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™ Marine Adhesive Sealant Fast Cure 5200, White; PN 06520 , 05220, 06534, 06535

Product Identification Numbers
60-9800-4557-3 60-9800-4558-1 60-9800-4562-3 62-5239-0330-0 62-5239-5236-4

1.2. Recommended use and restrictions on use

Recommended use
Adhesive Sealant, Sealant

For Industrial or Professional use only

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
Respiratory Sensitizer: Category 1.
Skin Sensitizer: Category 1.
Reproductive Toxicity: Category 1B.
Specific Target Organ Toxicity (repeated exposure): Category 2.
Chronic Aquatic Toxicity: Category 2.

2.2. Label elements
Signal word
Danger

Symbols
Health Hazard |Environment |

Pictograms

Hazard Statements:

H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H360	May damage fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure: respiratory system.
H411	Toxic 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.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P273	Avoid release to the environment.
P280E	Wear protective gloves.
P281	Use personal protective equipment as required.
P285	In case of inadequate ventilation wear respiratory protection.

Response:

P304 + P341	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P308 + P313	IF exposed or concerned: Get medical attention.
P333 + P313	If skin irritation or rash occurs: Get medical attention.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER or doctor.

Storage:

P405	Store locked up.

Disposal:

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

2.3. Other hazards
Although titanium dioxide is classified as a carcinogen, exposures associated with this health effect are not expected during normal, intended use of this product., Persons previously sensitized to isocyanates may develop a cross-sensitization reaction to other isocyanates.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	C.A.S. No.	% by Wt
Urethane Polymer	51447-37-1	40 - 70
Titanium Dioxide	13463-67-7	10 - 30
Zinc Oxide	1314-13-2	< 5
p,p'-Methylenebis(Phenyl Isocyanate)	101-68-8	< 5
Synthetic Amorphous Silica	112945-52-5	1 - 5
Alkyl Isocyanate Silane	85702-90-5	< 2
Alumina Trihydrate	21645-51-2	< 2
Carbitol Acetate	112-15-2	<= 2.0
Fumed Silica	7631-86-9	1 - 2
Heptane	142-82-5	< 0.5

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
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). Target organ effects following prolonged or repeated exposure. See Section 11 for additional details.

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

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
None inherent in this product.

Hazardous Decomposition or By-Products

Substance	Condition
Isocyanates	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Cyanide	During Combustion
Oxides of Nitrogen	During Combustion
Oxides of Sulfur	During Combustion
Toxic Vapor, Gas, Particulate	During Combustion

5.3. Special protective actions for fire-fighters
No special protective actions for fire-fighters are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Use personal protective equipment based on the results of an exposure assessment. Refer to Section 8 for PPE recommendations. If anticipated exposure resulting from an accidental release exceeds the protective capabilities of the PPE listed in Section 8, or are unknown, select PPE that offers an appropriate level of protection. Consider the physical and chemical hazards of the material when doing so. Examples of PPE ensembles for emergency response could include wearing bunker gear for a release of flammable material; wearing chemical protective clothing if the spilled material is a corrosive, a sensitizer, a significant dermal irritant, or can be absorbed through the skin; or donning a positive pressure supplied-air respirator for chemicals with inhalation hazards. For information regarding physical and health hazards, refer to sections 2 and 11 of the SDS. 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.

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
Pour isocyanate decontaminant solution (90% water, 8% concentrated ammonia, 2% detergent) on spill and allow to react for 10 minutes. Or pour water on spill and allow to react for more than 30 minutes. Cover with absorbent material. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a container approved for transportation by appropriate authorities, but do not seal the container for 48 hours to avoid pressure build-up. 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. 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
Keep out of reach of children. Do not handle until all safety precautions have been read and understood. 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. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before reuse. Use personal protective equipment (gloves, respirators, etc.) as required.

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 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	C.A.S. No.	Agency	Limit type	Additional Comments
p,p'-Methylenebis(Phenyl	101-68-8	ACGIH	TWA:0.005 ppm	

Isocyanate)				
p,p'-Methylenebis(Phenyl Isocyanate)	101-68-8	Malaysia OELs	TWA(8 hours):0.051 mg/m3(0.005 ppm)	
DUST, INERT OR NUISANCE	1314-13-2	Malaysia OELs	TWA (proposed)(respirable particles)(8 hours):3 mg/m3;TWA (proposed)(Inhalable particulate)(8 hours):10 mg/m3	
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	
DUST, INERT OR NUISANCE	13463-67-7	Malaysia OELs	TWA (proposed)(respirable particles)(8 hours):3 mg/m3;TWA (proposed)(Inhalable particulate)(8 hours):10 mg/m3	
Titanium Dioxide	13463-67-7	ACGIH	TWA(Respirable nanoscale particles):0.2 mg/m3;TWA(Respirable finescale particles):2.5 mg/m3	A3: Confirmed animal carcin.
Titanium Dioxide	13463-67-7	Malaysia OELs	TWA(8 hours):10 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)	
Aluminum, insoluble compounds	21645-51-2	ACGIH	TWA(respirable fraction):1 mg/m3	A4: Not class. as human carcin
DUST, INERT OR NUISANCE	21645-51-2	Malaysia OELs	TWA (proposed)(respirable particles)(8 hours):3 mg/m3;TWA (proposed)(Inhalable particulate)(8 hours):10 mg/m3	
DUST, INERT OR NUISANCE	7631-86-9	Malaysia OELs	TWA (proposed)(respirable particles)(8 hours):3 mg/m3;TWA (proposed)(Inhalable particulate)(8 hours):10 mg/m3	

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.

8.2.2. Personal protective equipment (PPE)

Eye/face protection
None required.

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

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Apron - polymer laminate

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
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
Specific Physical Form:	Paste
Color	White
Odor	Slight Urethane
Odor threshold	*No Data Available*
pH	*Not Applicable*
Melting point/Freezing point	*Not Applicable*
Boiling point/Initial boiling point/Boiling range	*Not Applicable*
Flash Point	No flash point
Evaporation rate	*No Data Available*
Flammability	Not Applicable
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Vapor Pressure	*No Data Available*
Relative Vapor Density	*No Data Available*
Density	1.3 g/ml
Relative Density	1.3 [*Ref Std:*WATER=1]
Water solubility	Nil
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*No Data Available*
Kinematic Viscosity	230,769 mm2/sec
Volatile Organic Compounds	38 g/l [*Test Method:*tested per EPA method 24] [*Details:*EU VOC content]
Percent volatile	2.83 % weight
VOC Less H2O & Exempt Solvents	38 g/l [*Test Method:*tested per EPA method 24]

Molecular weight	*No Data Available*

Particle Characteristics	*Not Applicable*

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
None known.

10.5. Incompatible materials
Amines
Alcohols
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 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:
Allergic Respiratory Reaction: Signs/symptoms may include difficulty breathing, wheezing, cough, and tightness of chest.

May cause additional health effects (see below).

Skin Contact:
Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness. 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:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May cause additional health effects (see below).

Additional Health Effects:

Prolonged or repeated exposure may cause target organ effects:
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.

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

Additional Information:
Persons previously sensitized to isocyanates may develop a cross-sensitization 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
Urethane Polymer	Dermal		LD50 estimated to be > 5,000 mg/kg
Urethane Polymer	Ingestion	Rat	LD50 > 5,000 mg/kg
Titanium Dioxide	Dermal	Rabbit	LD50 > 10,000 mg/kg
Titanium Dioxide	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 6.82 mg/l
Titanium Dioxide	Ingestion	Rat	LD50 > 10,000 mg/kg
Synthetic Amorphous Silica	Dermal	Rabbit	LD50 > 5,000 mg/kg
Synthetic Amorphous Silica	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
Synthetic Amorphous Silica	Ingestion	Rat	LD50 > 5,110 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
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
Carbitol Acetate	Dermal	Rabbit	LD50 15,000 mg/kg
Carbitol Acetate	Ingestion	Rat	LD50 11,000 mg/kg
Fumed Silica	Dermal	Rabbit	LD50 > 5,000 mg/kg
Fumed Silica	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
Fumed Silica	Ingestion	Rat	LD50 > 5,110 mg/kg
Alumina Trihydrate	Dermal		LD50 estimated to be > 5,000 mg/kg
Alumina Trihydrate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 2.3 mg/l
Alumina Trihydrate	Ingestion	Rat	LD50 > 5,000 mg/kg

Alkyl Isocyanate Silane	Dermal	Rabbit	LD50 > 2,000 mg/kg
Alkyl Isocyanate Silane	Ingestion	Rat	LD50 > 5,000 mg/kg
Heptane	Dermal	similar compounds	LD50 > 2,000 mg/kg
Heptane	Inhalation-Vapor (4 hours)	similar compounds	LC50 > 33.5 mg/l
Heptane	Ingestion	similar compounds	LD50 > 5,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Titanium Dioxide	Rabbit	No significant irritation
Synthetic Amorphous Silica	Rabbit	No significant irritation
p,p'-Methylenebis(Phenyl Isocyanate)	official classification	Irritant
Zinc Oxide	Human and animal	No significant irritation
Carbitol Acetate	Human and animal	Minimal irritation
Fumed Silica	Rabbit	No significant irritation
Alumina Trihydrate	Rabbit	No significant irritation
Alkyl Isocyanate Silane	Rabbit	Minimal irritation
Heptane	Professional judgement	Mild irritant

Serious Eye Damage/Irritation

Name	Species	Value
Titanium Dioxide	Rabbit	No significant irritation
Synthetic Amorphous Silica	Rabbit	No significant irritation
p,p'-Methylenebis(Phenyl Isocyanate)	official classification	Severe irritant
Zinc Oxide	Rabbit	Mild irritant
Carbitol Acetate	Rabbit	Severe irritant
Fumed Silica	Rabbit	No significant irritation
Alumina Trihydrate	Rabbit	No significant irritation
Alkyl Isocyanate Silane	Rabbit	No significant irritation
Heptane	similar compounds	Mild irritant

Sensitization:

Skin Sensitization

Name	Species	Value
Titanium Dioxide	Human and animal	Not classified
Synthetic Amorphous Silica	Human and animal	Not classified
p,p'-Methylenebis(Phenyl Isocyanate)	Mouse	Sensitizing

Zinc Oxide	Guinea pig	Not classified
Carbitol Acetate	Human and animal	Not classified
Fumed Silica	Human and animal	Not classified
Alumina Trihydrate	Guinea pig	Not classified
Alkyl Isocyanate Silane	Guinea pig	Sensitizing
Heptane	similar compounds	Not classified

Respiratory Sensitization

Name	Species	Value
p,p'-Methylenebis(Phenyl Isocyanate)	Human	Sensitizing
Alkyl Isocyanate Silane	official classification	Sensitizing

Germ Cell Mutagenicity

Name	Route	Value
Titanium Dioxide	In Vitro	Not mutagenic
Titanium Dioxide	In vivo	Not mutagenic
Synthetic Amorphous Silica	In Vitro	Not mutagenic
p,p'-Methylenebis(Phenyl Isocyanate)	In Vitro	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
Carbitol Acetate	In Vitro	Not mutagenic
Fumed Silica	In Vitro	Not mutagenic
Alkyl Isocyanate Silane	In Vitro	Not mutagenic
Alkyl Isocyanate Silane	In vivo	Not mutagenic
Heptane	In Vitro	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
Titanium Dioxide	Ingestion	Multiple animal species	Not carcinogenic
Titanium Dioxide	Inhalation	Rat	Carcinogenic
Synthetic Amorphous Silica	Not Specified	Mouse	Some positive data exist, but the data are not sufficient for classification
p,p'-Methylenebis(Phenyl Isocyanate)	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
Fumed Silica	Not Specified	Mouse	Some positive data exist, but the data are not sufficient for classification
Alumina Trihydrate	Not Specified	Multiple animal species	Not carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Synthetic Amorphous Silica	Ingestion	Not classified for female reproduction	Rat	NOAEL 509	1 generation

				mg/kg/day	
Synthetic Amorphous Silica	Ingestion	Not classified for male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
Synthetic Amorphous Silica	Ingestion	Not classified for development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis
p,p'-Methylenebis(Phenyl Isocyanate)	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
Zinc Oxide	Ingestion	Not classified for reproduction and/or development	Multiple animal species	NOAEL 125 mg/kg/day	premating & during gestation
Fumed Silica	Ingestion	Not classified for female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation
Fumed Silica	Ingestion	Not classified for male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
Fumed Silica	Ingestion	Not classified for development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis
Alumina Trihydrate	Ingestion	Not classified for development	Rat	NOAEL 768 mg/kg/day	during organogenesis

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
p,p'-Methylenebis(Phenyl Isocyanate)	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
Carbitol Acetate	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human and animal	NOAEL Not available	not applicable
Carbitol Acetate	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Multiple animal species	NOAEL Not available	not applicable
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	similar health hazards	NOAEL Not available	
Heptane	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Titanium Dioxide	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 0.01 mg/l	2 years
Titanium Dioxide	Inhalation	pulmonary fibrosis	Not classified	Human	NOAEL Not available	occupational exposure
Synthetic Amorphous Silica	Inhalation	respiratory system | silicosis	Not classified	Human	NOAEL Not available	occupational exposure
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
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
Carbitol Acetate	Inhalation	respiratory system | liver | immune system | kidney and/or bladder	Not classified	Rat	NOAEL 0.48 mg/l	2 weeks
Fumed Silica	Inhalation	respiratory system |	Not classified	Human	NOAEL Not	occupational

		silicosis			available	exposure
Alkyl Isocyanate Silane	Ingestion	liver | heart | endocrine system | hematopoietic system | kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Heptane	Inhalation	nervous system	Not classified	Rat	NOAEL 6.15 mg/l	30 weeks
Heptane	Inhalation	peripheral nervous system	Not classified	Rat	NOAEL 12.5 mg/l	16 weeks
Heptane	Inhalation	hematopoietic system | kidney and/or bladder	Not classified	Rat	NOAEL 12.2 mg/l	26 weeks

Aspiration Hazard

Name	Value
Heptane	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 2: Toxic to aquatic life with long lasting effects

No product test data available

Material	Cas #	Organism	Type	Exposure	Test Endpoint	Test Result
Urethane Polymer	51447-37-1	N/A	Data not available or insufficient for classification	N/A	N/A	N/A
Titanium Dioxide	13463-67-7	Activated sludge	Experimental	3 hours	NOEC	>=1,000 mg/l
Titanium Dioxide	13463-67-7	Diatom	Experimental	72 hours	EC50	>10,000 mg/l
Titanium Dioxide	13463-67-7	Fathead Minnow	Experimental	96 hours	LC50	>100 mg/l
Titanium Dioxide	13463-67-7	Water flea	Experimental	48 hours	EC50	>100 mg/l
Titanium Dioxide	13463-67-7	Diatom	Experimental	72 hours	NOEC	5,600 mg/l
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'-	101-68-8	Green algae	Estimated	72 hours	NOEC	1,640 mg/l

Methylenebis(Phenyl Isocyanate)						
p,p'-Methylenebis(Phenyl Isocyanate)	101-68-8	Water flea	Estimated	21 days	NOEC	10 mg/l
Synthetic Amorphous Silica	112945-52-5	Green algae	Analogous Compound	72 hours	ErC50	>173.1 mg/l
Synthetic Amorphous Silica	112945-52-5	Sediment organism	Analogous Compound	96 hours	EC50	8,500 mg/kg (Dry Weight)
Synthetic Amorphous Silica	112945-52-5	Water flea	Analogous Compound	24 hours	EL50	>10,000 mg/l
Synthetic Amorphous Silica	112945-52-5	Zebra Fish	Analogous Compound	96 hours	LL50	>10,000 mg/l
Synthetic Amorphous Silica	112945-52-5	Green algae	Analogous Compound	72 hours	NOEC	173.1 mg/l
Synthetic Amorphous Silica	112945-52-5	Water flea	Analogous Compound	21 days	NOEC	68 mg/l
Synthetic Amorphous Silica	112945-52-5	Activated sludge	Experimental	3 hours	EC50	>1,000 mg/l
Zinc Oxide	1314-13-2	Activated sludge	Estimated	3 hours	EC50	6.5 mg/l
Zinc Oxide	1314-13-2	Green algae	Estimated	72 hours	EC50	0.052 mg/l
Zinc Oxide	1314-13-2	Rainbow Trout	Estimated	96 hours	LC50	0.21 mg/l
Zinc Oxide	1314-13-2	Water flea	Estimated	48 hours	EC50	0.07 mg/l
Zinc Oxide	1314-13-2	Green algae	Estimated	72 hours	NOEC	0.006 mg/l
Zinc Oxide	1314-13-2	Water flea	Estimated	7 days	NOEC	0.02 mg/l
Alkyl Isocyanate Silane	85702-90-5	N/A	Data not available or insufficient for classification	N/A	N/A	N/A
Alumina Trihydrate	21645-51-2	Fish	Experimental	96 hours	No tox obs at lmt of water sol	>100 mg/l
Alumina Trihydrate	21645-51-2	Green algae	Experimental	72 hours	No tox obs at lmt of water sol	>100 mg/l
Alumina Trihydrate	21645-51-2	Water flea	Experimental	48 hours	No tox obs at lmt of water sol	>100 mg/l
Alumina Trihydrate	21645-51-2	Green algae	Experimental	72 hours	No tox obs at lmt of water sol	100 mg/l
Carbitol Acetate	112-15-2	Fathead Minnow	Experimental	96 hours	LC50	110 mg/l
Carbitol Acetate	112-15-2	Green algae	Experimental	72 hours	EC50	>100 mg/l
Carbitol Acetate	112-15-2	Water flea	Experimental	48 hours	EC50	>100 mg/l
Carbitol Acetate	112-15-2	Green algae	Experimental	72 hours	NOEC	100 mg/l
Fumed Silica	7631-86-9	N/A	Data not available or insufficient for classification	N/A	N/A	N/A
Heptane	142-82-5	Water flea	Experimental	48 hours	EC50	1.5 mg/l
Heptane	142-82-5	Water flea	Estimated	21 days	NOEC	0.17 mg/l

12.2. Persistence and degradability

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
Urethane Polymer	51447-37-1	Data not availbl-insufficient	N/A	N/A	N/A	N/A
Titanium Dioxide	13463-67-7	Data not availbl-insufficient	N/A	N/A	N/A	N/A
p,p'-Methylenebis(Phenyl Isocyanate)	101-68-8	Estimated Hydrolysis		Hydrolytic half-life	20 hours (t 1/2)	
Synthetic Amorphous Silica	112945-52-5	Data not availbl-insufficient	N/A	N/A	N/A	N/A
Zinc Oxide	1314-13-2	Data not availbl-insufficient	N/A	N/A	N/A	N/A
Alkyl Isocyanate Silane	85702-90-5	Data not availbl-insufficient	N/A	N/A	N/A	N/A

Alumina Trihydrate	21645-51-2	Data not availbl-insufficient	N/A	N/A	N/A	N/A
Carbitol Acetate	112-15-2	Experimental Biodegradation	28 days	Biological Oxygen Demand	100 %BOD/ThOD	OECD 301C - MITI (I)
Fumed Silica	7631-86-9	Data not availbl-insufficient	N/A	N/A	N/A	N/A
Heptane	142-82-5	Experimental Biodegradation	28 days	Biological Oxygen Demand	101 %BOD/ThOD	OECD 301C - MITI (I)
Heptane	142-82-5	Experimental Photolysis		Photolytic half-life (in air)	4.24 days (t 1/2)	

12.3. Bioaccumulative potential

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
Urethane Polymer	51447-37-1	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Titanium Dioxide	13463-67-7	Experimental BCF - Fish	42 days	Bioaccumulation Factor	9.6	
p,p'-Methylenebis(Phenyl Isocyanate)	101-68-8	Experimental BCF - Fish	28 days	Bioaccumulation Factor	200	OECD305-Bioconcentration
Synthetic Amorphous Silica	112945-52-5	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Zinc Oxide	1314-13-2	Experimental BCF - Fish	56 days	Bioaccumulation Factor	≤217	OECD305-Bioconcentration
Alkyl Isocyanate Silane	85702-90-5	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Alumina Trihydrate	21645-51-2	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Carbitol Acetate	112-15-2	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	0.74	
Fumed Silica	7631-86-9	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Heptane	142-82-5	Estimated Bioconcentration		Bioaccumulation Factor	105	

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:UN3077

Proper Shipping Name:ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical Name: None assigned.
Hazard Class/Division:9
Subsidiary Risk: None assigned.
Packing Group:III
Limited Quantity: None assigned.
Marine Pollutant: None assigned.
Marine Pollutant Technical Name: None assigned.
Other Dangerous Goods Descriptions:
None assigned.

Air Transport (IATA)

UN Number:UN3077
Proper Shipping Name:ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical Name: None assigned.
Hazard Class/Division:9
Subsidiary Risk: None assigned.
Packing Group:III
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 Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information. 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.

SECTION 16: Other information

DISCLAIMER: The information in this Safety Data Sheet (SDS) 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 SDS or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own evaluation to satisfy themselves as to the suitability of the product for their own intended applications. In addition, this SDS is being provided to convey health and safety information. If you are the importer of record of this product into Malaysia, you are responsible for all applicable regulatory requirements, including, but not limited to, product registrations/notifications, substance volume tracking, and potential substance registration/notification.

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