JOLUKA

SYSTEMS FOR REINFORCED CONCRETE AND BRICK STRUCTURES

MATERIAL SAFETY DATA SHEET

1. Identification of substance / preparation and the company undertaking

Product Name	:	**Polythane 25**
Chemical Name	:	Diphenylmethane diisocyanate prepolymer
Chemical Family	:	MDI based prepolymer
Company	:	Joluka (Pty) Ltd 349 Roan Crescent, Corporate Park North Midrand Joahnnesburg 1685
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2. Composition/information on ingredients

Hazardous Components Diphenylmethane-4,4-diisocyanate < 0.5 %

3. Hazards identification

Contains diphenylmethane-4,4-diisocyanate < 0.5 %
Harmful Xn
May cause sensitisation by inhalation.
For their own protection, persons who suffer from hypersensitivity of the respiratory tract (e.g. asthmatics and chronic bronchitis sufferers) should avoid handling this product.
Symptoms affecting the respiratory tract can also occur several hours after overexposure.
Vapours and aerosols are the primary risk to the respiratory tract.
Presents no serious risk to the environment.

4. First-aid measures

First Aid Skin: Wash with plenty of warm water and soap. Consult a doctor in the event of a skin reaction.
First Aid Eyes: Flush eyes with lukewarm water for a sufficiently long period of time (10 minutes). Hold eyelids open while washing. Consult a doctor.
First Aid – Ingested: Do not induce vomiting, consult a doctor.
First Aid Inhalation: Remove person to fresh air. If there is difficulty in breathing, consult a doctor.

Information for the physician: The product irritates the respiratory tract and may trigger sensitisation of the skin and respiratory tract.
Treatment of acute irritation and bronchial constriction is primarily symptomatic. Extended medical care may be necessary, depending on the extent of the exposure and the symptoms.

5. Fire-fighting measures

Extinguishing media: CO2, foam, Dry Chemical; in cases of large fires, water spray should be used.
Formation of carbon monoxide, nitrogen oxide, isocyanate vapour and traces of hydrogen cyanide are possible in a fire.
Self contained breathing apparatus for firemen.
Evacuate personnel located downwind. Do not allow contaminated extinguishing water into the soil, groundwater or surface waters.

6. Accidental release measures

Personal protection: Gloves should be worn.
Environment precautions: Presents no danger to the environment once polymerised.
Methods for cleaning up: Scrape off mastic after polymerisation
Product recovery: Polymerised mastic can be scraped off after polymerisation
Product neutralising and elimination: Incinerate according to local regulations.

7. Handling and storage

Handling: Observe the usual precautionary measures for chemicals.
Avoid contact with skin.
Ensure adequate ventilation. Avoid smoking and drinking when handling.
Storage: Store away from any source of heat (< 30°C). Avoid high temperatures.
Keep the product in its original container

8. Exposure controls/Personal protection

Occupational Exposure Limits:	Values for diphenylmethane-4,4-diisocyanate: TWA 0,005 ppm; 0,05 mg/m3 Short term OEL-RL; 0,02 ppm; 0,05 mg/m3 SENSITISER
Controls	The control measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of substance release.

	Use a non-sparking, grounded ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Supply sufficient replacement air to make up for air removed. Have a safety shower/eye wash fountain readily available in the immediate work area.
Personal Protection	If engineering controls and work practices are not effective in controlling this material, then wear suitable personal protection equipment.
Respiratory Protection:	Required at inadequately ventilated workplaces.
Eye Protection:	Safety Goggles/face protection.
Hand:	PVC protective gloves, > 0,5 mm thickness Polychloroprene - CR, >= 0,5 mm thickness Nitrile rubber - NBR, >= 0,35 mm thickness Butyl rubber - IIR, >= 0,5 mm thickness Fluorinated rubber - FKM, >= 0,4 mm thickness All gloves breakthrough time >= 480 min Contaminated gloves should be disposed of.

Store working clothes separately. Wash hands before breaks and at end of work. Decontaminate, destroy and dispose of soiled protective clothing(see section13)
Safety precautions for handling freshly moulded polyurethane parts:
Depending on the production parameters, any uncovered surfaces of polyurethane mouldings produced using this raw material may contain traces of substances (e.g. starting and reaction products, catalysts, release agents) with hazardous characteristics (e.g. harmful, irritating, corrosive, sensitising).
In order to prevent skin contact with the traces of these substances, fully buttoned work clothing and protective gloves whose palm and finger areas at least are coated on the outside with nitrile rubber, PVC or polyurethane should be worn when demoulding or handling the freshly moulded polyurethane parts.
Avoid smoking, eating and drinking when handling.

9. Physical and chemical properties

Appearance:	White, grey, beige or black thixotropic paste, hydrocarbon odour
Relative Density:	1,30 @ 20°C
Vapour Pressure:	± 10 mbars at 20°C
Vapour density/air:	2
Flash Point:	Not tested; MDI ± 200°C
Flammable Limits:	Not determined
Ignition temperature:	± 400°C (Not tested - Value for MDI)

Not soluble in water, reacts with water.

pH:	Not applicable
Explosive limits:	Not determined

10. Stability and Reactivity

Conditions to Avoid: Stable at ambient temperatures. Avoid heat (> 30°C)
Incompatible Materials: Reacts with strong oxidisers.
Other: In fire situations, carbon monoxide, nitrous oxides, isocyanate vapours and a small amount of hydrogen cyanide can be produced.
No hazardous decomposition products when stored and handled correctly.

11. Toxicological information

Analogous to diphenylmethane-diisocyanate, isomers and homologues:
LD50 Oral, rat (female): >2 500 mg/kg
LC50 inhalation, rat: 490 mg/m³ as aerosol, 4h exposure
In a long-term inhalation study, rats were exposed over a period of 2 years to mechanically generated respirable aerosols (aerodynamic diameter 95 % less than 5 micron) of polymeric MDI (PMDI) in concentrations of 0.2, 1.0 and 6.0 mg PMDI/m³. The group of animals exposed to the highest concentration suffered an increased incidence of lung tumours, persistent inflammatory changes to the nose, respiratory tract and lungs, and yellowish deposits in the respiratory tract and lungs. The animals in the 1.0 mg/m³ group exhibited slight irritation and inflammatory changes to the nose, respiratory tract and lungs, but did not develop lung tumours and/or deposits. Animals in the 0.2 mg/m³ group suffered no irritation; this concentration was therefore deemed to constitute the "no effect level".

Effects on humans by exposure to the product on the:
Eyes: Causes slight temporary reddening and swelling of the conjunctiva and slight reversible clouding of the cornea. In high concentrations vapour product has irritating effect on eyes and mucous membranes.
Skin: Irritant. In case of longer contact with skin, tanning and irritant effects are possible.
Respiratory tract: In high concentrations vapour of product has irritating effects on eyes and mucous membranes.
Special effects/properties: Experience on humans:
Irritation of the mucous membranes in the nose, throat and lungs, dryness of the throat, pressure on the chest, sometimes accompanied by breathing difficulties and headaches. Delayed appearance of the symptoms and allergic reaction in susceptible persons possible.
No detrimental effects to health are known where the product is handled properly and industrial hygiene precautions are observed.

EFFECTS OF CHRONIC EXPOSURE:
No evidence that this product is a mutagen, carcinogen or teratogen.
May cause sensitisation by inhalation.
Dermal sensitisation: Inconclusive, because of conflicting experimental results

12. Ecological information

No ecological problems are expected when the product is handled and used with due care.
Immiscible with water. Reacts with water producing CO2 and forming a solid and insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by water soluble solvents. Previous experience shows that polyurea is inert and non-degradable.
Can be slightly hazardous to water.
Biodegradability: 0 % after 28 days (respirometer test)
Acute fish toxicity: LC50 = >1 000 mg/l (Brachydanio rerio 96h)
Daphnia: EC50 = > 1 000 mg/l (24h)
Acute bacteria toxicity: EC50 =>100 mg/l (Tested on activated sludge microorganism 3h)

13. Disposal considerations

Disposal Method (Product): There are no uniform EC regulations for the disposal of chemicals or residues. The disposal of the latter is regulated in the EC member countries through corresponding laws and regulations.
Product waste: May be transported to a controlled incinerator if local regulations are observed.
Decontaminated waste (solid) can be disposed of in a landfill. Check with local authority.
Disposal Method (Packaging): Disposal in accordance with local legal provisions.
Aluminium packaging may be recycled.

14. Transport information

ERG No	0	EAC	
IMDG-Shipping Name	NOT CONTROLLED SUBSTANCE		
IMDG Code	N/A	IMDG-Packaging Group	N/A
Marine Pollutant	No		
Class	Not Controlled		
Subsidiary Risks	None		

15. Regulatory information

EEC Hazard Classification

Risk Phases	Harmful Xn
	Contains diphenylmethane-4,4-diisocyanate < 1 %
	May cause sensitisation by inhalation

Safety Phases	Keep out of reach of children Do not breathe vapour/spray In case of accident or if you feel unwell, seek medical advice immediately and show the label where possible
National Legislation	National Road Traffic Act 1996 (Act 93 of 1996) Occupational Health and Safety Act 1993 (Act 85 of 1993) Hazardous Substances Act 1973 (Act 15 of 1973)

16. Other information

The information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so. It is the user's responsibility to determine for himself the suitability of any material for a specific purpose and to adopt such safety precautions as may be necessary. We make no warranty as to the results to be obtained in using any material. This information is neither product warranty nor base for legal relationship. It is not allowed to derive liabilities and warranties from this safety data sheet against us.