



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 Brand Adhesion Promoter C-100 (Red Label)

Product Identification Numbers

JT-1400-6984-3	JT-1400-8803-3	JT-2400-0080-5	JT-2400-1338-6	JT-2800-0934-4
JT-2800-1143-1	JT-2800-1885-7			

1.2. Recommended use and restrictions on use

Recommended use

Adhesion promoter

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.
Skin Corrosion/Irritation: Category 2.
Serious Eye Damage/Irritation: Category 2.
Respiratory Sensitizer: Category 1.
Skin Sensitizer: Category 1.
Reproductive Toxicity: Category 1B.
Reproductive Toxicity: Lactation.
Specific Target Organ Toxicity (repeated exposure): Category 1.
Aspiration Hazard: Category 1.
Acute Aquatic Toxicity: Category 1.
Chronic Aquatic Toxicity: Category 1.

2.2. Label elements

Signal word

Danger

Symbols

Flame | Health Hazard | Environment |

Pictograms



Hazard Statements:

H225	Highly flammable liquid and vapor.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
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.
H362	May cause harm to breast-fed children.
H304	May be fatal if swallowed and enters airways.
H372	Causes damage to organs through prolonged or repeated exposure: nervous system sensory organs.
H373	May cause damage to organs through prolonged or repeated exposure: respiratory system.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention:

P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P263	Avoid contact during pregnancy and while nursing.
P273	Avoid release to the environment.
P280K	Wear protective gloves and respiratory protection.
P281	Use personal protective equipment as required.
P285	In case of inadequate ventilation wear respiratory protection.

Response:

P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P304 + P341	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P331	Do NOT induce vomiting.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.

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P342 + P311

If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

P370 + P378

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

Disposal:

P501

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

2.3. Other hazards

May cause drowsiness or dizziness., 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
Ethyl Acetate	141-78-6	20 - 30
Toluene	108-88-3	20 - 30
Modified Rubber	Trade Secret	10 - 20
P,P'-Methylenebis(phenyl isocyanate)	101-68-8	< 10
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	9016-87-9	< 10
Chlorinated Alkanes	85535-85-9	1 - 10
(GAMMA-MERCAPTOPROPYL)TRIMETHOXYSILANE	4420-74-0	1 - 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:

Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. Get medical attention.

If Swallowed:

Do not induce vomiting. Get immediate 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). Aspiration pneumonitis (coughing, gasping, choking, burning of the mouth, and difficulty breathing). Central nervous system depression (headache, dizziness, drowsiness, incoordination, nausea, slurred speech, giddiness, and unconsciousness). 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

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

<u>Substance</u>	<u>Condition</u>
Isocyanates	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Chloride	During Combustion
Hydrogen Cyanide	During Combustion
Irritant Vapors or Gases	During Combustion
Oxides of Nitrogen	During Combustion
Oxides of Sulfur	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. 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 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. 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 use in a confined area with minimal air exchange. 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. Avoid contact during pregnancy/while nursing. 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. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) Keep away from reactive metals (eg. Aluminum, zinc etc.) to avoid the formation of hydrogen gas that could create an explosion hazard. 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 to prevent contamination with water or air. If contamination is suspected, do not reseal container. 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
P,P'-Methylenebis(phenyl isocyanate)	101-68-8	ACGIH	TWA:0.005 ppm	
P,P'-Methylenebis(phenyl isocyanate)	101-68-8	Malaysia OELs	TWA(8 hours):0.051 mg/m3(0.005 ppm)	
Toluene	108-88-3	ACGIH	TWA:20 ppm	A4: Not class. as human carcin, Ototoxicant
Toluene	108-88-3	Malaysia OELs	TWA(8 hours):188 mg/m3(50 ppm)	SKIN
Ethyl Acetate	141-78-6	ACGIH	TWA:400 ppm	
Ethyl Acetate	141-78-6	Malaysia OELs	TWA(8 hours):1440 mg/m3(400 ppm)	
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	9016-87-9	Manufacturer determined	TWA(inhalable fraction)(8 hours):0.05 mg/m3;CEIL(inhalable fraction):0.1 mg/m3	Dermal Sensitizer, Respiratory Sensitizer

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

Provide ventilated enclosure for curing. Curing enclosures must be exhausted to outdoors or to a suitable emission control device. 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:

Safety Glasses with side shields
Indirect Vented Goggles

Skin/hand protection

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

Gloves made from the following material(s) are recommended: Polymer laminate

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:	Viscous
Color	Amber
Odor	Solvent
Odor threshold	<i>No Data Available</i>
pH	<i>Not Applicable</i>
Melting point/Freezing point	<i>No Data Available</i>
Boiling point/Initial boiling point/Boiling range	≥ 77.2 °C [<i>Test Method: Estimated</i>]
Flash Point	2 °C [<i>Test Method: Closed Cup</i>]
Evaporation rate	2.3 [<i>Ref Std: TOLUENE=1</i>] [<i>Details: Ref Std: TOLUENE=1</i>]
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	1.2 % volume
Flammable Limits(UEL)	11.5 % volume
Vapor Pressure	11,465.7 Pa
Vapor Density and/or Relative Vapor Density	3 [<i>Ref Std: AIR=1</i>] [<i>Details: Ref Std: AIR=1</i>]
Density	1.05 g/cm ³
Relative Density	1.05 [<i>Ref Std: WATER=1</i>]
Water solubility	25 g/100 g
Solubility- non-water	<i>No Data Available</i>
Partition coefficient: n-octanol/ water	<i>No Data Available</i>
Autoignition temperature	426.7 °C
Decomposition temperature	<i>No Data Available</i>

Viscosity/Kinematic Viscosity	30 mPa-s
Volatile Organic Compounds	567 g/l [<i>Test Method</i> :calculated SCAQMD rule 443.1]
Percent volatile	60 % weight
VOC Less H2O & Exempt Solvents	567 g/l [<i>Test Method</i> :calculated SCAQMD rule 443.1]
Molecular weight	<i>No Data Available</i>

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

High shear and high temperature conditions

Sparks and/or flames

High shear and high temperature conditions

10.5. Incompatible materials

Finely divided active metals

Reactive metals

Strong oxidizing agents

Water

Finely divided active metals

Reactive metals

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:

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

and throat pain.

Allergic Respiratory Reaction: Signs/symptoms may include difficulty breathing, wheezing, cough, and tightness of chest.

May cause additional health effects (see below).

Skin Contact:

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

Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

Eye Contact:

Severe Eye Irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

Ingestion:

Chemical (Aspiration) Pneumonitis: Signs/symptoms may include coughing, gasping, choking, burning of the mouth, difficulty breathing, bluish colored skin (cyanosis), and may be fatal.

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.

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.

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. Contains a chemical or chemicals which may interfere with lactation or be harmful to breastfed children.

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	Dermal		No data available; calculated ATE >5,000 mg/kg
Overall product	Inhalation-		No data available; calculated ATE >50 mg/l

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	Vapor(4 hr)		
Overall product	Ingestion		No data available; calculated ATE >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
Ethyl Acetate	Dermal	Rabbit	LD50 > 18,000 mg/kg
Ethyl Acetate	Inhalation-Vapor (4 hours)	Rat	LC50 70.5 mg/l
Ethyl Acetate	Ingestion	Rat	LD50 5,620 mg/kg
P,P'-Methylenebis(phenyl isocyanate)	Dermal	Rabbit	LD50 > 5,000 mg/kg
POLYMETHYLENE POLYPHENYLENE 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
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.368 mg/l
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	Ingestion	Rat	LD50 31,600 mg/kg
Chlorinated Alkanes	Ingestion	Rat	LD50 > 4,000 mg/kg
Chlorinated Alkanes	Dermal	similar compounds	LD50 > 2,800 mg/kg
Chlorinated Alkanes	Inhalation-Vapor (4 hours)	similar compounds	LC50 > 24.1 mg/l
(GAMMA-MERCAPTOPROPYL)TRIMETHOXYSILANE	Dermal	Rabbit	LD50 2,270 mg/kg
(GAMMA-MERCAPTOPROPYL)TRIMETHOXYSILANE	Ingestion	Rat	LD50 770 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Toluene	Rabbit	Irritant
Ethyl Acetate	Rabbit	Minimal irritation
P,P'-Methylenebis(phenyl isocyanate)	official classification	Irritant
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	official classification	Irritant
Chlorinated Alkanes	Rabbit	Mild irritant
(GAMMA-MERCAPTOPROPYL)TRIMETHOXYSILANE	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Toluene	Rabbit	Moderate irritant
Ethyl Acetate	Rabbit	Mild irritant
P,P'-Methylenebis(phenyl isocyanate)	official classification	Severe irritant
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	official classification	Severe irritant
Chlorinated Alkanes	Rabbit	Mild irritant
(GAMMA-MERCAPTOPROPYL)TRIMETHOXYSILANE	Rabbit	No significant irritation

Sensitization:**Skin Sensitization**

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Name	Species	Value
Toluene	Guinea pig	Not classified
Ethyl Acetate	Guinea pig	Not classified
P,P'-Methylenebis(phenyl isocyanate)	official classification	Sensitizing
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	official classification	Sensitizing
Chlorinated Alkanes	Guinea pig	Not classified
(GAMMA-MERCAPTOPROPYL)TRIMETHOXSILANE	Guinea pig	Sensitizing

Respiratory Sensitization

Name	Species	Value
P,P'-Methylenebis(phenyl isocyanate)	Human	Sensitizing
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	Human	Sensitizing

Germ Cell Mutagenicity

Name	Route	Value
Toluene	In Vitro	Not mutagenic
Toluene	In vivo	Not mutagenic
Ethyl Acetate	In Vitro	Not mutagenic
Ethyl Acetate	In vivo	Not mutagenic
P,P'-Methylenebis(phenyl isocyanate)	In Vitro	Some positive data exist, but the data are not sufficient for classification
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	In Vitro	Some positive data exist, but the data are not sufficient for classification
Chlorinated Alkanes	In Vitro	Not mutagenic
Chlorinated Alkanes	In vivo	Not mutagenic
(GAMMA-MERCAPTOPROPYL)TRIMETHOXSILANE	In Vitro	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
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
P,P'-Methylenebis(phenyl isocyanate)	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity**Reproductive and/or Developmental Effects**

Name	Route	Value	Species	Test Result	Exposure Duration
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	poisoning

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P,P'-Methylenebis(phenyl isocyanate)	Inhalation	Not classified for development	Rat	available NOAEL 0.004 mg/l	and/or abuse during organogenesis
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
Chlorinated Alkanes	Ingestion	Not classified for female reproduction	Rat	NOAEL 99 mg/kg/day	premating into lactation
Chlorinated Alkanes	Ingestion	Not classified for male reproduction	Rat	NOAEL 84 mg/kg/day	9 weeks
Chlorinated Alkanes	Ingestion	Not classified for development	Rat	NOAEL 5,000 mg/kg/day	during gestation

Lactation

Name	Route	Species	Value
Chlorinated Alkanes	Ingestion	Rat	Causes effects on or via lactation

Target Organ(s)
Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
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
Ethyl Acetate	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Ethyl Acetate	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	
Ethyl Acetate	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
P,P'-Methylenebis(phenyl isocyanate)	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
Chlorinated Alkanes	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Toluene	Inhalation	auditory system nervous system eyes olfactory system	Causes damage to organs through 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

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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
Ethyl Acetate	Inhalation	endocrine system liver nervous system	Not classified	Rat	NOAEL 0.043 mg/l	90 days
Ethyl Acetate	Inhalation	hematopoietic system	Not classified	Rabbit	LOAEL 16 mg/l	40 days
Ethyl Acetate	Ingestion	hematopoietic system liver kidney and/or bladder	Not classified	Rat	NOAEL 3,600 mg/kg/day	90 days
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
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
Chlorinated Alkanes	Ingestion	endocrine system liver kidney and/or bladder hematopoietic system immune system eyes	Not classified	Rat	NOAEL 625 mg/kg/day	13 weeks

Aspiration Hazard

Name	Value
Toluene	Aspiration hazard

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

SECTION 12: Ecological information

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

12.1. Toxicity**Acute aquatic hazard:**

GHS Acute 1: Very toxic to aquatic life.

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Chronic aquatic hazard:

GHS Chronic 1: Very toxic to aquatic life with long lasting effects.

No product test data available

Material	Cas #	Organism	Type	Exposure	Test Endpoint	Test Result
Ethyl Acetate	141-78-6	Bacteria	Experimental	18 hours	EC10	2,900 mg/l
Ethyl Acetate	141-78-6	Fish	Experimental	96 hours	LC50	212.5 mg/l
Ethyl Acetate	141-78-6	Invertebrate	Experimental	48 hours	EC50	165 mg/l
Ethyl Acetate	141-78-6	Green algae	Experimental	72 hours	NOEC	>100 mg/l
Ethyl Acetate	141-78-6	Water flea	Experimental	21 days	NOEC	2.4 mg/l
Toluene	108-88-3	Coho Salmon	Experimental	96 hours	LC50	5.5 mg/l
Toluene	108-88-3	Grass Shrimp	Experimental	96 hours	LC50	9.5 mg/l
Toluene	108-88-3	Green algae	Experimental	72 hours	EC50	12.5 mg/l
Toluene	108-88-3	Leopard frog	Experimental	9 days	LC50	0.39 mg/l
Toluene	108-88-3	Pink Salmon	Experimental	96 hours	LC50	6.41 mg/l
Toluene	108-88-3	Water flea	Experimental	48 hours	EC50	3.78 mg/l
Toluene	108-88-3	Coho Salmon	Experimental	40 days	NOEC	1.39 mg/l
Toluene	108-88-3	Diatom	Experimental	72 hours	NOEC	10 mg/l
Toluene	108-88-3	Water flea	Experimental	7 days	NOEC	0.74 mg/l
Toluene	108-88-3	Activated sludge	Experimental	12 hours	IC50	292 mg/l
Toluene	108-88-3	Bacteria	Experimental	16 hours	NOEC	29 mg/l
Toluene	108-88-3	Bacteria	Experimental	24 hours	EC50	84 mg/l
Toluene	108-88-3	Redworm	Experimental	28 days	LC50	>150 mg per kg of bodyweight
Toluene	108-88-3	Soil microbes	Experimental	28 days	NOEC	<26 mg/kg (Dry Weight)
Chlorinated Alkanes	85535-85-9	Green algae	Endpoint not reached	72 hours	ErC50	>100 mg/l
Chlorinated Alkanes	85535-85-9	Bleak	Experimental	96 hours	No tox obs at lmt of water sol	>100 mg/l
Chlorinated Alkanes	85535-85-9	Water flea	Experimental	48 hours	EC50	0.006 mg/l
Chlorinated Alkanes	85535-85-9	Blackworm	Experimental	28 days	NOEC	130 mg/kg (Dry Weight)
Chlorinated Alkanes	85535-85-9	Green algae	Experimental	72 hours	NOEC	0.049 mg/l
Chlorinated Alkanes	85535-85-9	Rainbow Trout	Experimental	60 days	No tox obs at lmt of water sol	>100 mg/l
Chlorinated Alkanes	85535-85-9	Water flea	Experimental	21 days	NOEC	0.01 mg/l
Chlorinated Alkanes	85535-85-9	Mallard Duck	Analogous Compound	154 days	NOEC	166 ppm diet
Chlorinated Alkanes	85535-85-9	Activated sludge	Experimental	3 hours	EC50	>2,000 mg/l
Chlorinated Alkanes	85535-85-9	Mallard Duck	Experimental	5 days	NOEC	>24,603 ppm diet
Chlorinated Alkanes	85535-85-9	Mung Bean	Experimental	28 days	NOEC	5,000 mg/kg (Dry Weight)
Chlorinated Alkanes	85535-85-9	Redworm	Experimental	56 days	NOEC	280 mg/kg (Dry Weight)
Chlorinated Alkanes	85535-85-9	Soil microbes	Experimental	28 days	EC50	>400 mg/kg (Dry Weight)
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

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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
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	9016-87-9	Green algae	Analogous Compound	72 hours	No tox obs at lmt of water sol	>100 mg/l
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	9016-87-9	Water flea	Analogous Compound	24 hours	No tox obs at lmt of water sol	>100 mg/l
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	9016-87-9	Green algae	Analogous Compound	72 hours	No tox obs at lmt of water sol	>100 mg/l
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	9016-87-9	Activated sludge	Analogous Compound	3 hours	EC50	>100 mg/l
(GAMMA-MERCAPTOPYL)TRIMETHOXY SILANE	4420-74-0	Green algae	Experimental	72 hours	EC50	267 mg/l
(GAMMA-MERCAPTOPYL)TRIMETHOXY SILANE	4420-74-0	Water flea	Experimental	48 hours	EC50	6.7 mg/l
(GAMMA-MERCAPTOPYL)TRIMETHOXY SILANE	4420-74-0	Zebra Fish	Experimental	96 hours	LC50	439 mg/l

12.2. Persistence and degradability

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
Ethyl Acetate	141-78-6	Experimental Biodegradation	14 days	Biological Oxygen Demand	94 %BOD/ThOD	OECD 301C - MITI (I)
Ethyl Acetate	141-78-6	Experimental Photolysis		Photolytic half-life (in air)	20.0 days (t 1/2)	
Toluene	108-88-3	Experimental Biodegradation	20 days	Biological Oxygen Demand	80 %BOD/ThOD	APHA Std Meth Water/Wastewater
Toluene	108-88-3	Experimental Photolysis		Photolytic half-life (in air)	5.2 days (t 1/2)	
Chlorinated Alkanes	85535-85-9	Experimental Aquatic Inherent Biodegrad.	25 days	Biological Oxygen Demand	22 %BOD/ThOD	
Chlorinated Alkanes	85535-85-9	Experimental Biodegradation	28 days	Biological Oxygen Demand	≤64 %BOD/ThOD	similar to OECD 301D
P,P'-Methylenebis(phenyl isocyanate)	101-68-8	Estimated Hydrolysis		Hydrolytic half-life	20 hours (t 1/2)	
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	9016-87-9	Analogous Compound Aquatic Inherent Biodegrad.	28 days	Biological Oxygen Demand	0 %BOD/ThOD	OECD 302C - Modified MITI (II)
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	9016-87-9	Analogous Compound Hydrolysis		Hydrolytic half-life	20 hours (t 1/2)	
(GAMMA-	4420-74-0	Estimated		Hydrolytic half-life	53.3 minutes (t 1/2)	

3M Brand Adhesion Promoter C-100 (Red Label)

MERCAPTOPROPYL)TRIMETHOXY SILANE		Hydrolysis				
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12.3. Bioaccumulative potential

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
Ethyl Acetate	141-78-6	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	0.68	
Toluene	108-88-3	Experimental BCF - Other	72 hours	Bioaccumulation Factor	90	
Toluene	108-88-3	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.73	
Chlorinated Alkanes	85535-85-9	Experimental BCF - Fish	35 days	Bioaccumulation Factor	1087	OECD305-Bioconcentration
Chlorinated Alkanes	85535-85-9	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	7	
P,P'-Methylenebis(phenyl isocyanate)	101-68-8	Experimental BCF - Fish	28 days	Bioaccumulation Factor	200	OECD305-Bioconcentration
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	9016-87-9	Analogous Compound BCF - Fish	28 days	Bioaccumulation Factor	200	OECD305-Bioconcentration
POLYMETHYLENE POLYPHENYLENE ISOCYANATE	9016-87-9	Analogous Compound Bioconcentration		Log of Octanol/H2O part. coeff	4.51	
(GAMMA-MERCAPTOPROPYL)TRIMETHOXY SILANE	4420-74-0	Estimated Bioconcentration		Log of Octanol/H2O part. coeff	0.25	

12.4. Mobility in soil

Please contact manufacturer for more details

12.5 Other adverse effects

Material	CAS No.	Ozone Depletion Potential	Global Warming Potential
(gamma-mercaptopropyl)trimethoxysilane	4420-74-0	0	

SECTION 13: Disposal considerations**13.1. Disposal methods**

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

SECTION 14: Transport Information**Marine Transport (IMDG)**

UN Number:UN1866

Proper Shipping Name:RESIN SOLUTION

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.

Air Transport (IATA)

UN Number:UN1866

Proper Shipping Name:RESIN SOLUTION

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 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 material are in compliance with the provisions of Japan Chemical Substance Control Law. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Japan Industrial Safety and Health Law. Certain restrictions may apply. Contact the selling division for additional 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. 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.

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