Safety Data Sheet

Document Group:	31-1367-7	**Version Number:**	3.00
Issue Date:	21/07/2021	**Supercedes Date:**	22/07/2016

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™ Electrical Insulating Sealer 1602-R, Red

Product Identification Numbers
80-6107-3299-4 80-6116-0633-8 HB-0043-0221-0

1.2. Recommended use and restrictions on use

Recommended use
Electrical

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
E Mail: 3mmyehsr@mmm.com
Website: www.3M.com.my

1.4. Emergency telephone number
+60 03-7884 2888

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture
Flammable Aerosol: Category 1.
Gas Under Pressure: Liquefied gas.
Acute Toxicity (inhalation): Category 4.
Serious Eye Damage/Irritation: Category 2.
Carcinogenicity: Category 2.
Reproductive Toxicity: Category 1B.
Specific Target Organ Toxicity (single exposure): Category 1.
Specific Target Organ Toxicity (single exposure): Category 3.
Chronic Aquatic Toxicity: Category 3.

2.2. Label elements
Signal word

Danger

Symbols
Flame |Gas cylinder |Exclamation mark |Health Hazard |

Pictograms

Hazard Statements:

H222	Extremely flammable aerosol.
H280	Contains gas under pressure; may explode if heated.
H332	Harmful if inhaled.
H319	Causes serious eye irritation.
H351	Suspected of causing cancer.
H360	May damage fertility or the unborn child.
H335	May cause respiratory irritation.
H370	Causes damage to organs: cardiovascular system.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statements
General:

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

Prevention:

P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P271	Use only outdoors or in a well-ventilated area.
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.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.

Storage:

P405	Store locked up.
P410 + P403	Protect from sunlight. Store in a well-ventilated place.
P410 + P412	Protect from sunlight. Do not expose to temperatures exceeding 50C/122F.

Disposal:

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

2.3. Other hazards
Intentional misuse by deliberately concentrating and inhaling contents can be harmful or fatal., May cause drowsiness or dizziness., May displace oxygen and cause rapid suffocation., Repeated exposure may cause skin dryness or cracking.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	C.A.S. No.	% by Wt
Methyl Ethyl Ketone	78-93-3	20 - 30
Methyl Acetate	79-20-9	20 - 25
Butane	106-97-8	10 - 15
Propane	74-98-6	10 - 15
Resin Epoxy Ester	Trade Secret	5 - 10
2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE	6846-50-0	1 - 5
BISPHENOL A-FORMALDEHYDE RESIN	25085-75-0	1 - 5
MIBK	108-10-1	1 - 5
N-Butyl Acetate	123-86-4	1 - 5
NUC - Calcium Carbonate	471-34-1	1 - 5
NUC - Iron Oxide (Fe2O3)	1309-37-1	1 - 5
Cobalt Octoate	136-52-7	0.1 - 1
Toluene	108-88-3	0.1 - 1
Xylene	1330-20-7	0.1 - 1

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. Get medical attention.

Skin Contact:
Wash with soap and water. If signs/symptoms develop, get medical attention.

Eye Contact:
Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. 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

Irritating to the respiratory tract (coughing, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain). 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
Use a fire fighting agent suitable for the surrounding fire.

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	Condition
Carbon monoxide	During Combustion
Carbon dioxide	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.

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.

6.3. Methods and material for containment and cleaning up
If possible, seal leaking container. Place leaking containers in a well-ventilated area, preferably an operating exhaust hood, or if necessary outdoors on an impermeable surface until appropriate packaging for the leaking container or its contents is available. Contain spill. 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
Do not use in a confined area with minimal air exchange. Keep out of reach of children. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use. 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 contact with oxidizing agents (eg. chlorine, chromic acid etc.) Use personal protective equipment (gloves, respirators, etc.) as required.

7.2. Conditions for safe storage including any incompatibilities
Store in a well-ventilated place. Keep container tightly closed. Protect from sunlight. Do not expose to temperatures exceeding 50C/122F. 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
		ACGIH	Limit value not established:	simple asphyxiant
		ACGIH	STEL:1000 ppm	
		ACGIH	TWA(respirable fraction):5 mg/m3	A4: Not class. as human carcin
		ACGIH	TWA:100 ppm;STEL:150 ppm	A4: Not class. as human carcin
		ACGIH	TWA:20 ppm	A4: Not class. as human carcin, Ototoxicant
		ACGIH	TWA:20 ppm;STEL:75 ppm	A3: Confirmed animal carcin.
		ACGIH	TWA:200 ppm;STEL:250 ppm	
		ACGIH	TWA:200 ppm;STEL:300 ppm	
		ACGIH	TWA:50 ppm;STEL:150 ppm	
		Malaysia OELs	TWA (proposed)(as Fe, dust and fume)(8 hours):5 mg/m3(2 ppm)	
		Malaysia OELs	TWA(8 hours):188 mg/m3(50 ppm)	SKIN
		Malaysia OELs	TWA(8 hours):1900 mg/m3(800 ppm)	
		Malaysia OELs	TWA(8 hours):205 mg/m3(50 ppm)	
		Malaysia OELs	TWA(8 hours):2500 ppm	
		Malaysia OELs	TWA(8 hours):434 mg/m3(100 ppm)	
		Malaysia OELs	TWA(8 hours):590 mg/m3(200 ppm)	
		Malaysia OELs	TWA(8 hours):606 mg/m3(200 ppm)	
		Malaysia OELs	TWA(8 hours):713 mg/m3(150 ppm)	
Natural gas		ACGIH	Limit value not established:	simple asphyxiant

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.

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:
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
Specific Physical Form:	Aerosol
Color	Red
Odor	Ketones
Odor threshold	*No Data Available*
pH	*Not Applicable*
Melting point/Freezing point	*No Data Available*
Boiling point/Initial boiling point/Boiling range	*No Data Available*
Flash Point	-8.9 ºC [*Test Method:*Closed Cup] [*Details:*Methyl acetate.]
Evaporation rate	*No Data Available*
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	1.4 % [*Details:*Liquid portion.]
Flammable Limits(UEL)	16 % [*Details:*Liquid portion.]
Vapor Pressure	*No Data Available*
Vapor Density and/or Relative Vapor Density	*No Data Available*
Density	792 g/l
Relative Density	0.8 [*Ref Std:*WATER=1] [*Details:*Liquid portion.]
Water solubility	*No Data Available*
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*No Data Available*
Viscosity/Kinematic Viscosity	*Not Applicable*
Volatile Organic Compounds	
Percent volatile	86 % volume
VOC Less H2O & Exempt Solvents	
Bulk density	*No Data Available*

Nanoparticles
This material contains 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

Substance	Condition
Hydrocarbons	Normal Use
Ketones	Normal Use

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:
Harmful if inhaled. 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:
Prolonged or repeated exposure may cause: Dermal Defatting: Signs/symptoms may include localized redness, itching, drying and cracking of skin.

Eye Contact:
Severe Eye Irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the

cornea, and impaired 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.

Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure.

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.

Carcinogenicity:
Contains a chemical or chemicals which can cause cancer.

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-Dust/Mist(4 hr)		No data available; calculated ATE1 - 5 mg/l
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
	Dermal	Rabbit	LD50 > 8,050 mg/kg
	Inhalation-Vapor (4 hours)	Rat	LC50 34.5 mg/l
	Ingestion	Rat	LD50 2,737 mg/kg
	Dermal	Rat	LD50 > 2,000 mg/kg
	Inhalation-Vapor (4 hours)	Rat	LC50 > 49 mg/l
	Ingestion	Rat	LD50 > 5,000 mg/kg
	Inhalation-Gas (4 hours)	Rat	LC50 > 200,000 ppm
	Inhalation-Gas (4 hours)	Rat	LC50 277,000 ppm
	Dermal	Rabbit	LD50 > 16,000 mg/kg
	Inhalation-Vapor (4 hours)	Rat	LC50 >8.2,<16.4 mg/l
	Ingestion	Rat	LD50 3,038 mg/kg
	Dermal	Rabbit	LD50 > 5,000 mg/kg

	Inhalation-Dust/Mist (4 hours)	Rat	LC50 1.4 mg/l
	Inhalation-Vapor (4 hours)	Rat	LC50 > 20 mg/l
	Ingestion	Rat	LD50 > 8,800 mg/kg
	Dermal	Not available	LD50 3,100 mg/kg
	Ingestion	Not available	LD50 3,700 mg/kg
	Dermal	Rat	LD50 > 2,000 mg/kg
	Inhalation-Dust/Mist (4 hours)	Rat	LC50 3 mg/l
	Ingestion	Rat	LD50 6,450 mg/kg
	Dermal	Guinea pig	LD50 > 18,800 mg/kg
	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 8 mg/l
	Ingestion	Rat	LD50 > 3,200 mg/kg
	Dermal	Rat	LD50 12,000 mg/kg
	Inhalation-Vapor (4 hours)	Rat	LC50 30 mg/l
	Ingestion	Rat	LD50 5,550 mg/kg
	Dermal	Rabbit	LD50 > 4,200 mg/kg
	Inhalation-Vapor (4 hours)	Rat	LC50 29 mg/l
	Ingestion	Rat	LD50 3,523 mg/kg
	Dermal		LD50 estimated to be 2,000 - 5,000 mg/kg
	Ingestion	Rat	LD50 3,129 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
	Rabbit	Minimal irritation
	Rabbit	No significant irritation
	Rabbit	Minimal irritation
	Professional judgement	No significant irritation
	Rabbit	Mild irritant
	Rabbit	Minimal irritation
	Rabbit	No significant irritation
	Rabbit	Irritant
	Rabbit	Mild irritant
	In vitro data	No significant irritation

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

Serious Eye Damage/Irritation

Name	Species	Value
	Rabbit	Severe irritant

	Rabbit	Moderate irritant
	Rabbit	Mild irritant
	Rabbit	No significant irritation
	Rabbit	Mild irritant
	Rabbit	Moderate irritant
	Rabbit	No significant irritation
	Rabbit	Moderate irritant
	Rabbit	Mild irritant
	Rabbit	Severe irritant

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

Sensitization:

Skin Sensitization

Name	Species	Value
	Human	Not classified
	Guinea pig	Not classified
	Multiple animal species	Not classified
	Human	Not classified
	Guinea pig	Not classified
	Mouse	Sensitizing

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

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
	In Vitro	Not mutagenic
	In Vitro	Not mutagenic
	In vivo	Not mutagenic
	In Vitro	Not mutagenic
	In Vitro	Not mutagenic
	In Vitro	Not mutagenic
	In Vitro	Not mutagenic
	In Vitro	Not mutagenic
	In Vitro	Not mutagenic
	In vivo	Not mutagenic
	In Vitro	Not mutagenic
	In vivo	Not mutagenic

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

Carcinogenicity

Name	Route	Species	Value
	Inhalation	Human	Not carcinogenic
	Inhalation	Multiple animal	Carcinogenic

		species	
	Inhalation	Human	Some positive data exist, but the data are not sufficient for classification
	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
	Ingestion	Rat	Some positive data exist, but the data are not sufficient for classification
	Inhalation	Mouse	Some positive data exist, but the data are not sufficient for classification
	Dermal	Rat	Not carcinogenic
	Ingestion	Multiple animal species	Not carcinogenic
	Inhalation	Human	Some positive data exist, but the data are not sufficient for classification

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

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
	Inhalation	Not classified for development	Rat	LOAEL 8.8 mg/l	during gestation
	Inhalation	Not classified for female reproduction	Multiple animal species	NOAEL 8.2 mg/l	2 generation
	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,000 mg/kg/day	13 weeks
	Inhalation	Not classified for male reproduction	Multiple animal species	NOAEL 8.2 mg/l	2 generation
	Inhalation	Not classified for development	Mouse	NOAEL 12.3 mg/l	during organogenesis
	Inhalation	Not classified for female reproduction	Rat	NOAEL 7.1 mg/l	premating & during gestation
	Inhalation	Not classified for development	Rat	NOAEL 7.1 mg/l	premating & during gestation
	Ingestion	Not classified for development	Rat	NOAEL 625 mg/kg/day	premating & during gestation
	Ingestion	Toxic to development	Rabbit	NOAEL 300 mg/kg/day	during gestation
	Inhalation	Not classified for female reproduction	Human	NOAEL Not available	occupational exposure
	Inhalation	Not classified for male reproduction	Rat	NOAEL 2.3 mg/l	1 generation
	Ingestion	Toxic to development	Rat	LOAEL 520 mg/kg/day	during gestation
	Inhalation	Toxic to development	Human	NOAEL Not available	poisoning and/or abuse
	Inhalation	Not classified for female reproduction	Human	NOAEL Not available	occupational exposure
	Ingestion	Not classified for development	Mouse	NOAEL Not available	during organogenesis
	Inhalation	Not classified for development	Multiple animal species	NOAEL Not available	during gestation
	Ingestion	Toxic to female reproduction	Rat	NOAEL 300 mg/kg/day	1 generation
	Ingestion	Toxic to male reproduction	Rat	NOAEL 300 mg/kg/day	1 generation

	Ingestion	Toxic to development	Rat	NOAEL 100 mg/kg/day	1 generation

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

Lactation

Name	Route	Species	Value
	Ingestion	Mouse	Not classified for effects on or via lactation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
	Inhalation	central nervous system depression	May cause drowsiness or dizziness	official classification	NOAEL Not available	
	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	
	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
	Ingestion	liver	Not classified	Rat	NOAEL Not available	not applicable
	Ingestion	kidney and/or bladder	Not classified	Rat	LOAEL 1,080 mg/kg	not applicable
	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human and animal	NOAEL Not available	
	Inhalation	respiratory irritation	May cause respiratory irritation	Human and animal	NOAEL Not available	
	Inhalation	blindness	Not classified		NOAEL Not available	
	Ingestion	central nervous system depression	May cause drowsiness or dizziness		NOAEL Not available	
	Inhalation	cardiac sensitization	Causes damage to organs	Human	NOAEL Not available	
	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
	Inhalation	respiratory irritation	Not classified	Human	NOAEL Not available	
	Inhalation	cardiac sensitization	Causes damage to organs	Human	NOAEL Not available	
	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human and animal	NOAEL Not available	
	Inhalation	heart	Not classified	Dog	NOAEL 5,000 ppm	25 minutes
	Inhalation	respiratory irritation	Not classified	Rabbit	NOAEL Not available	
	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	LOAEL 0.1 mg/l	2 hours
	Inhalation	respiratory irritation	May cause respiratory irritation	Human	NOAEL 0.9 mg/l	7 minutes
	Inhalation	vascular system	Not classified	Dog	NOAEL Not available	not available
	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Rat	LOAEL 900 mg/kg	not applicable
	Inhalation	respiratory system	May cause damage to organs	Rat	LOAEL 2.6 mg/l	4 hours
	Inhalation	central nervous	May cause drowsiness or	Human	NOAEL Not	not available

		system depression	dizziness		available	
	Inhalation	respiratory irritation	May cause respiratory irritation	Human	NOAEL Not available	not available
	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
	Inhalation	respiratory system	Not classified	Rat	NOAEL 0.812 mg/l	90 minutes
	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	
	Inhalation	immune system	Not classified	Mouse	NOAEL 0.004 mg/l	3 hours
	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	poisoning and/or abuse
	Inhalation	auditory system	Causes damage to organs	Rat	LOAEL 6.3 mg/l	8 hours
	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	
	Inhalation	eyes	Not classified	Rat	NOAEL 3.5 mg/l	not available
	Inhalation	liver	Not classified	Multiple animal species	NOAEL Not available	
	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Multiple animal species	NOAEL Not available	
	Ingestion	eyes	Not classified	Rat	NOAEL 250 mg/kg	not applicable
	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL not available	

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

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
	Dermal	nervous system	Not classified	Guinea pig	NOAEL Not available	31 weeks
	Inhalation	liver | kidney and/or bladder | heart | endocrine system | gastrointestinal tract | bone, teeth, nails, and/or hair | hematopoietic system | immune system | muscles	Not classified	Rat	NOAEL 14.7 mg/l	90 days
	Ingestion	liver	Not classified	Rat	NOAEL Not available	7 days
	Ingestion	nervous system	Not classified	Rat	NOAEL 173 mg/kg/day	90 days
	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.1 mg/l	28 days
	Inhalation	endocrine system | hematopoietic system | liver | immune system | kidney and/or	Not classified	Rat	NOAEL 6.1 mg/l	28 days

		bladder				
	Inhalation	kidney and/or bladder | blood	Not classified	Rat	NOAEL 4,489 ppm	90 days
	Inhalation	liver	Not classified	Rat	NOAEL 0.41 mg/l	13 weeks
	Inhalation	heart	Not classified	Multiple animal species	NOAEL 0.8 mg/l	2 weeks
	Inhalation	kidney and/or bladder	Not classified	Multiple animal species	NOAEL 0.4 mg/l	90 days
	Inhalation	respiratory system	Not classified	Multiple animal species	NOAEL 4.1 mg/l	14 weeks
	Inhalation	endocrine system | hematopoietic system	Not classified	Multiple animal species	NOAEL 0.41 mg/l	90 days
	Inhalation	nervous system	Not classified	Multiple animal species	NOAEL 0.41 mg/l	13 weeks
	Ingestion	endocrine system | hematopoietic system | liver | kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
	Ingestion	heart | immune system | muscles | nervous system | respiratory system	Not classified	Rat	NOAEL 1,040 mg/kg/day	120 days
	Inhalation	olfactory system	Not classified	Rat	NOAEL 2.4 mg/l	14 weeks
	Inhalation	liver | kidney and/or bladder	Not classified	Rabbit	NOAEL 7.26 mg/l	13 days
	Inhalation	pulmonary fibrosis | respiratory system | pneumoconiosis	Not classified	Human	NOAEL Not available	occupational exposure
	Inhalation	auditory system | eyes | olfactory system	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
	Inhalation	nervous system	May cause damage to organs though prolonged or repeated exposure	Human	NOAEL Not available	poisoning and/or abuse
	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 2.3 mg/l	15 months
	Inhalation	heart | liver | kidney and/or bladder	Not classified	Rat	NOAEL 11.3 mg/l	15 weeks
	Inhalation	endocrine system	Not classified	Rat	NOAEL 1.1 mg/l	4 weeks
	Inhalation	immune system	Not classified	Mouse	NOAEL Not available	20 days
	Inhalation	bone, teeth, nails, and/or hair	Not classified	Mouse	NOAEL 1.1 mg/l	8 weeks
	Inhalation	hematopoietic system | vascular system	Not classified	Human	NOAEL Not available	occupational exposure
	Inhalation	gastrointestinal tract	Not classified	Multiple animal species	NOAEL 11.3 mg/l	15 weeks
	Ingestion	nervous system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 625 mg/kg/day	13 weeks
	Ingestion	heart	Not classified	Rat	NOAEL 2,500 mg/kg/day	13 weeks
	Ingestion	liver | kidney and/or bladder	Not classified	Multiple animal species	NOAEL 2,500 mg/kg/day	13 weeks

	Ingestion	hematopoietic system	Not classified	Mouse	NOAEL 600 mg/kg/day	14 days
	Ingestion	endocrine system	Not classified	Mouse	NOAEL 105 mg/kg/day	28 days
	Ingestion	immune system	Not classified	Mouse	NOAEL 105 mg/kg/day	4 weeks
	Inhalation	nervous system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.4 mg/l	4 weeks
	Inhalation	auditory system	May cause damage to organs though prolonged or repeated exposure	Rat	LOAEL 7.8 mg/l	5 days
	Inhalation	liver	Not classified	Multiple animal species	NOAEL Not available	
	Inhalation	heart | endocrine system | gastrointestinal tract | hematopoietic system | muscles | kidney and/or bladder | respiratory system	Not classified	Multiple animal species	NOAEL 3.5 mg/l	13 weeks
	Ingestion	auditory system	Not classified	Rat	NOAEL 900 mg/kg/day	2 weeks
	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 1,500 mg/kg/day	90 days
	Ingestion	liver	Not classified	Multiple animal species	NOAEL Not available	
	Ingestion	heart | skin | endocrine system | bone, teeth, nails, and/or hair | hematopoietic system | immune system | nervous system | respiratory system	Not classified	Mouse	NOAEL 1,000 mg/kg/day	103 weeks

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

Aspiration Hazard

Name	Value
	Some positive data exist, but the data are not sufficient for classification
	Aspiration hazard
	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:

Not acutely toxic to aquatic life by GHS criteria.

Chronic aquatic hazard:
GHS Chronic 3: Harmful to aquatic life with long lasting effects

No product test data available

Material	Cas #	Organism	Type	Exposure	Test Endpoint	Test Result
		Activated sludge	Experimental	12 hours	IC50	1,873 mg/l
		Bacteria	Experimental	16 hours	NOEC	1,150 mg/l
		Fathead Minnow	Experimental	96 hours	LC50	2,993 mg/l
		Green algae	Experimental	96 hours	EC50	2,029 mg/l
		Water flea	Experimental	48 hours	EC50	308 mg/l
		Green Algae	Experimental	96 hours	EC10	1,289 mg/l
		Water flea	Experimental	21 days	NOEC	100 mg/l
		Bacteria	Experimental	16 hours	EC50	6,000 mg/l
		Green algae	Experimental	72 hours	EC50	>120 mg/l
		Water flea	Experimental	48 hours	EC50	1,026.7 mg/l
		Green algae	Experimental	72 hours	NOEC	120 mg/l
			Data not available or insufficient for classification			N/A
			Data not available or insufficient for classification			N/A
		Activated sludge	Experimental	30 minutes	EC50	>1,000 mg/l
		Anaerobic sludge	Experimental	24 hours	NOEC	1,200 mg/l
		Bacteria	Experimental	18 hours	EC50	959 mg/l
		Crustacea	Experimental	48 hours	LC50	32 mg/l
		Fathead Minnow	Experimental	96 hours	LC50	18 mg/l
		Fathead Minnow	Experimental	96 hours	LC50	505 mg/l
		Golden Orfe	Experimental	48 hours	LC50	>1,000 mg/l
		Green Algae	Experimental	72 hours	EC50	8 mg/l
		Green algae	Experimental	72 hours	EC50	>100 mg/l
		Green algae	Experimental	72 hours	EC50	674.7 mg/l
		Green Algae	Experimental	96 hours	EC50	400 mg/l
		Medaka	Experimental	96 hours	LC50	18 mg/l
		Rainbow Trout	Experimental	96 hours	LC50	>100 mg/l
		Water flea	Experimental	24 hours	EC50	72.8 mg/l
		Water flea	Experimental	48 hours	EC50	>100 mg/l
		Water flea	Experimental	48 hours	EC50	170 mg/l
			Data not available or insufficient for classification			N/A
		Fathead	Experimental	32 days	NOEC	57 mg/l

		Minnow				
		Green algae	Experimental	72 hours	EC10	100 mg/l
		Green Algae	Experimental	72 hours	NOEC	5.3 mg/l
		Water flea	Experimental	21 days	NOEC	0.7 mg/l
		Water flea	Experimental	21 days	NOEC	78 mg/l
		Activated sludge	Estimated	3 hours	NOEC	157 mg/l
		Activated sludge	Estimated	30 minutes	EC50	703 mg/l
		Algae or other aquatic plants	Estimated	7 days	EC50	0.14 mg/l
		Green Algae	Estimated	72 hours	EC50	0.84 mg/l
		Green Algae	Estimated	72 hours	EC50	4.36 mg/l
		Rainbow Trout	Estimated	96 hours	LC50	2.6 mg/l
		Rainbow Trout	Estimated	96 hours	LC50	8.9 mg/l
		Water flea	Estimated	48 hours	EC50	3.82 mg/l
		Water flea	Estimated	48 hours	LC50	3.5 mg/l
		Coho Salmon	Experimental	96 hours	LC50	5.5 mg/l
		Grass Shrimp	Experimental	96 hours	LC50	9.5 mg/l
		Green Algae	Experimental	72 hours	EC50	12.5 mg/l
		Leopard frog	Experimental	9 days	LC50	0.39 mg/l
		Pink Salmon	Experimental	96 hours	LC50	6.41 mg/l
		Water flea	Experimental	48 hours	EC50	3.78 mg/l
		Algae or other aquatic plants	Estimated	7 days	EC10	0.007 mg/l
		Fathead Minnow	Estimated	34 days	NOEC	1.2 mg/l
		Green Algae	Estimated	72 hours	EC10	0.135 mg/l
		Green Algae	Estimated	72 hours	NOEC	0.44 mg/l
		Water flea	Estimated	7 days	NOEC	0.96 mg/l
		Coho Salmon	Experimental	40 days	NOEC	1.39 mg/l
		Diatom	Experimental	72 hours	NOEC	10 mg/l
		Rainbow Trout	Experimental	56 days	NOEC	>1.3 mg/l
		Water flea	Experimental	7 days	NOEC	0.74 mg/l
		Activated sludge	Experimental	12 hours	IC50	292 mg/l
		Bacteria	Experimental	16 hours	NOEC	29 mg/l
		Bacteria	Experimental	24 hours	EC50	84 mg/l
		Redworm	Experimental	28 days	LC50	>150 mg per kg of bodyweight
		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
		Experimental Biodegradation	28 days	Biological Oxygen Demand	98 % BOD/ThBOD	OECD 301D - Closed Bottle Test
		Experimental Biodegradation	28 days	Biological Oxygen Demand	70 % weight	OECD 301D - Closed Bottle Test
		Experimental		Photolytic half-	12.3 days (t	Non-standard method

		Photolysis		life (in air)	1/2)	
		Experimental Photolysis		Photolytic half-life (in air)	27.5 days (t 1/2)	Non-standard method
		Experimental Photolysis		Photolytic half-life (in air)	2.28 days (t 1/2)	Non-standard method
		Data not availbl-insufficient			N/A	
		Data not availbl-insufficient			N/A	
		Data not availbl-insufficient			N/A	
		Experimental Biodegradation	28 days	Carbon dioxide evolution	70.73 % weight	OECD 301B - Mod. Sturm or CO2
		Experimental Biodegradation	14 days	Biological Oxygen Demand	84 % weight	OECD 301C - MITI (I)
		Experimental Biodegradation	28 days	Biological Oxygen Demand	98 % weight	OECD 301D - Closed Bottle Test
		Experimental Photolysis		Photolytic half-life (in air)	5.2 days (t 1/2)	
		Experimental Photolysis		Photolytic half-life (in air)	1.4 days (t 1/2)	
		Data not availbl-insufficient			N/A	
		Experimental Biodegradation	20 days	Biological Oxygen Demand	80 % BOD/ThBOD	APHA Std Meth Water/Wastewater
		Experimental Biodegradation	28 days	Biological Oxygen Demand	90-98 % BOD/ThBOD	OECD 301F - Manometric Respiro

12.3. Bioaccumulative potential

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
		Experimental Bioconcentration		Log of Octanol/H2O part. coeff	0.29	Non-standard method
		Experimental Bioconcentration		Log of Octanol/H2O part. coeff	0.18	Non-standard method
		Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.89	Non-standard method
		Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.36	Non-standard method
		Data not available or insufficient for	N/A	N/A	N/A	N/A

		classification				
		Data not available or insufficient for classification	N/A	N/A	N/A	N/A
		Estimated Bioconcentration		Bioaccumulation Factor	7.4	Est: Bioconcentration factor
		Experimental BCF-Carp	42 days	Bioaccumulation Factor	<=31 mg/l	OECD 305C-Bioaccum degree fish
		Experimental Bioconcentration		Log of Octanol/H2O part. coeff	1.31	Non-standard method
		Experimental Bioconcentration		Log of Octanol/H2O part. coeff	1.78	Non-standard method
		Estimated BCF - Fathead Minnow	63 days	Bioaccumulation Factor	190	Non-standard method
		Experimental BCF - Other	72 hours	Bioaccumulation Factor	90	
		Experimental BCF - Rainbow Trout	56 days	Bioaccumulation Factor	25.9	
		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

Material	CAS No.	Ozone Depletion Potential	Global Warming Potential
		0	

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: None assigned.
Proper Shipping Name: None assigned.
Technical Name: None assigned.
Hazard Class/Division:2.1
Subsidiary Risk: None assigned.
Packing Group: None assigned.

Limited Quantity: Yes
Marine Pollutant: None assigned.
Marine Pollutant Technical Name: None assigned.
Other Dangerous Goods Descriptions:
None assigned.

Air Transport (IATA)
Forbidden:3M packaging does not meet regulatory agency requirements

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.

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