SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

DESMODUR 44 V 20 L

Material number: 05596408

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use:
Di-/polyisocyanate components for the production of polyurethanes

Uses advised against:
Consumer spray application is not supported.
Consumer applications that require heating above room temperature before or during use are not supported.
Professional cleaning activities with Aprotic Polar Solvents are not supported.

1.3 Details of the supplier of the safety data sheet

Covestro Pty Ltd.
Level 1, 700 Springvale Road
MULGRAVE, VIC 3170
AUSTRALIA

Phone: (61) 3-9581-9888
e-mail: productsafetyapac@covestro.com

1.4 Emergency telephone number

IXOM SH&E Shared Services
In Australia: 1800 033 111, In New Zealand: 0800 734 607

SECTION 2: Hazards identification

NZ importers please refer to the additional HSNO Cover Note provided by Covestro for more information specific to this product. The Cover Note should be read in conjunction with this SDS.

2.1 Classification of the substance or mixture

GHS Classification:
Acute toxicity, Inhalative, Category 4 (H332)
Skin irritation, Category 2 (H315)
Eye irritation, Category 2 (H319)
Sensitization of the skin, Category 1 (H317)
Sensitization of the respiratory airways, Category 1 (H334)
Carcinogenicity, Category 2 (H351)
Specific target organ toxicity (single exposure), Category 3 (H335)
Specific target organ toxicity (repeated exposure), Category 2 (H373)

2.2 Label elements

GHS-Labelling

Danger

Hazardous components which must be listed on the label
diphenylmethane-diisocyanate, isomers and homologues

Hazard statements:
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H373 May cause damage to organs (Respiratory tract) through prolonged or repeated exposure.

Precautionary statements:
P201 Obtain special instructions before use.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: 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.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/ container to an approved waste disposal plant.

HAZARDOUS according to the criteria of NOHSC NON-DANGEROUS GOODS

2.3 Other hazards

In case of hypersensitivity of the respiratory tract (e.g. asthmatics and those who suffer from chronic bronchitis) it is inadvisable to work with the product.
Symptoms affecting the respiratory tract can also occur several hours after overexposure.
Dust, vapors and aerosols are the primary risk to the respiratory tract.

SECTION 3: Composition/information on ingredients

Type of product: Substance

3.1 Substances

diphenylmethane-diisocyanate, isomers and homologues

Hazardous components

diphenylmethane-diisocyanate, isomers and homologues
Concentration [wt.-%]: ca. 100
CAS-No.: 9016-87-9
GHS Classification: Acute Tox. 4 Inhalative H332 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Resp. Sens. 1 H334 Skin Sens. 1 H317 Carc. 2 H351 STOT SE 3 H335 STOT RE 2 Inhalative H373
Specific threshold concentration (GHS):

Eye Irrit. 2	H319	>= 5 %
Skin Irrit. 2	H315	>= 5 %
Resp. Sens. 1	H334	>= 0,1 %
STOT SE 3	H335	>= 5 %

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice: Soiled, soaked clothing and shoes must be immediately removed, decontaminated and disposed of.

If inhaled: Take the person into the fresh air and keep him warm, let him rest; if there is difficulty in breathing, medical advice is required.

In case of skin contact: In the event of contact with the skin, preferably wash with a cleanser based on polyethylene glycol or with plenty of warm water and soap. Consult a doctor in the event of a skin reaction.

In case of eye contact: Hold the eyes open and rinse with preferably lukewarm water for a sufficiently long period of time (at least 10 minutes). Contact an ophthalmologist.

If swallowed: DO NOT induce vomiting. Wash/clean mouth with water. Medical advice is required.

4.2 Most important symptoms and effects, both acute and delayed

Notes to physician: The product irritates the respiratory tract and may trigger sensitisation of the skin and respiratory tract. Treatment of acute irritation or bronchial constriction is primarily symptomatic. Extended medical treatment may be required depending on the degree of exposure and the severity of the symptoms.

4.3 Indication of any immediate medical attention and special treatment needed

Therapeutic measures: No information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: Carbon dioxide (CO2), Foam, extinguishing powder, in cases of larger fires, water spray should be used.

Unsuitable extinguishing media: High volume water jet

5.2 Special hazards arising from the substance or mixture

Burning releases carbon monoxide, carbon dioxide, oxides of nitrogen, isocyanate vapors and traces of hydrogen cyanide. In the event of fire and/or explosion do not breathe fumes.

Fire in vicinity poses risk of pressure build-up and rupture. Containers at risk from fire should be cooled with water and, if possible, removed from the danger area.

5.3 Advice for fire-fighters

For firefighting, self-contained breathing apparatus is required, plus a gas-tight chemical hazmat suit. Firemen must wear self-contained breathing apparatus.

Do not allow contaminated extinguishing water to enter the soil, ground-water or surface waters.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Put on protective equipment (see section 8). Ensure adequate ventilation/exhaust extraction. Keep unauthorized persons away.

6.2 Environment related measures

Do not allow to escape into waterways, wastewater or soil.

6.3 Methods and material for containment and cleaning up

Remove mechanically; cover the remainder with wet, absorbent material (e.g. sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. one hour transfer to waste container and do not seal (evolution of CO2!). Keep damp in a safe ventilated area for several days.

Spill area can be decontaminated with the following recommended decontamination solution:

Decontamination solution 1: 8-10% sodium carbonate and 2% of liquid soap in water

Decontamination solution 2: Liquid/yellow soap (potassium soap with ~15% anionic tenside): 20ml; Water:700ml; Polyethylenglycol (PEG 400): 350ml

Decontamination solution 3: 30 % commercial laundry detergent containing monoethanolamine, 70 % water

6.4 Reference to other sections

For further disposal measures see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Provide sufficient air exchange and/or exhaust in work rooms. The precautions required in the handling of isocyanates must be taken.

Solid products: Avoid formation and deposition of dust.

Contact with skin and eyes and inhalation of dust/vapor must be avoided.

In all workplaces or parts of the plant where high concentrations of isocyanate aerosols and/or vapors may be generated (e.g. during pressure release, mold venting or when cleaning mixing heads with an air blast), appropriately located exhaust ventilation must be provided in order to prevent occupational exposure limits from being exceeded. The air should be drawn away from the personnel handling the product The efficiency of the exhaust equipment should be periodically checked. The threshold limit values noted in section 8 must be monitored.

The personal protective measures described in section 8 must be observed. Contact with skin and eyes and inhalation of vapors must be avoided under all circumstances.

Keep away from foodstuffs, drinks and tobacco. Wash hands before breaks and at end of work and use skin-protecting ointment. Keep working clothes separately. Take off all contaminated clothing immediately. Decontaminate, destroy and dispose of soiled protective clothing (see Section 13)

7.2 Conditions for safe storage, including any incompatibilities

Cleaning with Aprotic Polar Solvents (meeting the IUPAC definition) may lead to formation of (hazardous) primary aromatic amines (> 0,1 %). See section 11.

Keep container tightly closed and dry. Further information on the storage conditions which must be observed to preserve quality can be found in our product information sheet.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

Provide general ventilation.
Provide suitable exact ventilation.
Inspect and maintain equipment.
Hygiene measures:
Avoid skin and eye contact.
Wash off skin contamination immediately
Clear spills immediately
Provide hazard information and training to personnel

8.1 Control parameters

Components with workplace control parameters

Substance	CAS-No.	Basis	Type	Value	Ceiling Limit Value	Remarks
diphenylmethane-diisocyanate, isomers and homologues	9016-87-9	AU NOEL	TWA	0,02 mg/m3		Advisory carcinogen category: See individual entries., measured as NCO
diphenylmethane-diisocyanate, isomers and homologues	9016-87-9	AU NOEL	STEL	0,07 mg/m3		Advisory carcinogen category: See individual entries., measured as NCO
diphenylmethane-diisocyanate, isomers and homologues	9016-87-9	AU OEL	TWA	0,02 mg/m3		, measured as NCO
diphenylmethane-diisocyanate, isomers and homologues	9016-87-9	AU OEL	STEL	0,07 mg/m3		, measured as NCO
4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate	101-68-8	AU NOEL	STEL	0,07 mg/m3		
4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate	101-68-8	AU NOEL	TWA	0,02 mg/m3		
4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate	101-68-8	AU OEL	TWA	0,02 mg/m3		
4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate	101-68-8	AU OEL	STEL	0,07 mg/m3		
o-(p-isocyanatobenzyl) phenyl isocyanate; diphenylmethane-2,4'-diisocyanate	5873-54-1	AU NOEL	STEL	0,07 mg/m3		, measured as NCO
o-(p-isocyanatobenzyl) phenyl isocyanate; diphenylmethane-2,4'-diisocyanate	5873-54-1	AU NOEL	TWA	0,02 mg/m3		, measured as NCO
o-(p-isocyanatobenzyl) phenyl isocyanate; diphenylmethane-2,4'-diisocyanate	5873-54-1	AU OEL	TWA	0,02 mg/m3		, measured as NCO
o-(p-isocyanatobenzyl) phenyl isocyanate; diphenylmethane-2,4'-diisocyanate	5873-54-1	AU OEL	STEL	0,07 mg/m3		, measured as NCO
2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate	2536-05-2	AU NOEL	STEL	0,07 mg/m3		, measured as NCO

2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate	2536-05-2	AU NOEL	TWA	0,02 mg/m3		, measured as NCO
2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate	2536-05-2	AU OEL	TWA	0,02 mg/m3		, measured as NCO
2,2'-methylenediphenyl diisocyanate; diphenylmethane-2,2'-diisocyanate	2536-05-2	AU OEL	STEL	0,07 mg/m3		, measured as NCO

The product may contain traces of phenylisocyanate.

8.2 Exposure controls

Respiratory protection
Respiratory protection required in insufficiently ventilated working areas and during spraying. An air-fed mask, or for short periods of work, a combination of charcoal filter and particulate filter A2-P2 (EN529) is recommended.

In case of hypersensitivity of the respiratory tract (e.g. asthmatics and those who suffer from chronic bronchitis) it is inadvisable to work with the product.

Hand protection
Suitable materials for safety gloves; EN 374:
Butyl rubber, nitrile rubber, chloroprene rubber (neoprene).
Notice: suitable materials that provide sufficient protection for industrial cleaning with Aprotic Polar Solvents (meeting the IUPAC definition): butyl rubber.
When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN374) is recommended.
Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent of the specific composition of the material a glove is fabricated from. The thickness of the glove must depending on model and type of material, generally be more than 0,35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0,35 mm. Other glove materials with a thickness of less than 0,35 mm may offer sufficient protection when only brief contact is expected.
Example:
Polychloroprene - CR: thickness >=0,5mm; breakthrough time >=480min.
Nitrile rubber - NBR: thickness >=0,35mm; breakthrough time >=480min.
Butyl rubber - IIR: thickness >=0,5mm; breakthrough time >=480min.
Fluorinated rubber - FKM: thickness >=0,4mm; breakthrough time >=480min.
Recommendation: contaminated gloves should be disposed of.

Eye protection
Use safety glasses with side shields, conforming to EN 166.

Skin and body protection
Use protective clothing (chemically resistant).
In case of hypersensitivity of the skin it is inadvisable to work with the product.

Safety precautions for handling freshly molded polyurethane parts: see section 16

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state:	liquid at 20 °C at 1.013 hPa
Appearance:	liquid
Colour:	brown
Odour:	earthy, musty
Odour Threshold:	not established

pH:	not applicable	
Pour point:	< 0 °C	ISO 3016
Boiling point/boiling range:	> 300 °C at 1.013 hPa	DIN 53171
Flash point:	226 °C	ISO 2719
Evaporation rate:	not established	
Flammability (solid, gas):	not applicable	
Burning number:	not applicable	
Upper/lower flammability or explosive limits:	not established	
Vapour pressure:	Diphenyl-methane-diisocyanate, (MDI) < 0,00001 hPa at 20 °C < 0,0005 hPa (50°C)	
	For products with a very low vapor pressure, the apparent vapor pressure may exceed the vapor pressure of the pure product due to conditions of manufacturing, storage or transportation, e.g. by solved gases like nitrogen or carbon dioxide:	
	1 hPa at 20 °C	EG A4
	12 hPa at 50 °C	EG A4
	17 hPa at 55 °C	EG A4
Relative vapour density:	not established	
Density:	1,238 g/cm³ at 20 °C	DIN 51757
Miscibility with water:	immiscible at 15 °C	
Surface tension:	not established	
Partition coefficient (n−octanol/water):	not established	
Auto-ignition temperature:	not applicable	
Ignition temperature:	> 500 °C	DIN 51794
Decomposition temperature:	not established	
Heat of combustion:	not established	
Viscosity, dynamic:	>= 200 mPa.s at 20 °C	DIN 53019
Viscosity, kinematic:	not established	
Explosive properties:	not established	
Dust explosion class:	not applicable	
Oxidising properties:	not established	

9.2 Other information

The indicated values do not necessarily correspond to the product specification. Please refer to the technical information sheet for specification data.

SECTION 10: Stability and reactivity

10.1 Reactivity

This information is not available.

10.2 Chemical stability

Polymerises at about 200 °C with evolution of CO2.

10.3 Possibility of hazardous reactions

Exothermic reaction with amines and alcohols; reacts with water forming CO2; in closed containers, risk of bursting owing to increase of pressure.

10.4 Conditions to avoid

This information is not available.

10.5 Incompatible materials

This information is not available.

10.6 Hazardous decomposition products

No hazardous decomposition products when stored and handled correctly.

SECTION 11: Toxicological information

Please find below the data available to us:

11.1 Information on toxicological effects

Acute toxicity, oral
diphenylmethane-diisocyanate, isomers and homologues
LD50 rat, male/female: > 2.000 mg/kg
Method: OECD Test Guideline 401
Studies of a comparable product.

Acute toxicity, dermal
diphenylmethane-diisocyanate, isomers and homologues
LD50 rabbit, male/female: > 9.400 mg/kg
Method: OECD Test Guideline 402

Acute toxicity, inhalation
diphenylmethane-diisocyanate, isomers and homologues
LC50 rat, male/female: 0,31 mg/l, 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

Assessment: Harmful if inhaled.

Converted acute toxicity point estimate 1,5 mg/l
Test atmosphere: dust/mist
Method: Expert judgement

Primary skin irritation
diphenylmethane-diisocyanate, isomers and homologues
Species: rabbit
Result: slight irritant
Method: OECD Test Guideline 404

Primary mucosae irritation
diphenylmethane-diisocyanate, isomers and homologues
Species: rabbit
Result: non-irritant
Method: OECD Test Guideline 405
Toxicological studies of a comparable product.

Sensitisation
diphenylmethane-diisocyanate, isomers and homologues
Skin sensitisation according to Magnusson/Kligmann (maximizing test):
Species: Guinea pig
Result: negative
Classification: Does not cause skin sensitization.
Method: OECD Test Guideline 406
Studies of a comparable product.

Skin sensitization (local lymph node assay (LLNA)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact.
Method: OECD Test Guideline 429
Studies of a comparable product.

Respiratory sensitization
Species: rat
Result: positive
Classification: May cause sensitization by inhalation.

Subacute, subchronic and prolonged toxicity
diphenylmethane-diisocyanate, isomers and homologues
NOAEL: 0,2 mg/m3
LOAEL (Lowest observable adverse effect level): 1 mg/m3
Application Route: Inhalative
Species: rat, male/female
Dose Levels: 0 - 0,2 - 1 - 6 mg/m3
Exposure duration: 2 a
Frequency of treatment: 6 hours a day, 5 days a week
Target Organs: Lungs, Nasal inner lining
Test substance: as aerosol
Method: OECD Test Guideline 453
Findings: Irritation to nasal cavity and to lungs.
Studies of a comparable product.

Carcinogenicity
diphenylmethane-diisocyanate, isomers and homologues
Species: rat, male/female
Application Route: Inhalative
Dose Levels: 0 - 0,2 - 1 - 6 mg/m3
Test substance: as aerosol
Exposure duration: 2 a
Frequency of treatment: 6 hours/day, 5 days/week
Method: OECD Test Guideline 453
Occurrence of tumors in the highest dose group.

Reproductive toxicity/Fertility
diphenylmethane-diisocyanate, isomers and homologues
No data available.

Reproductive toxicity/Developmental Toxicity/Teratogenicity
diphenylmethane-diisocyanate, isomers and homologues
NOAEL (teratogenicity): 12 mg/m³
NOAEL (maternal): 4 mg/m³
NOAEL (developmental toxicity): 4 mg/m³
Species: rat, female
Application Route: Inhalative
Dose Levels: 0 - 1 - 4 - 12 mg/m3
Frequency of treatment: 6 hours/day (Exposure duration: 10 days (day 6 - 15 p.c.))
Test period: 20 d
Test substance: as aerosol
Method: OECD Test Guideline 414
NOAEL (developmental toxicity): 4 mg/m3
Did not show teratogenic effects in animal experiments.

Genotoxicity in vitro
diphenylmethane-diisocyanate, isomers and homologues
Test type: Salmonella/microsome test (Ames test)
Test system: Salmonella typhimurium
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Genotoxicity in vivo
diphenylmethane-diisocyanate, isomers and homologues

Test type: Micronucleus test
Species: rat, male
Application Route: Inhalative (exposure period: 3x1h/day over 3 weeks)
Result: negative
Method: OECD Test Guideline 474
Studies of a comparable product.

STOT evaluation – one-time exposure
diphenylmethane-diisocyanate, isomers and homologues
Route of exposure: Inhalative
Target Organs: Respiratory system
May cause respiratory irritation.

STOT evaluation – repeated exposure
diphenylmethane-diisocyanate, isomers and homologues
Route of exposure: Inhalative
Target Organs: Respiratory tract
May cause damage to organs through prolonged or repeated exposure.

Aspiration toxicity

diphenylmethane-diisocyanate, isomers and homologues
Based on available data, the classification criteria are not met.

CMR Assessment
diphenylmethane-diisocyanate, isomers and homologues
Carcinogenicity: Suspected of causing cancer by inhalation (Carc. 2).
Mutagenicity: In vitro an in vivo tests did not show mutagenic effects. Based on available data, the classification criteria are not met.
Teratogenicity: Did not show teratogenic effects in animal experiments. Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

Toxicology Assessment
diphenylmethane-diisocyanate, isomers and homologues
Acute effects: Harmful if inhaled. The product causes irritation of eyes, skin and mucous membranes.
Sensitization: May cause sensitization by inhalation and skin contact.

Additional information
Industrial cleaning with Aprotic Polar Solvents (meeting the IUPAC definition) may lead to formation of (hazardous) primary aromatic amines (> 0.1 %). Primary aromatic amines are chemicals that are regarded as potentially carcinogenic for humans based on animal testing. Some of these chemicals are known human carcinogens. Compliance with the control measures recommended in the exposure scenario is expected to protect against these effects.

Special properties/effects: Over-exposure entails the risk of concentration-dependent irritating effects on eyes, nose throat, and respiratory tract. Delayed appearance of the complaints and development of hypersensitivity (difficult breathing, coughing, asthma) are possible. Hypersensitive persons may suffer from these effects even at low isocyanate concentrations, including concentrations below the occupational exposure limit. Prolonged contact with the skin may cause tanning and irritant effects.

Animal tests and other research indicate that skin contact with diisocyanates can play a role in causing isocyanate sensitization and respiratory reaction.

SECTION 12: Ecological information

Do not allow to escape into waterways, wastewater or soil.

Please find below the data available to us:

12.1 Toxicity

Acute Fish toxicity
diphenylmethane-diisocyanate, isomers and homologues
LC50 > 1.000 mg/l
Test type: Acute Fish toxicity
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: OECD Test Guideline 203

Chronic Fish toxicity
diphenylmethane-diisocyanate, isomers and homologues
Study scientifically not justified.

Acute toxicity for daphnia
diphenylmethane-diisocyanate, isomers and homologues
EC50 > 1.000 mg/l
Test type: static test
Species: Daphnia magna (Water flea)
Exposure duration: 24 h
Method: OECD Test Guideline 202

Chronic toxicity to daphnia
diphenylmethane-diisocyanate, isomers and homologues
NOEC (Reproduction) > 10 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: OECD Test Guideline 211

Acute toxicity for algae
diphenylmethane-diisocyanate, isomers and homologues
ErC50 > 1.640 mg/l
Test type: Growth inhibition
Species: scenedesmus subspicatus
Exposure duration: 72 h
Method: OECD Test Guideline 201

Acute bacterial toxicity
diphenylmethane-diisocyanate, isomers and homologues
EC50 > 100 mg/l
Test type: Respiration inhibition
Species: activated sludge
Exposure duration: 3 h
Method: OECD Test Guideline 209

Toxicity to soil dwelling organisms
diphenylmethane-diisocyanate, isomers and homologues
NOEC (mortality) > 1.000 mg/kg
Species: Eisenia fetida (earthworms)
Exposure duration: 14 d
Method: OECD Test Guideline 207

Toxicity to terrestrial plants
diphenylmethane-diisocyanate, isomers and homologues
NOEC (seedling emergence) > 1.000 mg/kg
Species: Avena sativa (oats)
Exposure duration: 14 d
Method: OECD Test Guideline 208

NOEC (Growth rate) > 1.000 mg/kg
Species: Avena sativa (oats)
Exposure duration: 14 d
Method: OECD Test Guideline 208

NOEC (seedling emergence) > 1.000 mg/kg
Species: Lactuca sativa (lettuce)
Exposure duration: 14 d
Method: OECD Test Guideline 208

NOEC (Growth rate) > 1.000 mg/kg
Species: Lactuca sativa (lettuce)
Exposure duration: 14 d
Method: OECD Test Guideline 208

Ecotoxicology Assessment
diphenylmethane-diisocyanate, isomers and homologues
Acute aquatic toxicity: Based on available data, the classification criteria are not met.
Chronic aquatic toxicity: Based on available data, the classification criteria are not met.
Toxicity Data on Soil: Not expected to adsorb on soil. The substance is graded as non-critical to soil-dwelling organisms.
Impact on Sewage Treatment: Because of the low bacterial toxicity, there is no risk of an adverse effect on the performance of biological waste water treatment plants.

12.2 Persistence and degradability

Biodegradability
diphenylmethane-diisocyanate, isomers and homologues
Test type: aerobic
Inoculum: activated sludge
Biodegradation: 0 %, 28 d, i.e. not inherently degradable
Method: OECD Test Guideline 302 C
According to the results of tests of biodegradability this product is not readily biodegradable.

Stability in water
diphenylmethane-diisocyanate, isomers and homologues
Test type: Hydrolysis
Half life: 20 h at 25 °C
The substance hydrolyzes rapidly in water.
Studies of a comparable product.

Photodegradation
diphenylmethane-diisocyanate, isomers and homologues
Test type: Phototransformation in air
Temperature: 25 °C
sensitizer: OH-radicals
Concentration sensibilisator: 500.000 1/cm3
Half-life indirect photolysis: 0,92 d
Method: SRC - AOP (calculation)
After evaporation or exposure to the air, the product will be moderately degraded by photochemical processes.
Studies of a comparable product.

12.3 Bioaccumulative potential

Bioaccumulation
diphenylmethane-diisocyanate, isomers and homologues
Bioconcentration factor (BCF): 92
Species: Cyprinus carpio (Carp)
Exposure duration: 28 d
Concentration: 0,8 µg/l
Method: OECD Test Guideline 305 E
Studies of a comparable product.
An accumulation in aquatic organisms is not to be expected.
The substance hydrolyzes rapidly in water.
Studies of hydrolysis products.

Bioconcentration factor (BCF): 200
Species: Cyprinus carpio (Carp)
Exposure duration: 28 d
Concentration: 0,08 µg/l
Method: OECD Test Guideline 305 E
Studies of a comparable product.
An accumulation in aquatic organisms is not to be expected.
The substance hydrolyzes rapidly in water.
Studies of hydrolysis products.

12.4 Mobility in soil

No data available.

Environmental distribution
diphenylmethane-diisocyanate, isomers and homologues
no data available

12.5 Results of PBT and vPvB assessment

No data available.

12.6 Other adverse effects

Isocyanate reacts with water at the interface forming CO2 and a solid insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by watersoluble solvents. Previous experience shows that polyurea is inert and non-degradable.

SECTION 13: Disposal considerations

Dispose in accordance with applicable international, national and local laws, ordinances and statutes.

For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

13.1 Waste treatment methods

After final product withdrawal, all residues must be removed from containers (drip-free, powder-free or paste-free). Packaging empty of usable product can be handed to a professional waste management company; in the EU, this is done per packaging type at collection points run by the existing take-back systems for the chemicals industry. The product and hazardous substance labelling must be left intact on the packaging.

Alternatively, the product and hazardous substance labelling can be removed if the product residues adhering to the sides are rendered non-hazardous. This packaging can also be handed to the collection points run by the existing take-back systems for the chemicals industry for packaging type-specific recycling.
Containers must be recycled in compliance with national legislation and environmental regulations.

No disposal into waste water.

SECTION 14: Transport information

ADG7 -
Australia

14.1 UN number or ID number	:	Not dangerous goods
14.2 UN proper shipping name	:	Not dangerous goods
14.3 Transport hazard class(es)	:	Not dangerous goods
14.4 Packing group	:	Not dangerous goods
14.5 Environmental hazards	:	Not dangerous goods

IATA

14.1 UN number or ID number	:	Not dangerous goods
14.2 UN proper shipping name	:	Not dangerous goods
14.3 Transport hazard class(es)	:	Not dangerous goods

14.4 Packing group	:	Not dangerous goods
14.5 Environmental hazards	:	Not dangerous goods

IMDG

14.1 UN number or ID number	:	Not dangerous goods
14.2 UN proper shipping name	:	Not dangerous goods
14.3 Transport hazard class(es)	:	Not dangerous goods
14.4 Packing group	:	Not dangerous goods
14.5 Marine pollutant	:	Not dangerous goods

14.6 Special precautions for user

See section 6 - 8.

Additional information	:	Keep away from foodstuffs, acids and alkalis. Avoid temperatures below 1 °C. Avoid heat above +50 °C. Keep dry.

14.7 Maritime transport in bulk according to IMO instruments

Product name: Polymethylene polyphenyl isocyanate
Pollution category: Y - Ship type: 3
Vicosity at 20°C: approx 200 mPa.s, Temperature where viscosity is 50 mPa.s: approx 48°C
Melting point: <0°C

SECTION 15: Regulatory information

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

No poison schedule number allocated

Any existing national regulations on the handling of isocyanates must be observed.

SECTION 16: Other information

Full text of the hazard statements of the CLP classification (1272/2008/CE) referred to under sections 2, 3 and 10.

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.

ISOPA directives for safe loading/unloading, transport and storage of TDI and MDI. See ISOPA website: www.isopa.org (Product Stewardship „Walk the Talk“).

Safety precautions for handling freshly molded polyurethane parts:

Depending on the production parameters, any uncovered surfaces of freshly molded polyurethane parts using this raw material may contain traces of substances (e. g. starting and reaction products, catalysts, release agents) with hazardous characteristics. Skin contact with traces of these substances must be avoided. Therefore, during demolding or other handling of fresh molded parts, protective gloves tested according to DIN-EN 374 (e.g. nitrile rubber >= 0,35 mm thick, breakthrough time >= 480 min, or according to recommendations from glove makers thinner gloves that need to be changed in compliance with breakthrough times more frequently) must be used. Depending on formulation and processing conditions, the requirements may be different from handling of the pure substances. Closed protective clothing is required for the protection of other areas of skin.

Relevant changes since the last version are highlighted in the margin. This version replaces all previous versions.

Further information
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.