



## DESMODUR N 3200

Version 3.10

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

#### 1.1 Product identifier

### DESMODUR N 3200

**Material number:** 04322096

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

**Use:**

Hardener for coating materials or adhesives for industrial and trade applications

**Uses advised against:**

Not suitable for use in homemaker (DIY) applications.

#### 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)  
Sensitization of the skin, Category 1 (H317)  
Specific target organ toxicity (single exposure), Category 3 (H335)

#### 2.2 Label elements

**GHS-Labeling**



Warning

**Hazardous components which must be listed on the label**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

**Hazard statements:**

H317 May cause an allergic skin reaction.

H332 Harmful if inhaled.  
H335 May cause respiratory irritation.

**Precautionary statements:**

P280 Wear protective gloves.  
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.  
P312 Call a POISON CENTER or doctor/ physician if you feel unwell.  
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**

No information available.

**SECTION 3: Composition/information on ingredients**

**Type of product:** Substance

**3.1 Substances**

aliphatic polyisocyanate

**Hazardous components**

Hexamethylene diisocyanate, oligomerisation product (biuret type)  
Concentration [wt.-%]: ca. 100  
EC-No.: 500-060-2  
CAS-No.: 28182-81-2  
GHS Classification: Acute Tox. 4 Inhalative H332 Skin Sens. 1 H317 STOT SE 3 H335

This contains:

hexamethylene-di-isocyanate  
Concentration [wt.-%]: <= 0,4  
CAS-No.: 822-06-0  
GHS Classification: Acute Tox. 1 Inhalative H330 Acute Tox. 4 Oral H302 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Resp. Sens. 1 H334 Skin Sens. 1 H317 STOT SE 3 H335  
Specific threshold concentration (GHS):  
Resp. Sens. 1 H334 >= 0,5 %  
Skin Sens. 1 H317 >= 0,5 %

**SECTION 4: First aid measures****4.1 Description of first aid measures**

**General advice:** Take off all contaminated clothing immediately.

**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 case of skin contact wash affected areas thoroughly with soap and plenty of water. 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 the patient to vomit, medical advice is required.

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

**Notes to physician:** Basic first aid, decontamination, symptomatic treatment.

#### 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 (CO<sub>2</sub>), 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.

#### 5.3 Advice for fire-fighters

During fire-fighting respirator with independent air-supply and airtight garment is required.

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 CO<sub>2</sub>!). Keep damp in a safe ventilated area for several days.

#### 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. Exhaust ventilation necessary if product is sprayed.

The threshold limit values noted in section 8 must be monitored. In all areas where isocyanate aerosols and/or vapor concentrations are produced in elevated concentrations, exhaust ventilation must be provided in such a way that the workplace exposure limits (WEL) is not exceeded. The air should be drawn away from the

personnel handling the product

The personal protective measures described in section 8 must be observed. The precautions required in the handling of isocyanates must be taken. Avoid contact with skin and eyes and the inhalation of vapor.

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.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep container dry and tightly closed in a cool and well ventilated place. 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

### 8.1 Control parameters

#### Components with workplace control parameters

Substance	CAS-No.	Basis	Type	Value	Ceiling Limit Value	Remarks
hexamethylene-di-isocyanate	822-06-0	AU NOEL	STEL	0,07 mg/m <sup>3</sup>		
hexamethylene-di-isocyanate	822-06-0	AU NOEL	TWA	0,02 mg/m <sup>3</sup>		
hexamethylene-di-isocyanate	822-06-0	AU OEL	TWA	0,02 mg/m <sup>3</sup>		
hexamethylene-di-isocyanate	822-06-0	AU OEL	STEL	0,07 mg/m <sup>3</sup>		

### 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 and skin (e.g. asthmatics and those who suffer from chronic bronchitis and chronic skin complaint) it is inadvisable to work with the product.

#### Hand protection

Suitable materials for safety gloves; EN 374:

Butyl rubber - IIR: thickness  $\geq 0,5\text{mm}$ ; breakthrough time  $\geq 480\text{min}$ .

Fluorinated rubber - FKM: thickness  $\geq 0,4\text{mm}$ ; breakthrough time  $\geq 480\text{min}$ .

Recommendation: contaminated gloves should be disposed of.

#### Eye protection

Wear eye/face protection.

#### Skin and body protection

Wear suitable protective clothing.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Appearance: liquid

Colour:	colourless to yellowish	
Odour:	almost odourless	
Odour Threshold:	not established	
pH:	not applicable	
Pour point:	not measurable	
Boiling point/boiling range:	ca. 136 °C at 1.013 hPa with decomposition.	
Flash point:	ca. 169 °C at 1.013 hPa	DIN EN 22719
Evaporation rate:	not established	
Flammability (solid, gas):	not applicable	
Burning number:	not applicable	
Upper/lower flammability or explosive limits:	not applicable	
Vapour pressure:	< 0,0001 hPa at 20 °C (vapor pressure balance/OECD No.104)	
Vapour pressure of ingredients: hexamethylene-di-isocyanate	ca. 0,007 hPa at 20 °C	
Vapour density:	not established	
Density:	ca. 1,1301 g/cm <sup>3</sup> at 20 °C ca. 1,1153 g/cm <sup>3</sup> at 40 °C	
Miscibility with water:	immiscible - reacts with water to liberate CO <sub>2</sub> gas at 15 °C	
Surface tension:	not applicable	
Partition coefficient (n-octanol/water):	cannot be determined, hydrolyses	
Auto-ignition temperature:	not applicable	
Ignition temperature:	ca. 449 °C at 1.013 hPa	
Decomposition temperature:	not established	
Viscosity, dynamic:	ca. 5.380 mPa.s at 20 °C	
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**

This information is not available.

**10.3 Possibility of hazardous reactions**

Exothermic reaction with amines and alcohols; reacts slowly with water forming CO<sub>2</sub>, 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

#### 11.1 Information on toxicological effects

##### Acute toxicity, oral

Hexamethylene diisocyanate, oligomerisation product (biuret type)

LD50 rat: > 5.000 mg/kg

Method: OECD Test Guideline 401

##### Acute toxicity, dermal

Hexamethylene diisocyanate, oligomerisation product (biuret type)

LD50 rabbit, male/female: > 2.000 mg/kg

Studies of a comparable product.

LD50 rat, male/female: > 2.000 mg/kg

Method: OECD Test Guideline 402

Studies of a comparable product.

##### Acute toxicity, inhalation

Hexamethylene diisocyanate, oligomerisation product (biuret type)

LC50 rat: 0,402 mg/l, 4 h

Test atmosphere: dust/mist

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.

Converted acute toxicity point estimate 1,5 mg/l

Test atmosphere: dust/mist

Method: Expert judgement

Assessment: Harmful if inhaled.

##### Primary skin irritation

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Species: rabbit

Result: slight irritant

Classification: No skin irritation

Method: OECD Test Guideline 404

##### Primary mucosae irritation

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Species: rabbit

Result: slight irritant

Classification: No eye irritation

Method: OECD Test Guideline 405

##### Sensitisation

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Skin sensitization (local lymph node assay (LLNA)):

Species: Mouse

Result: positive

Classification: May cause sensitization by skin contact.

Method: OECD Test Guideline 429

**Respiratory sensitization**

Species: Guinea pig

Classification: No classification according to EC Directives 2006/121/EC or 1999/45/EC as respiratory sensitizer.

No pulmonary sensitisation observed in animal tests.

No pulmonary sensitisation potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on hexamethylene diisocyanate.

**Subacute, subchronic and prolonged toxicity**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

NOAEL: 3,4 mg/m<sup>3</sup> air

LOAEL (Lowest observable adverse effect level): 21 mg/m<sup>3</sup>

Application Route: inhalation (dust/mist/fume)

Species: rat

Dose Levels: 0,3 - 4 - 25 mg/m<sup>3</sup>

Exposure duration: 90 d

Frequency of treatment: (6 hours a day, 5 days a week)

Test substance: (as aerosol)

Method: OECD Test Guideline 413

Evidence of damage to organs other than the organs of respiration was not found.

NOAEL: 3,7 mg/m<sup>3</sup> air

LOAEL (Lowest observable adverse effect level): 17,5 mg/m<sup>3</sup>

Application Route: inhalation (dust/mist/fume)

Species: rat, male/female

Dose Levels: 3 - 15 - 75 mg/m<sup>3</sup>

Exposure duration: 21 d

Frequency of treatment: (6 hours a day, 5 days a week)

Test substance: (as aerosol)

Method: OECD Test Guideline 412

Evidence of damage to organs other than the organs of respiration was not found.

**Carcinogenicity**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

No data available.

**Reproductive toxicity/Fertility**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Available data show no indications for reproductive toxicity.

**Reproductive toxicity/Teratogenicity**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Animal experiments on structurally similar compounds showed no indication of specific reproductive toxicity.

**Genotoxicity in vitro**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Test type: Salmonella/microsome test (Ames test)

Metabolic activation: with/without

Result: No indication of mutagenic effects.

Method: OECD Test Guideline 471

Toxicological studies at the product

Test type: Chromosome aberration test in vitro

Test system: Chinese hamster ovary (CHO) cells

Metabolic activation: with/without

Result: negative

Method: OECD Test Guideline 473

Test type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary (CHO) cells

Metabolic activation: with/without

Result: negative

Method: OECD Test Guideline 476

**Genotoxicity in vivo**

No data available.

**STOT evaluation – one-time exposure**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Route of exposure: Inhalative

Target Organs: Respiratory Tract

May cause respiratory irritation.

**STOT evaluation – repeated exposure**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Based on available data, the classification criteria are not met.

**Aspiration toxicity**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Based on available data, the classification criteria are not met.

**CMR Assessment**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Carcinogenicity: No data available.

Mutagenicity: In vitro tests did not show mutagenic effects Based on available data, the classification criteria are not met.

Teratogenicity: 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**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Acute effects: Harmful if inhaled.

Sensitization: May cause sensitization by skin contact.

Repeated dose toxicity: Based on available data, the classification criteria are not met.

**Additional information**

Special properties/effects: Over-exposure, especially when spraying coatings containing isocyanate without the necessary precautions, 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.

**12.1 Toxicity****Acute Fish toxicity**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

LC50 > 100 mg/l

Species: Danio rerio (zebra fish)

Exposure duration: 96 h

Method: Directive 67/548/EEC, Annex V, C.1.

Sample preparation on account of the reactivity of the substance with water:

Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.

**Chronic Fish toxicity**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

No data available.

**Acute toxicity for daphnia**

Hexamethylene diisocyanate, oligomerisation product (biuret type)



EC50 > 100 mg/l

Species: Daphnia magna (Water flea)

Exposure duration: 48 h

Method: Directive 67/548/EEC, Annex V, C.2.

Sample preparation on account of the reactivity of the substance with water:

Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.

#### **Chronic toxicity to daphnia**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

No data available.

#### **Acute toxicity for algae**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

EC50 > 100 mg/l

Test type: Growth inhibition

Species: Desmodesmus subspicatus (Green algae)

Exposure duration: 72 h

Method: OECD Test Guideline 201

ErC50 > 100 mg/l

Species: scenedesmus subspicatus

Exposure duration: 72 h

Method: OECD Test Guideline 201

Sample preparation on account of the reactivity of the substance with water:

Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.

#### **Acute bacterial toxicity**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

EC50 645,7 mg/l

Species: activated sludge

Exposure duration: 3 h

Method: OECD Test Guideline 209

EC50 645,7 mg/l

Test type: Respiration inhibition

Species: activated sludge

Exposure duration: 3 h

Method: OECD Test Guideline 209

#### **Ecotoxicology Assessment**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

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.

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**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Biodegradation: 1 %, 28 d, i.e. not readily degradable

Method: OECD Test Guideline 301 D

#### **Stability in water**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

The substance hydrolyzes rapidly in water.

Studies of a comparable product.

### **12.3 Bioaccumulative potential**

#### **Bioaccumulation**

Hexamethylene diisocyanate, oligomerisation product (biuret type)

Bioconcentration factor (BCF): 9,6

Method: (calculated)

An accumulation in aquatic organisms is not to be expected.

**Partition coefficient (n-octanol/water)**

cannot be determined, hydrolyses

**12.4 Mobility in soil****Surface tension**

not applicable

**12.5 Results of PBT and vPvB assessment**

No data available.

**12.6 Other adverse effects**

On the basis of the data for ecotoxicological effects, the substance can be classified as non-critical to aquatic organisms in the water-soluble range. As the compound is not readily biodegradable, long retention times in water are to be expected. This applies only in cases where no other elimination mechanisms (photodegradation, hydrolysis, adsorption) are active. However, as there is no ecotoxic effect, no damage to the ecosystem is to be expected.

The resin reacts with water at the interface forming CO<sub>2</sub> 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). Once the product residues adhering to the walls of the containers have been rendered harmless, the product and hazard labels must be invalidated. These containers can be returned for recycling to the appropriate centres set up within the framework of the existing take-back scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations.

None disposal into waste water.

**SECTION 14: Transport information****ADG7 -****Australia**

14.1 UN 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	:	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	:	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 : Not dangerous cargo.  
Keep dry. Avoid heat above +40 °C.  
Keep separated from foodstuffs.

**14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

Not applicable.

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

Schedule 6 (Standard for the Uniform Scheduling of Medicines and Poisons)

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.**

H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.

The product is used mainly as a hardener in coating materials or adhesives. The handling of coating materials or adhesives containing reactive polyisocyanates and residual monomeric HDI requires appropriate protective measures referred to in this safety data sheet. These products may therefore be used only in industrial or trade applications. They are not suitable for use in homemaker (DIY) applications.

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.