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(TM) Scotch-Weld(TM) Urethane Adhesive DP604NS Black and Urethane Adhesive 604NS Black, Part A

Product Identification Numbers
62-2748-8530-0 62-2748-9531-7

1.2. Recommended use and restrictions on use

Recommended use
Structural adhesive

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
Skin Corrosion/Irritation: Category 2.
Serious Eye Damage/Irritation: Category 2.
Respiratory Sensitizer: Category 1.
Skin Sensitizer: Category 1.
Specific Target Organ Toxicity (repeated exposure): Category 2.
Specific Target Organ Toxicity (single exposure): Category 3.

2.2. Label elements
Signal word
Danger

Symbols
Exclamation mark |Health Hazard |

Pictograms

Hazard Statements:

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.
H335	May cause respiratory irritation.
H373	May cause damage to organs through prolonged or repeated exposure: respiratory system.

Precautionary statements

Prevention:

P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P280E	Wear protective gloves.
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.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

2.3. Other hazards
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
polyurethane prepolymer	67837-35-8	40 - 70
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	15 - 40
1,1'-diphenylmethane diisocyanate polymer	39310-05-9	1 - 5
1,1'-methylenebis(isocyanatobenzene)	26447-40-5	1 - 5
4,4'-diphenylmethane diisocyanate	101-68-8	1 - 5*
carbon black	1333-86-4	0.05 - 0.5

*These components are contained as a part of 1,1'-methylenebis(isocyanatobenzene)(26447-40-5)

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

4.2. Most important symptoms and effects, both acute and delayed

Irritating to the respiratory tract (coughing, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain). 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
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
Aldehydes	During Combustion
Isocyanates	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Cyanide	During Combustion
Oxides of Nitrogen	During Combustion
Toxic Vapor, Gas, Particulate	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. 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. 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
For industrial/occupational use only. Not for consumer sale or use. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. 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
Store in a well-ventilated place. Keep container tightly closed to prevent contamination with water or air. If contamination is suspected, do not reseal container. Store away from acids. Store away from strong bases.

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
4,4'-diphenylmethane diisocyanate	101-68-8	ACGIH	TWA:0.005 ppm	
4,4'-diphenylmethane diisocyanate	101-68-8	Malaysia OELs	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	Malaysia OELs	TWA(8 hours):3.5 mg/m3	
DUST, INERT OR NUISANCE	1333-86-4	Malaysia OELs	TWA (proposed)(respirable particles)(8 hours):3 mg/m3;TWA (proposed)(Inhalable particulate)(8 hours):10 mg/m3	
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	ACGIH	TWA:0.005 ppm	
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	Malaysia OELs	TWA(8 hours):0.054 mg/m3(0.005 ppm)	

ACGIH : American Conference of Governmental Industrial Hygienists
CMRG : Chemical Manufacturer's Recommended Guidelines
Malaysia OELs : Malaysia. Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

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.
Gloves made from the following material(s) are recommended: Butyl Rubber
Fluoroelastomer
Nitrile Rubber

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 liquid
Color	Black
Odor	Low Odor
Odor threshold	*No Data Available*
pH	*Not Applicable*
Melting point/Freezing point	*No Data Available*
Boiling point/Initial boiling point/Boiling range	>=204.4 ºC
Flash Point	>=143.3 ºC [*Test Method:*Tagliabue Closed Cup]
Evaporation rate	<=1 [*Details:*Gels with exposure to humidity.]
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	*No Data Available*
Flammable Limits(UEL)	*No Data Available*
Vapor Pressure	<=0 Pa [@ 20 ºC]
Vapor Density and/or Relative Vapor Density	>=1 [*Ref Std:*AIR=1]
Density	1.056 g/ml [*Ref Std:*WATER=1]

Relative Density	1.056 [*Ref Std:*WATER=1]
Water solubility	Negligible
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*No Data Available*
Viscosity/Kinematic Viscosity	1,500 - 2,400 mPa-s [@ 20 ºC] [*Test Method:*Brookfield]
Volatile Organic Compounds	*No Data Available*
Percent volatile	*No Data Available*
VOC Less H2O & Exempt Solvents	0.5 g/l [*Test Method:*calculated SCAQMD rule 443.1] [*Details:*when used as intended with Part B]
VOC Less H2O & Exempt Solvents	1 g/l [*Test Method:*calculated SCAQMD rule 443.1] [*Details:*as supplied]
VOC Less H2O & Exempt Solvents	0.05 % [*Test Method:*calculated SCAQMD rule 443.1] [*Details:*when used as intended with Part B]
Molecular weight	*No Data Available*

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 is generated during cure. Do not cure a mass larger than 50 grams in a confined space to prevent a premature exothermic reaction with production of intense heat and smoke.

10.5. Incompatible materials
Water
Strong acids
Strong bases
Reaction with water, alcohols, and amines is not hazardous if container can vent to the atmosphere to prevent pressure buildup.

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:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

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.

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
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Dermal	Rat	LD50 > 7,000 mg/kg
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.33 mg/l
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Ingestion	Rat	LD50 18,200 mg/kg
1,1'-methylenebis(isocyanatobenzene)	Dermal	Rabbit	LD50 > 5,000 mg/kg
1,1'-methylenebis(isocyanatobenzene)	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.368 mg/l
1,1'-methylenebis(isocyanatobenzene)	Ingestion	Rat	LD50 31,600 mg/kg
4,4'-diphenylmethane diisocyanate	Dermal	Rabbit	LD50 > 5,000 mg/kg
4,4'-diphenylmethane diisocyanate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.368 mg/l
4,4'-diphenylmethane diisocyanate	Ingestion	Rat	LD50 31,600 mg/kg
1,1'-diphenylmethane diisocyanate polymer	Dermal	Rabbit	LD50 > 5,000 mg/kg
1,1'-diphenylmethane diisocyanate polymer	Inhalation-	Rat	LC50 0.368 mg/l

	Dust/Mist (4 hours)		
1,1'-diphenylmethane diisocyanate polymer	Ingestion	Rat	LD50 31,600 mg/kg
carbon black	Dermal	Rabbit	LD50 > 3,000 mg/kg
carbon black	Ingestion	Rat	LD50 > 8,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Rabbit	Irritant
1,1'-methylenebis(isocyanatobenzene)	official classification	Irritant
4,4'-diphenylmethane diisocyanate	official classification	Irritant
1,1'-diphenylmethane diisocyanate polymer	official classification	Irritant
carbon black	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Rabbit	Mild irritant
1,1'-methylenebis(isocyanatobenzene)	official classification	Severe irritant
4,4'-diphenylmethane diisocyanate	official classification	Severe irritant
1,1'-diphenylmethane diisocyanate polymer	official classification	Severe irritant
carbon black	Rabbit	No significant irritation

Sensitization:

Skin Sensitization

Name	Species	Value
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Human and animal	Sensitizing
1,1'-methylenebis(isocyanatobenzene)	official classification	Sensitizing
4,4'-diphenylmethane diisocyanate	official classification	Sensitizing
1,1'-diphenylmethane diisocyanate polymer	official classification	Sensitizing

Respiratory Sensitization

Name	Species	Value
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Professional judgement	Sensitizing
1,1'-methylenebis(isocyanatobenzene)	Human	Sensitizing

4,4'-diphenylmethane diisocyanate	Human	Sensitizing
1,1'-diphenylmethane diisocyanate polymer	Human	Sensitizing

Germ Cell Mutagenicity

Name	Route	Value
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	In Vitro	Not mutagenic
1,1'-methylenebis(isocyanatobenzene)	In Vitro	Some positive data exist, but the data are not sufficient for classification
4,4'-diphenylmethane diisocyanate	In Vitro	Some positive data exist, but the data are not sufficient for classification
1,1'-diphenylmethane diisocyanate polymer	In Vitro	Some positive data exist, but the data are not sufficient for classification
carbon black	In Vitro	Not mutagenic
carbon black	In vivo	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
1,1'-methylenebis(isocyanatobenzene)	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
4,4'-diphenylmethane diisocyanate	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
1,1'-diphenylmethane diisocyanate polymer	Inhalation	Rat	Some positive data exist, but the data are not sufficient for classification
carbon black	Dermal	Mouse	Not carcinogenic
carbon black	Ingestion	Mouse	Not carcinogenic
carbon black	Inhalation	Rat	Carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	Not classified for female reproduction	Rat	NOAEL 6 mg/m3	premating into lactation
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	Not classified for male reproduction	Rat	NOAEL 6 mg/m3	28 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	Not classified for development	Rat	NOAEL 6 mg/m3	during gestation
1,1'-methylenebis(isocyanatobenzene)	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
4,4'-diphenylmethane diisocyanate	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis
1,1'-diphenylmethane diisocyanate polymer	Inhalation	Not classified for development	Rat	NOAEL 0.004 mg/l	during organogenesis

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	respiratory irritation	May cause respiratory irritation	Rat	NOAEL not available	
1,1'-methylenebis(isocyanatobenzene)	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
4,4'-diphenylmethane diisocyanate	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
1,1'-diphenylmethane diisocyanate polymer	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	respiratory system	Not classified	Rat	NOAEL 3 mg/m3	90 days
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	Inhalation	heart | skin | endocrine system | gastrointestinal tract | bone, teeth, nails, and/or hair | hematopoietic system | liver | immune system | muscles | nervous system | eyes | kidney and/or bladder | vascular system	Not classified	Rat	NOAEL 18 mg/m3	90 days
1,1'-methylenebis(isocyanatobenzene)	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
4,4'-diphenylmethane diisocyanate	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
1,1'-diphenylmethane diisocyanate polymer	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	LOAEL 0.004 mg/l	13 weeks
carbon black	Inhalation	pneumoconiosis	Not classified	Human	NOAEL Not available	occupational exposure

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

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:
Not chronically toxic to aquatic life by GHS criteria.

No product test data available

Material	Cas #	Organism	Type	Exposure	Test Endpoint	Test Result
polyurethane prepolymer	67837-35-8	N/A	Data not available or insufficient for classification	N/A	N/A	N/A
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	Water flea	Estimated	48 hours	EC50	7.07 mg/l

dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	Activated sludge	Experimental	3 hours	EC50	19 mg/l
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	Green algae	Experimental	72 hours	EC50	>5 mg/l
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	Zebra Fish	Experimental	96 hours	LC50	1.2 mg/l
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	Green algae	Experimental	72 hours	EC10	1.2 mg/l
1,1'-diphenylmethane diisocyanate polymer	39310-05-9	Green algae	Analogous Compound	72 hours	EC50	>1,640 mg/l
1,1'-diphenylmethane diisocyanate polymer	39310-05-9	Water flea	Analogous Compound	24 hours	EC50	>1,000 mg/l
1,1'-diphenylmethane diisocyanate polymer	39310-05-9	Zebra Fish	Analogous Compound	96 hours	LC50	>1,000 mg/l
1,1'-diphenylmethane diisocyanate polymer	39310-05-9	Green algae	Analogous Compound	72 hours	NOEL	1,640 mg/l
1,1'-diphenylmethane diisocyanate polymer	39310-05-9	Water flea	Analogous Compound	21 days	NOEC	10 mg/l
1,1'-methylenebis(isocyanatobenzene)	26447-40-5	Green algae	Estimated	72 hours	EC50	>1,640 mg/l
1,1'-methylenebis(isocyanatobenzene)	26447-40-5	Water flea	Estimated	24 hours	EC50	>1,000 mg/l
1,1'-methylenebis(isocyanatobenzene)	26447-40-5	Zebra Fish	Estimated	96 hours	LC50	>1,000 mg/l
1,1'-methylenebis(isocyanatobenzene)	26447-40-5	Green algae	Estimated	72 hours	NOEL	1,640 mg/l
1,1'-methylenebis(isocyanatobenzene)	26447-40-5	Water flea	Estimated	21 days	NOEC	10 mg/l
4,4'-diphenylmethane diisocyanate	101-68-8	Activated sludge	Estimated	3 hours	EC50	>100 mg/l
4,4'-diphenylmethane diisocyanate	101-68-8	Green algae	Estimated	72 hours	EC50	>1,640 mg/l
4,4'-diphenylmethane diisocyanate	101-68-8	Water flea	Estimated	24 hours	EC50	>1,000 mg/l
4,4'-diphenylmethane diisocyanate	101-68-8	Zebra Fish	Estimated	96 hours	LC50	>1,000 mg/l
4,4'-diphenylmethane diisocyanate	101-68-8	Green algae	Estimated	72 hours	NOEC	1,640 mg/l
4,4'-diphenylmethane	101-68-8	Water flea	Estimated	21 days	NOEC	10 mg/l

diisocyanate						
carbon black	1333-86-4	Activated sludge	Experimental	3 hours	EC50	>=100 mg/l
carbon black	1333-86-4	N/A	Data not available or insufficient for classification	N/A	N/A	N/A

12.2. Persistence and degradability

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
polyurethane prepolymer	67837-35-8	Data not availbl-insufficient	N/A	N/A	N/A	N/A
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	Experimental Biodegradation	28 days	Biological Oxygen Demand	0 %BOD/ThOD	OECD 301F - Manometric Respiro
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	Experimental Hydrolysis		Hydrolytic half-life	1.97 hours (t 1/2)	
1,1'-diphenylmethane diisocyanate polymer	39310-05-9	Analogous Compound Biodegradation	28 days	Biological Oxygen Demand	0 %BOD/ThOD	similar to OECD 302C
1,1'-methylenebis(isocyanatobenzene)	26447-40-5	Data not availbl-insufficient	N/A	N/A	N/A	N/A
4,4'-diphenylmethane diisocyanate	101-68-8	Estimated Hydrolysis		Hydrolytic half-life	20 hours (t 1/2)	
carbon black	1333-86-4	Data not availbl-insufficient	N/A	N/A	N/A	N/A

12.3. Bioaccumulative potential

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
polyurethane prepolymer	67837-35-8	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
dicyclohexylmethane-4,4'-diisocyanate (HMDI)	5124-30-1	Estimated Bioconcentration		Log of Octanol/H2O part. coeff	2.03	
1,1'-diphenylmethane diisocyanate polymer	39310-05-9	Analogous Compound BCF - Fish	28 days	Bioaccumulation Factor	200	OECD305-Bioconcentration
1,1'-methylenebis(isocyanatobenzene)	26447-40-5	Estimated BCF - Fish	28 days	Bioaccumulation Factor	200	
4,4'-diphenylmethane diisocyanate	101-68-8	Experimental BCF - Fish	28 days	Bioaccumulation Factor	200	OECD305-Bioconcentration
carbon black	1333-86-4	Data not available or insufficient for classification	N/A	N/A	N/A	N/A

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: None assigned.
Proper Shipping Name: None assigned.
Technical Name: None assigned.
Hazard Class/Division: None assigned.
Subsidiary Risk: None assigned.
Packing Group: None assigned.
Limited Quantity: None assigned.
Marine Pollutant: None assigned.
Marine Pollutant Technical Name: None assigned.
Other Dangerous Goods Descriptions:
Not restricted, as per IMDG code 2.10.2.7, marine pollutant exception.

Air Transport (IATA)

UN Number: None assigned.
Proper Shipping Name: None assigned.
Technical Name: None assigned.
Hazard Class/Division: None assigned.
Subsidiary Risk: None assigned.
Packing Group: None assigned.
Limited Quantity: None assigned.
Marine Pollutant: None assigned.
Marine Pollutant Technical Name: None assigned.
Other Dangerous Goods Descriptions:
Not restricted, as per Special Provision A197, environmentally hazardous substance exception.

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. 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