Ingestion	Rat	LD50 > 5,000 mg/kg
Cyclohexane	Dermal	Rat	LD50 > 2,000 mg/kg
Cyclohexane	Inhalation-Vapor (4 hours)	Rat	LC50 > 32.9 mg/l
Cyclohexane	Ingestion	Rat	LD50 6,200 mg/kg
Hydrotreated Heavy Naphtha (Petroleum)	Inhalation-Vapor		LC50 estimated to be 20 - 50 mg/l
Hydrotreated Heavy Naphtha (Petroleum)	Dermal	Rabbit	LD50 > 5,000 mg/kg
Hydrotreated Heavy Naphtha (Petroleum)	Ingestion	Rat	LD50 > 5,000 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

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Overall product	Rabbit	Mild irritant
Acetone	Mouse	Minimal irritation
Isobutane	Professio	No significant irritation

	nal judgemen t	
Pentane	Rabbit	Minimal irritation
Propane	Rabbit	Minimal irritation
Non-Volatile Components	Professio nal judgemen t	No significant irritation
Methyl Acetate	Rabbit	No significant irritation
Cyclohexane	Rabbit	Mild irritant
Hydrotreated Heavy Naphtha (Petroleum)	Rabbit	Minimal irritation
Toluene	Rabbit	Irritant

Serious Eye Damage/Irritation

Name	Species	Value
Overall product	Rabbit	Corrosive
Acetone	Rabbit	Severe irritant
Isobutane	Professio nal judgemen t	No significant irritation
Pentane	Rabbit	Mild irritant
Propane	Rabbit	Mild irritant
Methyl Acetate	Rabbit	Moderate irritant
Cyclohexane	Rabbit	Mild irritant
Hydrotreated Heavy Naphtha (Petroleum)	Rabbit	Mild irritant
Toluene	Rabbit	Moderate irritant

Sensitization:

Skin Sensitization

Name	Species	Value
Pentane	Guinea pig	Not classified
Methyl Acetate	Human	Not classified
Hydrotreated Heavy Naphtha (Petroleum)	Guinea pig	Not classified
Toluene	Guinea pig	Not classified

Respiratory Sensitization

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

Germ Cell Mutagenicity

Name	Route	Value
Dimethyl Ether	In Vitro	Not mutagenic
Dimethyl Ether	In vivo	Not mutagenic
Acetone	In vivo	Not mutagenic
Acetone	In Vitro	Some positive data exist, but the data are not sufficient for classification
Isobutane	In Vitro	Not mutagenic
Pentane	In vivo	Not mutagenic
Pentane	In Vitro	Some positive data exist, but the data are not sufficient for classification
Propane	In Vitro	Not mutagenic
Methyl Acetate	In Vitro	Not mutagenic
Methyl Acetate	In vivo	Not mutagenic
Cyclohexane	In Vitro	Not mutagenic
Cyclohexane	In vivo	Some positive data exist, but the data are not

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		sufficient for classification
Hydrotreated Heavy Naphtha (Petroleum)	In Vitro	Not mutagenic
Hydrotreated Heavy Naphtha (Petroleum)	In vivo	Not mutagenic
Toluene	In Vitro	Not mutagenic
Toluene	In vivo	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
Dimethyl Ether	Inhalation	Rat	Not carcinogenic
Acetone	Not Specified	Multiple animal species	Not carcinogenic
Hydrotreated Heavy Naphtha (Petroleum)	Not Specified	Not available	Not carcinogenic
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
Dimethyl Ether	Inhalation	Not classified for development	Rat	NOAEL 40,000 ppm	during organogenesis
Acetone	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,700 mg/kg/day	13 weeks
Acetone	Inhalation	Not classified for development	Rat	NOAEL 5.2 mg/l	during organogenesis
Pentane	Ingestion	Not classified for development	Rat	NOAEL 1,000 mg/kg/day	during organogenesis
Pentane	Inhalation	Not classified for development	Rat	NOAEL 30 mg/l	during organogenesis
Cyclohexane	Inhalation	Not classified for female reproduction	Rat	NOAEL 24 mg/l	2 generation
Cyclohexane	Inhalation	Not classified for male reproduction	Rat	NOAEL 24 mg/l	2 generation
Cyclohexane	Inhalation	Not classified for development	Rat	NOAEL 6.9 mg/l	2 generation
Hydrotreated Heavy Naphtha (Petroleum)	Not Specified	Not classified for female reproduction	Not available	NOAEL NA	1 generation
Hydrotreated Heavy Naphtha (Petroleum)	Not Specified	Not classified for male reproduction	Not available	NOAEL NA	28 days
Hydrotreated Heavy Naphtha (Petroleum)	Not Specified	Not classified for development	Not applicable	NOAEL NA	during gestation
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

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Dimethyl Ether	Inhalation	central nervous	May cause drowsiness or	Rat	LOAEL	30 minutes

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		system depression	dizziness		10,000 ppm	
Dimethyl Ether	Inhalation	cardiac sensitization	Some positive data exist, but the data are not sufficient for classification	Dog	NOAEL 100,000 ppm	5 minutes
Acetone	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Acetone	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	
Acetone	Inhalation	immune system	Not classified	Human	NOAEL 1.19 mg/l	6 hours
Acetone	Inhalation	liver	Not classified	Guinea pig	NOAEL Not available	
Acetone	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	poisoning and/or abuse
Isobutane	Inhalation	cardiac sensitization	Causes damage to organs	Multiple animal species	NOAEL Not available	
Isobutane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human and animal	NOAEL Not available	
Isobutane	Inhalation	respiratory irritation	Not classified	Mouse	NOAEL Not available	
Pentane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Multiple animal species	NOAEL Not available	not available
Pentane	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Not available	NOAEL Not available	not available
Pentane	Inhalation	cardiac sensitization	Not classified	Dog	NOAEL Not available	not available
Pentane	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	not available
Propane	Inhalation	cardiac sensitization	Causes damage to organs	Human	NOAEL Not available	
Propane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Propane	Inhalation	respiratory irritation	Not classified	Human	NOAEL Not available	
Methyl Acetate	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human and animal	NOAEL Not available	
Methyl Acetate	Inhalation	respiratory irritation	May cause respiratory irritation	Human and animal	NOAEL Not available	
Methyl Acetate	Inhalation	blindness	Not classified		NOAEL Not available	
Methyl Acetate	Ingestion	central nervous system depression	May cause drowsiness or dizziness		NOAEL Not available	
Cyclohexane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human and animal	NOAEL Not available	
Cyclohexane	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human and animal	NOAEL Not available	
Cyclohexane	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
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

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Toluene	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	poisoning and/or abuse
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Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Dimethyl Ether	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 25,000 ppm	2 years
Dimethyl Ether	Inhalation	liver	Not classified	Rat	NOAEL 20,000 ppm	30 weeks
Acetone	Dermal	eyes	Not classified	Guinea pig	NOAEL Not available	3 weeks
Acetone	Inhalation	hematopoietic system	Not classified	Human	NOAEL 3 mg/l	6 weeks
Acetone	Inhalation	immune system	Not classified	Human	NOAEL 1.19 mg/l	6 days
Acetone	Inhalation	kidney and/or bladder	Not classified	Guinea pig	NOAEL 119 mg/l	not available
Acetone	Inhalation	heart liver	Not classified	Rat	NOAEL 45 mg/l	8 weeks
Acetone	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 900 mg/kg/day	13 weeks
Acetone	Ingestion	heart	Not classified	Rat	NOAEL 2,500 mg/kg/day	13 weeks
Acetone	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 200 mg/kg/day	13 weeks
Acetone	Ingestion	liver	Not classified	Mouse	NOAEL 3,896 mg/kg/day	14 days
Acetone	Ingestion	eyes	Not classified	Rat	NOAEL 3,400 mg/kg/day	13 weeks
Acetone	Ingestion	respiratory system	Not classified	Rat	NOAEL 2,500 mg/kg/day	13 weeks
Acetone	Ingestion	muscles	Not classified	Rat	NOAEL 2,500 mg/kg	13 weeks
Acetone	Ingestion	skin bone, teeth, nails, and/or hair	Not classified	Mouse	NOAEL 11,298 mg/kg/day	13 weeks
Isobutane	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 4,500 ppm	13 weeks
Pentane	Inhalation	peripheral nervous system	Not classified	Human	NOAEL Not available	occupational exposure
Pentane	Inhalation	heart skin endocrine system gastrointestinal tract bone, teeth, nails, and/or hair hematopoietic system liver immune system muscles nervous system eyes kidney and/or bladder respiratory system	Not classified	Rat	NOAEL 20 mg/l	13 weeks
Pentane	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 2,000 mg/kg/day	28 days
Methyl Acetate	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.1 mg/l	28 days
Methyl Acetate	Inhalation	endocrine system hematopoietic system liver	Not classified	Rat	NOAEL 6.1 mg/l	28 days

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		immune system kidney and/or bladder				
Cyclohexane	Inhalation	liver	Not classified	Rat	NOAEL 24 mg/l	90 days
Cyclohexane	Inhalation	auditory system	Not classified	Rat	NOAEL 1.7 mg/l	90 days
Cyclohexane	Inhalation	kidney and/or bladder	Not classified	Rabbit	NOAEL 2.7 mg/l	10 weeks
Cyclohexane	Inhalation	hematopoietic system	Not classified	Mouse	NOAEL 24 mg/l	14 weeks
Cyclohexane	Inhalation	peripheral nervous system	Not classified	Rat	NOAEL 8.6 mg/l	30 weeks
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

Aspiration Hazard

Name	Value
Pentane	Aspiration hazard
Cyclohexane	Aspiration hazard
Hydrotreated Heavy Naphtha (Petroleum)	Aspiration hazard
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 labeling, 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:

Not chronically toxic to aquatic life by GHS criteria.

No product test data available

Material	Cas #	Organism	Type	Exposure	Test Endpoint	Test Result
Non-Volatile Components	Trade Secret		Data not available or insufficient for classification			N/A
Acetone	67-64-1	Algae other	Experimental	96 hours	EC50	11,493 mg/l
Acetone	67-64-1	Crustacea other	Experimental	24 hours	LC50	2,100 mg/l
Acetone	67-64-1	Rainbow Trout	Experimental	96 hours	LC50	5,540 mg/l
Acetone	67-64-1	Water flea	Experimental	21 days	NOEC	1,000 mg/l
Acetone	67-64-1	Bacteria	Experimental	16 hours	NOEC	1,700 mg/l
Acetone	67-64-1	Redworm	Experimental	48 hours	LC50	>100
Dimethyl Ether	115-10-6	Bacteria	Experimental		EC10	>1,600 mg/l
Dimethyl Ether	115-10-6	Guppy	Experimental	96 hours	LC50	>4,100 mg/l
Dimethyl Ether	115-10-6	Water flea	Experimental	48 hours	EC50	>4,400 mg/l
Bicyclo[3.1.1]Hept-2-Ene,2,6,6-Trimethyl-,Polymer With 6,6-Dimethyl-2-Methylenebicyclo[3.1.1]Heptane	31393-98-3	Activated sludge	Experimental	3 hours	NOEC	1,000 mg/l
Bicyclo[3.1.1]Hept-2-Ene,2,6,6-Trimethyl-,Polymer With 6,6-Dimethyl-2-Methylenebicyclo[3.1.1]Heptane	31393-98-3	Water flea	Experimental	48 hours	No tox obs at lmt of water sol	>100 mg/l
Bicyclo[3.1.1]Hept-2-Ene,2,6,6-Trimethyl-,Polymer With 6,6-Dimethyl-2-Methylenebicyclo[3.1.1]Heptane	31393-98-3	Water flea	Endpoint not reached	21 days	EL10	>100 mg/l

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Pentane	109-66-0	Green Algae	Experimental	72 hours	EC50	10.7 mg/l
Pentane	109-66-0	Rainbow Trout	Experimental	96 hours	LC50	4.26 mg/l
Pentane	109-66-0	Water flea	Experimental	48 hours	EC50	2.7 mg/l
Pentane	109-66-0	Green Algae	Experimental	72 hours	NOEC	2.04 mg/l
Isobutane	75-28-5		Data not available or insufficient for classification			N/A
Methyl Acetate	79-20-9	Bacteria	Experimental	16 hours	EC50	6,000 mg/l
Methyl Acetate	79-20-9	Green algae	Experimental	72 hours	EC50	>120 mg/l
Methyl Acetate	79-20-9	Water flea	Experimental	48 hours	EC50	1,026.7 mg/l
Methyl Acetate	79-20-9	Green algae	Experimental	72 hours	NOEC	120 mg/l
Propane	74-98-6		Data not available or insufficient for classification			N/A
Cyclohexane	110-82-7	Bacteria	Experimental	24 hours	IC50	97 mg/l
Cyclohexane	110-82-7	Fathead Minnow	Experimental	96 hours	LC50	4.53 mg/l
Cyclohexane	110-82-7	Water flea	Experimental	48 hours	EC50	0.9 mg/l
Hydrotreated Heavy Naphtha (Petroleum)	64742-48-9	Green algae	Estimated	72 hours	EL50	>1,000 mg/l
Hydrotreated Heavy Naphtha (Petroleum)	64742-48-9	Rainbow Trout	Estimated	96 hours	LL50	>1,000 mg/l
Hydrotreated Heavy Naphtha (Petroleum)	64742-48-9	Water flea	Estimated	48 hours	EL50	>1,000 mg/l
Hydrotreated Heavy Naphtha (Petroleum)	64742-48-9	Bacteria	Experimental	5 hours	EL10	>2 ug/l
Hydrotreated Heavy Naphtha (Petroleum)	64742-48-9	Green Algae	Estimated	72 hours	NOEL	1,000 mg/l
Toluene	108-88-3	Coho Salmon	Experimental	96 hours	LC50	5.5 mg/l
Toluene	108-88-3	Grass Shrimp	Experimental	96 hours	LC50	9.5 mg/l
Toluene	108-88-3	Green Algae	Experimental	72 hours	EC50	12.5 mg/l
Toluene	108-88-3	Leopard frog	Experimental	9 days	LC50	0.39 mg/l
Toluene	108-88-3	Pink Salmon	Experimental	96 hours	LC50	6.41 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	1.39 mg/l
Toluene	108-88-3	Diatom	Experimental	72 hours	NOEC	10 mg/l
Toluene	108-88-3	Water flea	Experimental	7 days	NOEC	0.74 mg/l
Toluene	108-88-3	Activated sludge	Experimental	12 hours	IC50	292 mg/l
Toluene	108-88-3	Bacteria	Experimental	16 hours	NOEC	29 mg/l
Toluene	108-88-3	Bacteria	Experimental	24 hours	EC50	84 mg/l
Toluene	108-88-3	Redworm	Experimental	28 days	LC50	>150 mg per kg of bodyweight
Toluene	108-88-3	Soil microbes	Experimental	28 days	NOEC	<26 mg/kg (Dry Weight)

12.2. Persistence and degradability

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
Non-Volatile Components	Trade Secret	Data not available - insufficient			N/A	
Acetone	67-64-1	Experimental Photolysis		Photolytic half-life (in air)	147 days (t 1/2)	
Acetone	67-64-1	Experimental Biodegradation	28 days	Biological Oxygen Demand	78 % BOD/ThBOD	OECD 301D - Closed Bottle Test
Dimethyl Ether	115-10-6	Experimental Photolysis		Photolytic half-life (in air)	12.4 days (t 1/2)	Non-standard method
Dimethyl Ether	115-10-6	Experimental Biodegradation	28 days	Biological Oxygen Demand	5 % weight	OECD 301D - Closed Bottle Test
Bicyclo[3.1.1] Hept-2-Ene, 2,6,6-Trimethyl-, Polymer With 6,6-Dimethyl-2-Methylenebicyclo[3.1.1]Heptane	31393-98-3	Experimental Biodegradation	28 days	Biological Oxygen Demand	4 % BOD/ThBOD	OECD 301D - Closed Bottle Test
Pentane	109-66-0	Experimental Photolysis		Photolytic half-life (in air)	8.07 days (t 1/2)	Non-standard method
Pentane	109-66-0	Experimental Biodegradation	28 days	Biological Oxygen Demand	87 % BOD/ThBOD	OECD 301F - Manometric Respiro
Isobutane	75-28-5	Experimental Photolysis		Photolytic half-life (in air)	13.4 days (t 1/2)	Non-standard method
Methyl Acetate	79-20-9	Experimental Biodegradation	28 days	Biological Oxygen Demand	70 % weight	OECD 301D - Closed Bottle Test
Propane	74-98-6	Experimental Photolysis		Photolytic half-life (in air)	27.5 days (t 1/2)	Non-standard method
Cyclohexane	110-82-7	Experimental Photolysis		Photolytic half-life (in air)	4.14 days (t 1/2)	Non-standard method
Cyclohexane	110-82-7	Experimental Biodegradation	28 days	Biological Oxygen Demand	77 % BOD/ThBOD	OECD 301F - Manometric Respiro
Hydrotreated Heavy Naphtha (Petroleum)	64742-48-9	Estimated Biodegradation	28 days	Biological Oxygen Demand	31 % BOD/ThBOD	OECD 301F - Manometric Respiro
Toluene	108-88-3	Experimental Photolysis		Photolytic half-life (in air)	5.2 days (t 1/2)	
Toluene	108-88-3	Experimental Biodegradation	20 days	Biological Oxygen Demand	80 % BOD/ThBOD	APHA Std Meth Water/Wastewater

12.3. Bioaccumulative potential

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
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Non-Volatile Components	Trade Secret	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Acetone	67-64-1	Experimental BCF - Other		Bioaccumulation Factor	0.65	
Acetone	67-64-1	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	-0.24	
Dimethyl Ether	115-10-6	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Bicyclo[3.1.1] Hept-2-Ene,2,6,6-Trimethyl-, Polymer With 6,6-Dimethyl-2-Methylenebicyclo[3.1.1]Heptane	31393-98-3	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	7.41	Non-standard method
Pentane	109-66-0	Estimated Bioconcentration		Bioaccumulation Factor	26	Est: Bioconcentration factor
Isobutane	75-28-5	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.76	Non-standard method
Methyl Acetate	79-20-9	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	0.18	Non-standard method
Propane	74-98-6	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.36	Non-standard method
Cyclohexane	110-82-7	Experimental BCF-Carp	56 days	Bioaccumulation Factor	129	OECD 305E-Bioaccum FI-thru fis
Hydrotreated Heavy Naphtha (Petroleum)	64742-48-9	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Toluene	108-88-3	Experimental BCF - Other	72 hours	Bioaccumulation Factor	90	
Toluene	108-88-3	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.73	

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

According to the Environmental Quality (Scheduled Wastes) Regulations 2005, scheduled waste has to be sent to a prescribed premise for recycling, treatment or disposal. Please approach Kualiti Alam for proper schedule waste classification and disposal.

SECTION 14: Transport Information

Marine Transport (IMDG)

UN Number:UN3501

Proper Shipping Name:CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S.

Technical Name:None assigned.

Hazard Class/Division:2.1

Subsidiary Risk:None assigned.

Packing Group:None assigned.

Limited Quantity:None assigned.

Marine Pollutant: None assigned.

Marine Pollutant Technical Name: None assigned.

Other Dangerous Goods Descriptions:

None assigned.

Air Transport (IATA)

UN Number:UN3501

Proper Shipping Name:CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S.

Technical Name:None assigned.

Hazard Class/Division:2.1

Subsidiary Risk:None assigned.

Packing Group:None assigned.

Limited Quantity:None assigned.

Marine Pollutant: None assigned.

Marine Pollutant Technical Name: None assigned.

Other Dangerous Goods Descriptions:

None assigned.

Transportation classifications are provided as a customer service. As for shipping, YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. 3M's transportation classifications are based on product formulation, packaging, 3M policies and 3M's understanding of applicable current regulations. 3M does not guarantee the accuracy of this classification information. This information applies only to transportation classification and not the packaging, labeling or marking requirements. The above information is only for reference. If you are shipping by air or ocean, YOU are advised to check & meet applicable regulatory requirements.

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 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.

SECTION 16: Other information

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 Malaysia SDSs are available at www.3M.com.my