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™ Rubber and Gasket Adhesive 4799

Product Identification Numbers
62-4799-2631-3 62-4799-2635-4 62-4799-6530-3 62-4799-7530-2 62-4799-8530-1

1.2. Recommended use and restrictions on use

Recommended use
Adhesive, Adhesive for rubber to metal.

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 Liquid: Category 2.
Serious Eye Damage/Irritation: Category 2.
Skin Corrosion/Irritation: Category 2.
Reproductive Toxicity: Category 1B.
Specific Target Organ Toxicity (repeated exposure): Category 1.
Chronic Aquatic Toxicity: Category 2.

2.2. Label elements
Signal word
Danger

Symbols

Flame | Exclamation mark | Health Hazard |

Pictograms

Hazard Statements

H225	Highly flammable liquid and vapor.
H319	Causes serious eye irritation.
H315	Causes skin irritation.
H360	May damage fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure: nervous system |
H373	May cause damage to organs through prolonged or repeated exposure: sensory organs |
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

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.
P273	Avoid release to the environment.

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.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
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

Aspiration classification does not apply due to the viscosity of the product.
May cause drowsiness or dizziness.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	C.A.S. No.	% by Wt
Petroleum Distillates	64741-84-0	50 - 70
Hexane	110-54-3	10 - 35
Heptane	142-82-5	5 - 20
2-Methylpentane	107-83-5	5 - 10
3-Methylpentane	96-14-0	5 - 10
Magnesium Resinate	68037-42-3	2 - 10
Talc	14807-96-6	5 - 10
Cyclohexane	110-82-7	< 7
Hydrocarbon Resin	68478-07-9	3 - 7
Styrene-Butadiene Polymer	9003-55-8	3 - 7
Toluene	108-88-3	3 - 7
Calcium Zinc Resinate	68334-35-0	1 - 5
Ethyl Alcohol	64-17-5	< 1
Carbon Black	1333-86-4	< 0.5
Zinc Oxide	1314-13-2	< 0.25

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

Eye Contact:
Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. 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	Condition
Aldehydes	During Combustion
Hydrocarbons	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Oxides of Zinc	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
2-Methylpentane	107-83-5	ACGIH	TWA:500 ppm;STEL:1000 ppm	
HEXANE (ISOMERS OTHER THAN N-HEXANE)	107-83-5	Malaysia OELs	TWA(8 hours):1760 mg/m3(500 ppm)	
Toluene	108-88-3	ACGIH	TWA:20 ppm	A4: Not class. as human carcin
Toluene	108-88-3	Malaysia OELs	TWA(8 hours):188 mg/m3(50 ppm)	SKIN
Hexane	110-54-3	ACGIH	TWA:50 ppm	Danger of cutaneous absorption
Hexane	110-54-3	Malaysia OELs	TWA(8 hours):176 mg/m3(50 ppm)	SKIN
Cyclohexane	110-82-7	ACGIH	TWA:100 ppm	
Cyclohexane	110-82-7	Malaysia OELs	TWA(8 hours):1030 mg/m3(300 ppm)	
Zinc Oxide	1314-13-2	ACGIH	TWA(respirable fraction):2 mg/m3;STEL(respirable fraction):10 mg/m3	
Zinc Oxide	1314-13-2	Malaysia OELs	TWA(as fume)(8 hours):5 mg/m3;TWA(as dust)(8 hours):10 mg/m3	
Carbon Black	1333-86-4	ACGIH	TWA(inhalable fraction):3 mg/m3	A3: Confirmed animal carcin.
Carbon Black	1333-86-4	Malaysia OELs	TWA(8 hours):3.5 mg/m3	
Heptane	142-82-5	ACGIH	TWA:400 ppm;STEL:500 ppm	
Heptane	142-82-5	Malaysia OELs	TWA(8 hours):1640 mg/m3(400 ppm)	
DUST, INERT OR NUISANCE	14807-96-6	Malaysia OELs	TWA (proposed)(respirable particles)(8 hours):3 mg/m3;TWA (proposed)(Inhalable particulate)(8 hours):10 mg/m3	
Talc	14807-96-6	ACGIH	TWA(respirable fraction):2 mg/m3	A4: Not class. as human carcin
Talc	14807-96-6	Malaysia OELs	TWA(respirable fraction)(8 hours):2 mg/m3	
Ethyl Alcohol	64-17-5	ACGIH	STEL:1000 ppm	A3: Confirmed animal carcin.
Ethyl Alcohol	64-17-5	Malaysia OELs	TWA(8 hours):1880 mg/m3(1000 ppm)	
3-Methylpentane	96-14-0	ACGIH	TWA:500 ppm;STEL:1000 ppm	
HEXANE (ISOMERS OTHER THAN N-HEXANE)	96-14-0	Malaysia OELs	TWA(8 hours):1760 mg/m3(500 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
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:
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: Polyvinyl Alcohol (PVA)
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

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	Black
Odor	Mild Odor
Odor threshold	*No Data Available*
pH	*No Data Available*
Melting point/Freezing point	*No Data Available*
Boiling point/Initial boiling point/Boiling range	60 ºC
Flash Point	-25.6 ºC [*Test Method:*Closed Cup]
Evaporation rate	2.5 [*Ref Std:*ETHER=1]
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	1 % volume
Flammable Limits(UEL)	7 % volume
Vapor Pressure	15,998.6 Pa [*Details:*CONDITIONS: @ 68F]
Vapor Density and/or Relative Vapor Density	3 [*Ref Std:*AIR=1]

Density	0.82 g/ml
Relative Density	0.82 [*Ref Std:*WATER=1]
Water solubility	Slight (less than 10%)
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	7,500 - 18,000 mPa-s
Volatile Organic Compounds	
Percent volatile	Approximately 65 % weight
VOC Less H2O & Exempt Solvents	<=572 g/l [*Test Method:*calculated SCAQMD rule 443.1]
Molecular weight	*No Data Available*
Solids Content	20 - 40 % weight

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**
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:
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:
Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, dryness, cracking, blistering, and pain.

Eye Contact:
Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy 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.

Prolonged or repeated exposure may cause target organ effects:
Ocular Effects: Signs/symptoms may include blurred or significantly impaired vision.

Auditory Effects: Signs/symptoms may include hearing impairment, balance dysfunction and ringing in the ears.

Peripheral Neuropathy: Signs/symptoms may include tingling or numbness of the extremities, incoordination, weakness of the hands and feet, tremors and muscle atrophy.

Olfactory Effects: Signs/symptoms may include decreased ability to detect odors and/or complete loss of smell.

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

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

Additional Information:
This product contains ethanol. Alcoholic beverages and ethanol in alcoholic beverages have been classified by the International Agency for Research on Cancer as carcinogenic to humans. There are also data associating human consumption of alcoholic beverages with developmental toxicity and liver toxicity. Exposure to ethanol during the foreseeable use of this product is not expected to cause cancer, developmental toxicity, or liver toxicity.

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

Petroleum Distillates	Dermal	Rat	LD50 > 2,800 mg/kg
Petroleum Distillates	Inhalation-Vapor (4 hours)	Rat	LC50 > 25.2 mg/l
Petroleum Distillates	Ingestion	Rat	LD50 > 5,840 mg/kg
Hexane	Dermal	Rabbit	LD50 > 2,000 mg/kg
Hexane	Inhalation-Vapor (4 hours)	Rat	LC50 170 mg/l
Hexane	Ingestion	Rat	LD50 > 28,700 mg/kg
Heptane	Dermal	Rabbit	LD50 3,000 mg/kg
Heptane	Inhalation-Vapor (4 hours)	Rat	LC50 103 mg/l
Heptane	Ingestion	Rat	LD50 > 15,000 mg/kg
2-Methylpentane	Dermal		LD50 estimated to be > 5,000 mg/kg
2-Methylpentane	Inhalation-Vapor		LC50 estimated to be > 50 mg/l
2-Methylpentane	Ingestion		LD50 estimated to be > 5,000 mg/kg
3-Methylpentane	Dermal		LD50 estimated to be > 5,000 mg/kg
3-Methylpentane	Inhalation-Vapor		LC50 estimated to be > 50 mg/l
3-Methylpentane	Ingestion		LD50 estimated to be > 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
Talc	Dermal		LD50 estimated to be > 5,000 mg/kg
Talc	Ingestion		LD50 estimated to be > 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
Hydrocarbon Resin	Dermal	Rabbit	LD50 > 3,160 mg/kg
Styrene-Butadiene Polymer	Dermal	Rabbit	LD50 > 2,000 mg/kg
Hydrocarbon Resin	Ingestion	Rat	LD50 > 5,000 mg/kg
Styrene-Butadiene Polymer	Ingestion	Rat	LD50 > 5,000 mg/kg
Magnesium Resinate	Dermal		LD50 estimated to be 2,000 - 5,000 mg/kg
Magnesium Resinate	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Ethyl Alcohol	Dermal	Rabbit	LD50 > 15,800 mg/kg
Ethyl Alcohol	Inhalation-Vapor (4 hours)	Rat	LC50 124.7 mg/l
Ethyl Alcohol	Ingestion	Rat	LD50 17,800 mg/kg
Carbon Black	Dermal	Rabbit	LD50 > 3,000 mg/kg
Carbon Black	Ingestion	Rat	LD50 > 8,000 mg/kg
Zinc Oxide	Dermal		LD50 estimated to be > 5,000 mg/kg
Zinc Oxide	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.7 mg/l
Zinc Oxide	Ingestion	Rat	LD50 > 5,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Petroleum Distillates	Rabbit	Irritant
Hexane	Human and animal	Mild irritant
Heptane	Human	Mild irritant

2-Methylpentane	Professional judgement	Mild irritant
3-Methylpentane	Professional judgement	Mild irritant
Toluene	Rabbit	Irritant
Talc	Rabbit	No significant irritation
Cyclohexane	Rabbit	Mild irritant
Hydrocarbon Resin	similar compounds	No significant irritation
Styrene-Butadiene Polymer	Professional judgement	No significant irritation
Ethyl Alcohol	Rabbit	No significant irritation
Carbon Black	Rabbit	No significant irritation
Zinc Oxide	Human and animal	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Petroleum Distillates	Rabbit	Mild irritant
Hexane	Rabbit	Mild irritant
Heptane	Professional judgement	Moderate irritant
2-Methylpentane	Professional judgement	Moderate irritant
3-Methylpentane	Professional judgement	Moderate irritant
Toluene	Rabbit	Moderate irritant
Talc	Rabbit	No significant irritation
Cyclohexane	Rabbit	Mild irritant
Hydrocarbon Resin	similar compounds	Mild irritant
Ethyl Alcohol	Rabbit	Severe irritant
Carbon Black	Rabbit	No significant irritation
Zinc Oxide	Rabbit	Mild irritant

Sensitization:

Skin Sensitization

Name	Species	Value
Petroleum Distillates	Guinea pig	Not classified
Hexane	Human	Not classified
Toluene	Guinea pig	Not classified
Ethyl Alcohol	Human	Not classified
Zinc Oxide	Guinea pig	Not classified

Respiratory Sensitization

Name	Species	Value
Talc	Human	Not classified

Germ Cell Mutagenicity

Name	Route	Value
Hexane	In Vitro	Not mutagenic
Hexane	In vivo	Not mutagenic
Heptane	In Vitro	Not mutagenic
Toluene	In Vitro	Not mutagenic
Toluene	In vivo	Not mutagenic
Talc	In Vitro	Not mutagenic
Talc	In vivo	Not mutagenic
Cyclohexane	In Vitro	Not mutagenic
Cyclohexane	In vivo	Some positive data exist, but the data are not sufficient for classification
Ethyl Alcohol	In Vitro	Some positive data exist, but the data are not sufficient for classification
Ethyl Alcohol	In vivo	Some positive data exist, but the data are not sufficient for classification
Carbon Black	In Vitro	Not mutagenic
Carbon Black	In vivo	Some positive data exist, but the data are not sufficient for classification
Zinc Oxide	In Vitro	Some positive data exist, but the data are not sufficient for classification
Zinc Oxide	In vivo	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Hexane	Dermal	Mouse	Not carcinogenic
Hexane	Inhalation	Mouse	Some positive data exist, but the data are not sufficient for classification
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
Talc	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
Ethyl Alcohol	Ingestion	Multiple animal species	Some positive data exist, but the data are not sufficient for classification
Carbon Black	Dermal	Mouse	Not carcinogenic
Carbon Black	Ingestion	Mouse	Not carcinogenic
Carbon Black	Inhalation	Rat	Carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Petroleum Distillates	Ingestion	Toxic to male reproduction	similar compounds	NOAEL not available	not available
Petroleum Distillates	Inhalation	Toxic to male reproduction	similar compounds	NOAEL not available	not available
Hexane	Ingestion	Not classified for development	Mouse	NOAEL 2,200 mg/kg/day	during organogenesis

Hexane	Inhalation	Not classified for development	Rat	NOAEL 0.7 mg/l	during gestation
Hexane	Ingestion	Toxic to male reproduction	Rat	NOAEL 1,140 mg/kg/day	90 days
Hexane	Inhalation	Toxic to male reproduction	Rat	LOAEL 3.52 mg/l	28 days
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
Talc	Ingestion	Not classified for development	Rat	NOAEL 1,600 mg/kg	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
Ethyl Alcohol	Inhalation	Not classified for development	Rat	NOAEL 38 mg/l	during gestation
Ethyl Alcohol	Ingestion	Not classified for development	Rat	NOAEL 5,200 mg/kg/day	premating & during gestation
Zinc Oxide	Ingestion	Not classified for reproduction and/or development	Multiple animal species	NOAEL 125 mg/kg/day	premating & during gestation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Petroleum Distillates	Inhalation	central nervous system depression	May cause drowsiness or dizziness	similar compounds	NOAEL not available	not available
Petroleum Distillates	Ingestion	central nervous system depression	May cause drowsiness or dizziness	similar compounds	NOAEL not availavle	not available
Hexane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	not available
Hexane	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Rabbit	NOAEL Not available	8 hours
Hexane	Inhalation	respiratory system	Not classified	Rat	NOAEL 24.6 mg/l	8 hours
Heptane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Heptane	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	
Heptane	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
2-Methylpentane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
2-Methylpentane	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification		NOAEL Not available	
2-Methylpentane	Inhalation	cardiac sensitization	Not classified	Dog	NOAEL Not available	

2-Methylpentane	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
3-Methylpentane	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
3-Methylpentane	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification		NOAEL Not available	
3-Methylpentane	Inhalation	cardiac sensitization	Not classified	Dog	NOAEL Not available	
3-Methylpentane	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
Toluene	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	poisoning and/or abuse
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	
Ethyl Alcohol	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	LOAEL 2.6 mg/l	30 minutes
Ethyl Alcohol	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	LOAEL 9.4 mg/l	not available
Ethyl Alcohol	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Multiple animal species	NOAEL not available	
Ethyl Alcohol	Ingestion	kidney and/or bladder	Not classified	Dog	NOAEL 3,000 mg/kg	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Petroleum Distillates	Inhalation	peripheral nervous system	May cause damage to organs though prolonged or repeated exposure	similar compounds	NOAEL not available	not available
Hexane	Inhalation	peripheral nervous system	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	occupational exposure
Hexane	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Mouse	LOAEL 1.76 mg/l	13 weeks
Hexane	Inhalation	liver	Not classified	Rat	NOAEL Not available	6 months
Hexane	Inhalation	kidney and/or bladder	Not classified	Rat	LOAEL 1.76 mg/l	6 months
Hexane	Inhalation	hematopoietic system	Not classified	Mouse	NOAEL 35.2 mg/l	13 weeks
Hexane	Inhalation	auditory system | immune system | eyes	Not classified	Human	NOAEL Not available	occupational exposure

Hexane	Inhalation	heart | skin | endocrine system	Not classified	Rat	NOAEL 1.76 mg/l	6 months
Hexane	Ingestion	peripheral nervous system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1,140 mg/kg/day	90 days
Hexane	Ingestion	endocrine system | hematopoietic system | liver | immune system | kidney and/or bladder	Not classified	Rat	NOAEL Not available	13 weeks
Heptane	Inhalation	liver | nervous system | kidney and/or bladder	Not classified	Rat	NOAEL 12 mg/l	26 weeks
2-Methylpentane	Inhalation	peripheral nervous system	Not classified	Rat	NOAEL 5.3 mg/l	14 weeks
2-Methylpentane	Ingestion	peripheral nervous system	Not classified	Rat	NOAEL Not available	8 weeks
2-Methylpentane	Ingestion	kidney and/or bladder	Not classified	Rat	LOAEL 2,000 mg/kg	28 days
3-Methylpentane	Inhalation	peripheral nervous system	Not classified	Rat	NOAEL 5.3 mg/l	14 weeks
3-Methylpentane	Ingestion	peripheral nervous system	Not classified	Rat	NOAEL Not available	8 weeks
3-Methylpentane	Ingestion	kidney and/or bladder	Not classified	Rat	LOAEL 2,000 mg/kg	28 days
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
Talc	Inhalation	pneumoconiosis	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	occupational exposure
Talc	Inhalation	pulmonary fibrosis | respiratory system	Not classified	Rat	NOAEL 18 mg/m3	113 weeks

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
Ethyl Alcohol	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Rabbit	LOAEL 124 mg/l	365 days
Ethyl Alcohol	Inhalation	hematopoietic system | immune system	Not classified	Rat	NOAEL 25 mg/l	14 days
Ethyl Alcohol	Ingestion	liver	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 8,000 mg/kg/day	4 months
Ethyl Alcohol	Ingestion	kidney and/or bladder	Not classified	Dog	NOAEL 3,000 mg/kg/day	7 days
Carbon Black	Inhalation	pneumoconiosis	Not classified	Human	NOAEL Not available	occupational exposure
Zinc Oxide	Ingestion	nervous system	Not classified	Rat	NOAEL 600 mg/kg/day	10 days
Zinc Oxide	Ingestion	endocrine system | hematopoietic system | kidney and/or bladder	Not classified	Other	NOAEL 500 mg/kg/day	6 months

Aspiration Hazard

Name	Value
Petroleum Distillates	Aspiration hazard
Hexane	Aspiration hazard
Heptane	Aspiration hazard
2-Methylpentane	Aspiration hazard
3-Methylpentane	Aspiration hazard
Toluene	Aspiration hazard
Cyclohexane	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:
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
Petroleum Distillates	64741-84-0	Green Algae	Estimated	72 hours	Effect Concentration 50%	30 mg/l
Petroleum Distillates	64741-84-0	Rainbow Trout	Estimated	96 hours	Lethal Level 50%	11.4 mg/l
Petroleum Distillates	64741-84-0	Water flea	Estimated	48 hours	Effect Level 50%	3 mg/l
Petroleum Distillates	64741-84-0	Green Algae	Estimated	72 hours	No obs Effect Level	3 mg/l
Petroleum Distillates	64741-84-0	Water flea	Estimated	21 days	No obs Effect Level	1 mg/l
Hexane	110-54-3	Fathead Minnow	Experimental	96 hours	Lethal Concentration 50%	2.5 mg/l
Hexane	110-54-3	Water flea	Experimental	48 hours	Lethal Concentration 50%	3.9 mg/l
Heptane	142-82-5	Water flea	Experimental	48 hours	Effect Concentration 50%	1.5 mg/l
Heptane	142-82-5	Water flea	Estimated	21 days	No obs Effect Conc	0.17 mg/l
2-Methylpentane	107-83-5		Data not available or insufficient for classification			
3-Methylpentane	96-14-0		Data not available or insufficient for classification			
Magnesium Resinate	68037-42-3		Data not available or insufficient for classification			
Talc	14807-96-6		Data not available or insufficient for classification			
Cyclohexane	110-82-7	Fathead Minnow	Experimental	96 hours	Lethal Concentration 50%	4.53 mg/l
Cyclohexane	110-82-7	Water flea	Experimental	48 hours	Effect Concentration 50%	0.9 mg/l
Hydrocarbon Resin	68478-07-9		Data not available or insufficient for classification			
Styrene-Butadiene Polymer	9003-55-8		Data not available or insufficient for classification			
Toluene	108-88-3	Coho Salmon	Experimental	96 hours	Lethal Concentration	5.5 mg/l

					50%	
Toluene	108-88-3	Fish other	Experimental	96 hours	Lethal Concentration 50%	6.41 mg/l
Toluene	108-88-3	Green Algae	Experimental	72 hours	Effect Concentration 50%	12.5 mg/l
Toluene	108-88-3	Water flea	Experimental	48 hours	Effect Concentration 50%	3.78 mg/l
Toluene	108-88-3	Coho salmon	Experimental	40 days	No obs Effect Conc	3.2 mg/l
Toluene	108-88-3	Water flea	Experimental	7 days	No obs Effect Conc	0.74 mg/l
Calcium Zinc Resinate	68334-35-0	Fathead Minnow	Estimated	96 hours	Lethal Concentration 50%	1.7 mg/l
Calcium Zinc Resinate	68334-35-0	Green Algae	Estimated	72 hours	Effect Concentration 50%	39.6 mg/l
Calcium Zinc Resinate	68334-35-0	Water flea	Estimated	48 hours	Effect Concentration 50%	1.6 mg/l
Calcium Zinc Resinate	68334-35-0	Green Algae	Estimated	72 hours	No obs Effect Conc	6.25 mg/l
Ethyl Alcohol	64-17-5	Rainbow Trout	Experimental	96 hours	Lethal Concentration 50%	42 mg/l
Ethyl Alcohol	64-17-5	Water flea	Experimental	48 hours	Lethal Concentration 50%	5,012 mg/l
Ethyl Alcohol	64-17-5	Algae other	Experimental	96 hours	No obs Effect Conc	1,580 mg/l
Ethyl Alcohol	64-17-5	Water flea	Experimental	10 days	No obs Effect Conc	9.6 mg/l
Carbon Black	1333-86-4		Data not available or insufficient for classification			
Zinc Oxide	1314-13-2	Green Algae	Estimated	72 hours	Effect Concentration 50%	0.052 mg/l
Zinc Oxide	1314-13-2	Rainbow Trout	Estimated	96 hours	Lethal Concentration 50%	0.21 mg/l
Zinc Oxide	1314-13-2	Water flea	Estimated	48 hours	Effect Concentration 50%	0.07 mg/l
Zinc Oxide	1314-13-2	Green Algae	Estimated	72 hours	No obs Effect Conc	0.006 mg/l
Zinc Oxide	1314-13-2	Water flea	Estimated	7 days	No obs Effect Conc	0.02 mg/l

12.2. Persistence and degradability

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
Petroleum Distillates	64741-84-0	Estimated Biodegradation	28 days	Biological Oxygen Demand	98 % BOD/ThBOD	OECD 301F - Manometric Respiro
Hexane	110-54-3	Experimental Photolysis		Photolytic half-life (in air)	5.4 days (t 1/2)	Other methods
Hexane	110-54-3	Experimental Bioconcentration	28 days	Biological Oxygen Demand	100 % weight	OECD 301C - MITI (I)
Heptane	142-82-5	Experimental Photolysis		Photolytic half-life (in air)	4.24 days (t 1/2)	Other methods
Heptane	142-82-5	Experimental Biodegradation	28 days	Biological Oxygen Demand	101 % BOD/ThBOD	OECD 301C - MITI (I)
2-Methylpentane	107-83-5	Experimental Photolysis		Photolytic half-life (in air)	5.4 days (t 1/2)	Other methods
2-Methylpentane	107-83-5	Experimental Biodegradation	28 days	Biological Oxygen Demand	93 % BOD/ThBOD	OECD 301C - MITI (I)
3-Methylpentane	96-14-0	Experimental Photolysis		Photolytic half-life (in air)	5.3 days (t 1/2)	Other methods
3-Methylpentane	96-14-0	Estimated Biodegradation	28 days	Biological Oxygen Demand	93 % BOD/ThBOD	OECD 301C - MITI (I)
Magnesium Resinate	68037-42-3	Data not availbl-insufficient			N/A	
Talc	14807-96-6	Data not availbl-insufficient			N/A	
Cyclohexane	110-82-7	Experimental Photolysis		Photolytic half-life (in air)	4.14 days (t 1/2)	Other methods
Cyclohexane	110-82-7	Experimental Biodegradation	28 days	Biological Oxygen Demand	77 % BOD/ThBOD	OECD 301F - Manometric Respiro
Hydrocarbon Resin	68478-07-9	Data not availbl-insufficient			N/A	
Styrene-Butadiene Polymer	9003-55-8	Data not availbl-insufficient			N/A	
Toluene	108-88-3	Experimental Photolysis		Photolytic half-life (in air)	5.2 days (t 1/2)	Other methods
Toluene	108-88-3	Experimental Biodegradation	20 days	Biological Oxygen Demand	80 % weight	
Calcium Zinc Resinate	68334-35-0	Experimental Biodegradation	28 days	Carbon dioxide evolution	80 % weight	OECD 301B - Mod. Sturm or CO2
Ethyl Alcohol	64-17-5	Experimental Biodegradation	14 days	Biological Oxygen Demand	89 % BOD/ThBOD	OECD 301C - MITI (I)
Carbon Black	1333-86-4	Data not availbl-			N/A	

		insufficient				
Zinc Oxide	1314-13-2	Data not availbl-insufficient			N/A	

12.3. Bioaccumulative potential

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
Petroleum Distillates	64741-84-0	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Hexane	110-54-3	Estimated Bioconcentration		Bioaccumulation Factor	50	Est: Bioconcentration factor
Heptane	142-82-5	Estimated Bioconcentration		Bioaccumulation Factor	105	Est: Bioconcentration factor
2-Methylpentane	107-83-5	Estimated Bioconcentration		Bioaccumulation Factor	63	Other methods
3-Methylpentane	96-14-0	Estimated Bioconcentration		Bioaccumulation Factor	150	Est: Bioconcentration factor
Magnesium Resinate	68037-42-3	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Talc	14807-96-6	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Cyclohexane	110-82-7	Experimental BCF-Carp	56 days	Bioaccumulation Factor	129	OECD 305E-Bioaccum Fl-thru fis
Hydrocarbon Resin	68478-07-9	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Styrene-Butadiene Polymer	9003-55-8	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Toluene	108-88-3	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.73	Other methods
Calcium Zinc Resinate	68334-35-0	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	1.84	Other methods
Ethyl Alcohol	64-17-5	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	-0.35	Other methods
Carbon Black	1333-86-4	Data not available or insufficient for classification	N/A	N/A	N/A	N/A

Zinc Oxide	1314-13-2	Experimental BCF-Carp	56 days	Bioaccumulation Factor	≤217	OECD 305E-Bioaccum Fl-thru fis

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:UN1133
Proper Shipping Name:ADHESIVES
Technical Name: None assigned.
Hazard Class/Division:3
Subsidiary Risk: None assigned.
Packing Group:II
Limited Quantity: Yes
Marine Pollutant: None assigned.
Marine Pollutant Technical Name: None assigned.
Other Dangerous Goods Descriptions:
None assigned.

Air Transport (IATA)

UN Number:UN1133
Proper Shipping Name:ADHESIVES
Technical Name: None assigned.
Hazard Class/Division:3
Subsidiary Risk: None assigned.
Packing Group:II
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 material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information. The components of this product are in compliance with the new substance notification requirements of CEPA. The components of this product are in compliance with the chemical notification requirements of TSCA. 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.

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