Safety Data Sheet

This Safety Data Sheet has been prepared in accordance with the SS586 Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods.

Document group:	25-7995-1	**Version number:**	2.00
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SECTION 1: Identification

1.1. Product identifier
3M™ OEM Polyurethane Glass Adhesive Sealant 590, Black

Product Identification Numbers

62-5567-3930-8	62-5567-5230-1	62-5567-5235-0	62-5567-9530-0	DE-2729-2799-2
DE-2729-2800-8	DE-2729-2801-6	DE-2729-2802-4	FI-3000-0067-1	FI-3000-0082-0
FI-3000-0083-8	FI-3000-0088-7	FI-3000-0306-3	FI-3000-0420-2	GT-5000-9023-5
XT-0007-2011-7				

1.2. Recommended use and restrictions on use

Recommended use
Fast curing adhesive for permanent bonding., Sealant.

1.3. Supplier's details
Address: 3M Technologies (S) Pte Ltd,10 Ang Mo Kio Street 65, Singapore 569059
Telephone: +65 6450 8888
Website: www.3m.com.sg

1.4. Emergency telephone number
+65 6591 6601 (8.15am - 5.00pm, Monday - Friday)

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture
This product is not classified as hazardous per GHS criteria as implemented by Singapore Standard SS586.

2.2. Label elements
SIGNAL WORD
Not applicable.

Symbols
Not applicable.

Pictograms
Not applicable.

2.3. Other hazards
Persons previously sensitised to isocyanates may develop a cross-sensitisation reaction to other isocyanates.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	CAS Nbr	% by Wt
Urethane Polymer	Trade Secret	30 - 60
Carbon black	1333-86-4	10 - 30
Plasticizer	Trade Secret	15 - 30
Kaolin, calcined	92704-41-1	7 - 13
Hydrotreated Light Petroleum Distillates	64742-47-8	< 3
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	< 1
Quartz	14808-60-7	< 1
Dibutyltin Chloride	683-18-1	< 0.1
Tributyltin Chloride	1461-22-9	< 0.0005

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

Allergic respiratory reaction (difficulty breathing, wheezing, cough, and tightness of chest). Allergic skin reaction (redness, swelling, blistering, and itching).

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

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide.	During combustion.

Carbon dioxide.	During combustion.
Hydrogen cyanide.	During combustion.
Irritant vapours or gases.	During combustion.
Oxides of nitrogen.	During combustion.

5.3. Special protective actions for fire-fighters
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
Collect as much of the spilled material as possible. Place in a container approved for transportation by appropriate authorities, but do not seal the container for 48 hours to avoid pressure build-up. Clean up residue. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid breathing dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage including any incompatibilities
Keep container tightly closed to prevent contamination with water or air. If contamination is suspected, do not reseal container. Store away from heat. Store away from amines.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits
If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

Ingredient	CAS Nbr	Agency	Limit type	Additional comments
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	ACGIH	TWA:0.005 ppm	
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	Singapore PELs	TWA(8 hours):0.051 mg/m3(0.005 ppm)	
Carbon black	1333-86-4	ACGIH	TWA(inhalable fraction):3 mg/m3	A3: Confirmed animal carcin.
Carbon black	1333-86-4	Singapore PELs	TWA(8 hours):3.5 mg/m3	
TIN, ORGANIC COMPOUNDS	1461-22-9	ACGIH	TWA(as Sn):0.1 mg/m3;STEL(as Sn):0.2 mg/m3	A4: Not class. as human carcin, SKIN
TIN, ORGANIC COMPOUNDS	1461-22-9	Singapore PELs	TWA(as Sn)(8 hours):0.1	

			mg/m3;STEL(as Sn)(15 minutes):0.2 mg/m3	
Quartz	14808-60-7	ACGIH	TWA(respirable fraction):0.025 mg/m3	A2: Suspected human carcin.
Quartz	14808-60-7	Singapore PELs	TWA(as respirable dust)(8 hours):0.1 mg/m3	
Kerosine (petroleum)	64742-47-8	ACGIH	TWA(as total hydrocarbon vapor, non-aerosol):200 mg/m3	A3: Confirmed animal carcin., SKIN
TIN, ORGANIC COMPOUNDS	683-18-1	ACGIH	TWA(as Sn):0.1 mg/m3;STEL(as Sn):0.2 mg/m3	A4: Not class. as human carcin, SKIN
TIN, ORGANIC COMPOUNDS	683-18-1	Singapore PELs	TWA(as Sn)(8 hours):0.1 mg/m3;STEL(as Sn)(15 minutes):0.2 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
Singapore PELs : Singapore. Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order
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/vapours/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

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

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.
Gloves made from the following material(s) are recommended: Neoprene.
Nitrile rubber.
Natural rubber.

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an Neoprene apron.
Apron – Nitrile

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 vapours and particulates

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

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid.
Specific Physical Form:	Paste
Color	Black
Odor	Slight Urethane
Odour threshold	*No data available.*
pH	*Not applicable.*
Melting point/Freezing point	*No data available.*
Boiling point/Initial boiling point/Boiling range	192 - 200 ºC
Flash point	No flash point
Evaporation rate	*No data available.*
Flammability (solid, gas)	Not classified
Flammable Limits(LEL)	*Not applicable.*
Flammable Limits(UEL)	*Not applicable.*
Vapor Density and/or Relative Vapor Density	*No data available.*
Density	1.2 g/cm3
Relative density	1.2 [*Ref Std:*WATER=1]
Water solubility	Negligible
Solubility- non-water	*No data available.*
Partition coefficient: n-octanol/water	*No data available.*
Autoignition temperature	> 200 ºC
Decomposition temperature	*No data available.*
Viscosity/Kinematic Viscosity	*No data available.*
Volatile organic compounds (VOC)	19 g/l [*Test Method:*tested per EPA method 24] [*Details:*EU VOC content]
VOC less H2O & exempt solvents	19 g/l [*Test Method:*tested per EPA method 24]
VOC less H2O & exempt solvents	1.6 % [*Test Method:*tested per EPA method 24]
VOC less H2O & exempt solvents	0.16 lb/gal [*Test Method:*tested per EPA method 24]
Molecular weight	*No data available.*
Solids content	> 95 %

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 polymerisation will not occur.

10.4 Conditions to avoid
Heat.

10.5 Incompatible materials

Alcohols.
Amines.
Water

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 labelling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1 Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation
Allergic respiratory reaction: Signs/symptoms may include difficulty breathing, wheezing, cough, and tightness of chest.

Skin contact
Contact with the skin during product use is not expected to result in significant irritation. Allergic skin reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

Eye contact
Contact with the eyes during product use is not expected to result in significant irritation.

Ingestion
No known health effects.

Additional information:
Persons previously sensitised to isocyanates may develop a cross-sensitisation reaction to other isocyanates.

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	Inhalation-Vapor(4 hr)		No data available; calculated ATE >50 mg/l
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Plasticizer	Dermal	Rat	LD50 > 1,000 mg/kg
Plasticizer	Ingestion	Rat	LD50 > 5,000 mg/kg
Carbon black	Dermal	Rabbit	LD50 > 3,000 mg/kg
Carbon black	Ingestion	Rat	LD50 > 8,000 mg/kg
Kaolin, calcined	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 2.07 mg/l

Kaolin, calcined	Dermal	similar compounds	LD50 > 5,000 mg/kg
Kaolin, calcined	Ingestion	similar compounds	LD50 > 5,000 mg/kg
Hydrotreated Light Petroleum Distillates	Ingestion	Rat	LD50 > 15,000 mg/kg
Hydrotreated Light Petroleum Distillates	Dermal	similar compounds	LD50 > 5,000 mg/kg
p,p-Methylenebis(phenyl Isocyanate)	Dermal	Rabbit	LD50 > 5,000 mg/kg
p,p-Methylenebis(phenyl Isocyanate)	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.368 mg/l
p,p-Methylenebis(phenyl Isocyanate)	Ingestion	Rat	LD50 31,600 mg/kg
Quartz	Dermal		LD50 estimated to be > 5,000 mg/kg
Quartz	Ingestion		LD50 estimated to be > 5,000 mg/kg
Dibutyltin Chloride	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.059 mg/l
Dibutyltin Chloride	Ingestion	Rat	LD50 219 mg/kg
Tributyltin Chloride	Dermal	Rabbit	LD50 500 mg/kg
Tributyltin Chloride	Inhalation-Dust/Mist (4 hours)	Rat	LC50 Not available.
Tributyltin Chloride	Ingestion	Rat	LD50 101 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Carbon black	Rabbit	No significant irritation
Kaolin, calcined	Rabbit	No significant irritation
Hydrotreated Light Petroleum Distillates	similar compounds	Mild irritant
p,p-Methylenebis(phenyl Isocyanate)	official classification	Irritant
Quartz	Professional judgement	No significant irritation
Dibutyltin Chloride	Multiple animal species	Corrosive
Tributyltin Chloride	Rabbit	Irritant

Serious Eye Damage/Irritation

Name	Species	Value
Carbon black	Rabbit	No significant irritation
Kaolin, calcined	Rabbit	No significant irritation
Hydrotreated Light Petroleum Distillates	similar compounds	No significant irritation
p,p-Methylenebis(phenyl Isocyanate)	official classification	Severe irritant
Dibutyltin Chloride	Rabbit	Corrosive
Tributyltin Chloride	Rabbit	Corrosive

Sensitization:

Skin Sensitisation

Name	Species	Value
Hydrotreated Light Petroleum Distillates	similar compounds	Not classified
p,p-Methylenebis(phenyl Isocyanate)	official classification	Sensitising
Dibutyltin Chloride	similar compounds	Sensitising
Tributyltin Chloride	Mouse	Sensitising

Respiratory Sensitisation

Name	Species	Value
p,p-Methylenebis(phenyl Isocyanate)	Human	Sensitising

Germ Cell Mutagenicity

Name	Route	Value
Carbon black	In Vitro	Not mutagenic
Carbon black	In vivo	Some positive data exist, but the data are not sufficient for classification
Hydrotreated Light Petroleum Distillates	In Vitro	Not mutagenic
p,p-Methylenebis(phenyl Isocyanate)	In Vitro	Some positive data exist, but the data are not sufficient for classification
Quartz	In Vitro	Some positive data exist, but the data are not sufficient for classification
Quartz	In vivo	Some positive data exist, but the data are not sufficient for classification
Dibutyltin Chloride	In Vitro	Some positive data exist, but the data are not sufficient for classification
Dibutyltin Chloride	In vivo	Mutagenic
Tributyltin Chloride	In Vitro	Not mutagenic
Tributyltin Chloride	In vivo	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Carbon black	Dermal	Mouse	Not carcinogenic
Carbon black	Ingestion	Mouse	Not carcinogenic
Carbon black	Inhalation	Rat	Carcinogenic.
p,p-Methylenebis(phenyl Isocyanate)	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
Quartz	Inhalation	Human and animal	Carcinogenic.

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
p,p-Methylenebis(phenyl Isocyanate)	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
Dibutyltin Chloride	Ingestion	Not classified for male reproduction	Rat	NOAEL 12 mg/kg/day	28 days
Dibutyltin Chloride	Ingestion	Toxic to female reproduction	Rat	NOAEL 1.7 mg/kg/day	premating into lactation
Dibutyltin Chloride	Ingestion	Toxic to development	Rat	NOAEL 1.7 mg/kg/day	premating into lactation

Tributyltin Chloride	Ingestion	Not classified for male reproduction	Rat	NOAEL 10 mg/kg/day	2 generation
Tributyltin Chloride	Ingestion	Toxic to female reproduction	Rat	NOAEL 2 mg/kg/day	2 generation
Tributyltin Chloride	Ingestion	Toxic to development	Rat	LOAEL 0.025 mg/kg/day	weeks

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Hydrotreated Light Petroleum Distillates	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	
p,p-Methylenebis(phenyl Isocyanate)	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
Dibutyltin Chloride	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL not available	
Dibutyltin Chloride	Ingestion	immune system	Causes damage to organs	Rat	LOAEL 5 mg/kg	
Tributyltin Chloride	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available.	
Tributyltin Chloride	Ingestion	immune system	Causes damage to organs	Rat	NOAEL 5 mg/kg	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Carbon black	Inhalation	pneumoconiosis	Not classified	Human	NOAEL Not available	occupational exposure
Kaolin, calcined	Inhalation	pneumoconiosis	Not classified	similar compounds	NOAEL not available	occupational exposure
Hydrotreated Light Petroleum Distillates	Inhalation	liver	Not classified	Rat	NOAEL 6 mg/l	13 weeks
Hydrotreated Light Petroleum Distillates	Inhalation	kidney and/or bladder	Not classified	Rat	LOAEL 1.5 mg/l	13 weeks
Hydrotreated Light Petroleum Distillates	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 6 mg/l	13 weeks
Hydrotreated Light Petroleum Distillates	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
Hydrotreated Light Petroleum Distillates	Ingestion	kidney and/or bladder	Not classified	Rat	LOAEL 100 mg/kg/day	13 weeks
Hydrotreated Light Petroleum Distillates	Ingestion	hematopoietic system | eyes	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
p,p-Methylenebis(phenyl Isocyanate)	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
Quartz	Inhalation	silicosis	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	occupational exposure
Dibutyltin Chloride	Ingestion	immune system	Causes damage to organs through prolonged or repeated exposure	Rat	NOAEL 0.3 mg/kg/day	28 days
Dibutyltin Chloride	Ingestion	hematopoietic system | liver | nervous system | kidney and/or bladder	Not classified	Rat	NOAEL 12 mg/kg/day	28 days
Tributyltin Chloride	Ingestion	liver | immune system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.36 mg/kg/day	28 days
Tributyltin Chloride	Ingestion	kidney and/or	Not classified	Rat	NOAEL 1.5	28 days

		bladder | hematopoietic system			mg/kg/day	

Aspiration Hazard

Name	Value
Hydrotreated Light Petroleum Distillates	Aspiration hazard

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

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

12.1. Toxicity

Acute aquatic hazard:
GHS Acute 3: Harmful to aquatic life.

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

No product test data available.

Material	CAS Nbr	Organism	Type	Exposure	Test endpoint	Test result
Urethane Polymer	Trade Secret	N/A	Data not available or insufficient for classification	N/A	N/A	NA
Carbon black	1333-86-4	Green algae	Experimental	72 hours	No tox obs at lmt of water sol	>100 mg/l
Carbon black	1333-86-4	Zebra Fish	Experimental	96 hours	No tox obs at lmt of water sol	>100 mg/l
Carbon black	1333-86-4	Green algae	Experimental	72 hours	No tox obs at lmt of water sol	100 mg/l
Carbon black	1333-86-4	Activated sludge	Experimental	3 hours	NOEC	>800 mg/l
Plasticizer	Trade Secret	Medaka	Experimental	96 hours	LC50	>100 mg/l
Plasticizer	Trade Secret	Water flea	Experimental	48 hours	No tox obs at lmt of water sol	>100 mg/l
Plasticizer	Trade Secret	Green algae	Experimental	72 hours	EC10	>=2 mg/l
Kaolin, calcined	92704-41-1	Bacteria	Estimated	16 hours	EC10	1,400 mg/l
Kaolin, calcined	92704-41-1	Green algae	Estimated	72 hours	EC50	2,500 mg/l
Kaolin, calcined	92704-41-1	Water flea	Estimated	48 hours	EC50	>100 mg/l
Kaolin, calcined	92704-41-1	Zebra Fish	Estimated	96 hours	LC50	>100 mg/l
Kaolin, calcined	92704-41-1	Green algae	Estimated	72 hours	EC10	41 mg/l
Kaolin, calcined	92704-41-1	Rainbow trout	Estimated	30 days	NOEC	100 mg/l
Hydrotreated Light Petroleum Distillates	64742-47-8	Green algae	Experimental	72 hours	EL50	>1,000 mg/l
Hydrotreated Light Petroleum Distillates	64742-47-8	Rainbow trout	Experimental	96 hours	LL50	>1,000 mg/l
Hydrotreated Light Petroleum Distillates	64742-47-8	Water flea	Experimental	48 hours	EL50	>1,000 mg/l
Hydrotreated Light Petroleum	64742-47-8	Green algae	Experimental	72 hours	NOEL	1,000 mg/l

Distillates						
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	Activated sludge	Estimated	3 hours	EC50	>100 mg/l
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	Green algae	Estimated	72 hours	EC50	>1,640 mg/l
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	Water flea	Estimated	24 hours	EC50	>1,000 mg/l
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	Zebra Fish	Estimated	96 hours	LC50	>1,000 mg/l
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	Green algae	Estimated	72 hours	NOEC	1,640 mg/l
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	Water flea	Estimated	21 days	NOEC	10 mg/l
Quartz	14808-60-7	Green algae	Estimated	72 hours	EC50	440 mg/l
Quartz	14808-60-7	Water flea	Estimated	48 hours	EC50	7,600 mg/l
Quartz	14808-60-7	Zebra Fish	Estimated	96 hours	LC50	5,000 mg/l
Quartz	14808-60-7	Green algae	Estimated	72 hours	NOEC	60 mg/l
Dibutyltin Chloride	683-18-1	Algae or other aquatic plants	Experimental	96 hours	ErC50	0.0427 mg/l
Dibutyltin Chloride	683-18-1	Water flea	Experimental	48 hours	EC50	0.843 mg/l
Dibutyltin Chloride	683-18-1	Medaka	Experimental	28 days	NOEC	1.8 mg/l
Dibutyltin Chloride	683-18-1	Water flea	Experimental	21 days	NOEC	0.0105 mg/l
Dibutyltin Chloride	683-18-1	Activated sludge	Experimental	24 hours	IC50	11.5 mg/l
Tributyltin Chloride	1461-22-9	Copepod	Estimated	48 hours	LC50	0.0012 mg/l
Tributyltin Chloride	1461-22-9	Diatom	Experimental	72 hours	ErC50	0.000987 mg/l
Tributyltin Chloride	1461-22-9	Green algae	Experimental	96 hours	ErC50	0.0124 mg/l
Tributyltin Chloride	1461-22-9	Inland Silverside	Experimental	96 hours	LC50	0.003 mg/l
Tributyltin Chloride	1461-22-9	Water flea	Experimental	48 hours	EC50	0.0098 mg/l
Tributyltin Chloride	1461-22-9	Zebra Fish	Experimental	96 hours	LC50	0.0079 mg/l
Tributyltin Chloride	1461-22-9	Green algae	Experimental	96 hours	NOEC	0.0012 mg/l
Tributyltin Chloride	1461-22-9	Rainbow trout	Experimental	110 days	NOEC	.00004 mg/l
Tributyltin Chloride	1461-22-9	Redworm	Experimental	N/A	EC50	1.3 mg/kg (Dry Weight)
Tributyltin Chloride	1461-22-9	Soil microbes	Experimental	6 hours	EC50	11 mg/l
Tributyltin Chloride	1461-22-9	Springtail	Experimental	N/A	EC50	11 mg/kg (Dry Weight)

12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Urethane Polymer	Trade Secret	Data not available-insufficient	N/A	N/A	N/A	N/A
Carbon black	1333-86-4	Data not available-insufficient	N/A	N/A	N/A	N/A
Plasticizer	Trade Secret	Estimated	28 days	BOD	51 %BOD/ThOD	

		Biodegradation				
Kaolin, calcined	92704-41-1	Data not available-insufficient	N/A	N/A	N/A	N/A
Hydrotreated Light Petroleum Distillates	64742-47-8	Estimated Biodegradation	28 days	BOD	69 %BOD/ThOD	OECD 301F - Manometric respirometry
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	Estimated Hydrolysis		Hydrolytic half-life	20 hours (t 1/2)	
Quartz	14808-60-7	Data not available-insufficient	N/A	N/A	N/A	N/A
Dibutyltin Chloride	683-18-1	Experimental Biodegradation	28 days	CO2 evolution	6 %CO2 evolution/THCO2 evolution	OECD 301B - Modified sturm or CO2
Tributyltin Chloride	1461-22-9	Experimental Biodegradation	28 days	BOD	0 %BOD/ThOD	OECD 301F - Manometric respirometry

12.3 : Bioaccumulative potential

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Urethane Polymer	Trade Secret	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Carbon black	1333-86-4	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Plasticizer	Trade Secret	Experimental BCF - Fish	36 days	Bioaccumulation factor	56-212	
Kaolin, calcined	92704-41-1	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Hydrotreated Light Petroleum Distillates	64742-47-8	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
p,p-Methylenebis(phenyl Isocyanate)	101-68-8	Experimental BCF - Fish	28 days	Bioaccumulation factor	200	OECD305-Bioconcentration
Quartz	14808-60-7	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Dibutyltin Chloride	683-18-1	Analogous Compound BCF - Fish	56 days	Bioaccumulation factor	≤110	similar to OECD 305
Dibutyltin Chloride	683-18-1	Experimental Bioconcentration		Log Kow	0.97	OECD 107 log Kow shke flsk mtd
Tributyltin Chloride	1461-22-9	Experimental BCF - Fish	10 days	Bioaccumulation factor	24000	
Tributyltin Chloride	1461-22-9	Experimental Bioconcentration		Log Kow	4.76	

12.4. Mobility in soil
Please contact manufacturer for more details

12.5 Other adverse effects
No information available.

SECTION 13: Disposal considerations

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

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate uncured product in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

SECTION 14: Transport Information

International Regulations

UN No.: Not restricted for transport.
UN Proper shipping name: Not restricted for transport.

Transportation Class (IMO): None assigned
Transportation Class (IATA): None assigned
Other Dangerous Goods Descriptions (IMO): None assigned
Other Dangerous Goods Descriptions (IATA): None assigned
Packing Group: None assigned
Marine pollutant: None assigned

SECTION 15: Regulatory information

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

Global inventory status
Contact manufacturer for more information The components of this material are in compliance with the provisions of the Korea Chemical Control Act. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of 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. This product complies with Measures on Environmental Management of New Chemical Substances. All ingredients are listed on or exempt from on China IECSC inventory. The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

This product may contain component(s) that are regulated by the following:
Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations: this product is subject to SDS, labelling, PEL and other requirements in the Act/Regulations.
Fire Safety (Petroleum and Flammable Materials) Regulations: This product is subject to the requirements in the Regulations
Environmental Protection and Management (Hazardous Substances) Regulations: This product is subject to the requirements in the Regulations

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 Singapore SDSs are available at www.3m.com.sg