NCI CHEMICAL INDUSTRY LTD

SAFETY DATA SHEET

according to Regulation (EU) No. 1907/2006

POLYCOLD 100 PART B

Version 3.1 Revision Date 20.10.2010 Print Date 21.10.2010

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Trade name : POLYCOLD 100 PART B

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

Use : HARDENER FOR TOP COAT POLYASPARTIC COATING

Details of the supplier of the safety data sheet:

NCI CHEMICAL INDUSTRY LTD
8 IPPONAKTOS STREET, NICOSIA,
1018, CYPRUS
Tel.: +357 22 623303
Fax: +357 22 624265
Email: ncipaints@cytanet.com.cy
Emergency telephone number: +357 22623303

2. HAZARDS IDENTIFICATION

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)

Classification (67/548/EEC, 1999/45/EC):

Harmful by inhalation.
May cause sensitization by skin contact.
Irritating to respiratory system.

Label elements

Hazardous components which must be listed on the label

hexamethylene-1,6-diisocyanate homopolymer

Identification no.: 28182-81-2

Labelling (1272/2008/CE):

NCI CHEMICAL INDUSTRY LTD

SAFETY DATA SHEET

according to Regulation (EU) No. 1907/2006

POLYCOLD 100 PART B

Version 3.1 Revision Date 20.10.2010 Print Date 21.10.2010

Hazard statements:
H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.

Precautionary statements:
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280 Wear protective gloves/ protective clothing/ eye protection/ face 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.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention

Labelling (67/548/EEC, 1999/45/EC):
Labelling according to Directive 2006/121 Annex VI:
Xn Harmful
hexamethylene-1,6-diisocyanate homopolymer

R-phrase(s)
R20 Harmful by inhalation.
R37 Irritating to respiratory system.
R43 May cause sensitization by skin contact.
S-phrase(s)
S24 Avoid contact with skin.
S37 Wear suitable gloves.

COMPOSITION/INFORMATION ON INGREDIENTS

3. Type of product: Substance
aliphatic polyisocyanate

Hazardous components
hexamethylene-1,6-diisocyanate homopolymer
Concentration [wt.-%]: ca. 100
CAS-No.: 28182-81-2
GHS Classification: Acute Tox. 4 Inhalative H332 Skin Sens. 1 H317 STOT SE 3 H335
Classification (67/548/EEC): Xn R20 Xi R37 Xi R43
Classification/labelling according to Directive 2006/121 Annex VI
this contains:
Hexamethylene-1,6-diisocyanate
Concentration [wt.-%]: ca. 0,3
CAS-No.: 822-06-0
EINECS-No.: 212-485-8
Index-No.: 615-011-00-1
GHS Classification: Acute Tox. 4 Oral H302

GHS Classification: Acute Tox. 4 Oral H302 Acute Tox. 1 Inhalative H330 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Sens. Resp. 1 H334 Skin Sens. 1 H317 STOT SE 3 H335

Specific threshold concentration (GHS):

Sens. Resp. 1	**H334**	**>= 0,5 %**
Skin Sens. 1	**H317**	**>= 0,5 %**

Classification (67/548/EEC): T R23 Xi R36/37/38 R42/43

Specific threshold concentration

Xn	**R20, R42/43**	**0,5 - < 2 %**
T R23,	**R42/43**	**2 - < 20 %**
T R23, R36/37/38, R42/43		**>= 20 %**

4. FIRST AID MEASURES

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.

5. Fire-fighting measures

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

Special hazards arising from the substance or mixture:

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

Advice for fire-fighters:

Firemen must wear self-contained breathing apparatus.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Put on protective equipment (see chapter 8). Ensure adequate ventilation/exhaust extraction. Keep unauthorized persons away.

Environment related measures: Do not allow to escape into waterways, wastewater or soil.

Methods and material for containment and cleaning up: Take up with absorbent for chemicals or, if necessary with dry sand and store in closed containers.

Reference to other sections: For further disposal measures see chapter 13.

7. HANDLING AND STORAGE

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 Chapter 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 Chapter 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 the end of workday. Keep working clothes separately. Take off all contaminated clothing immediately.

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.

VCI storage class (VCI = German Association of the Chemical Industry): 10

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components with workplace control parameters

EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components with workplace control parameters

Substance	CAS-No.	Basis	Type	Value	Ceiling Limit Value	Remarks
Hexamethylene-1,6-diisocyanate	822-06-0	TRGS 900		0,005 ppm 0,035 mg/m3	=2=	
Hexamethylene-1,6-diisocyanate	822-06-0	TRGS 900	STEL FAC		1	Substance listed with both Peak factor and STEL factor. The Peak factor is supplied with the AGW values.
Hexamethylene-1,6-diisocyanate	822-06-0	TRGS 900	STEL CL			Category I: substances for which the localized effect has an assigned OEL respiratory passages.

Exposition assessment value (EBW) per TGRS 430:Polyisocyanate content (HDI oligomers and/or prepolymers) 100 %. Use an exposition assessment value of 0,35 mg/m³.

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 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 374-3:
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:

Wear eye/face protection.

Skin and body protection:

Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance:	**liquid**	
Colour:	colourless	
Odour:	slight inherent odour	
Odour Threshold:	not established	
pH:	not applicable	
Melting point/range:	not measurable	
Boiling point/boiling range:	not established	
Flash point:	ca. 193 °C at 1.013 hPa	DIN EN 22719
Evaporation rate:	not established	
Flammability (solid, gas):	not applicable	
Burning number:	not applicable	
Vapour pressure:	< 0,00001 hPa at 20 °C	EG A4
Vapour pressure of ingredients:		
Hexamethylene-1,6 Diisocyanate	ca. 0,007 hPa at 20 °C	
Vapour density:	not established	
Density:	ca. 1,15 g/cm³ at 20 °C	DIN 51757
Miscibility with water:	immiscible at 15 °C	
Surface tension:	ca. 46,5 mN/m at 20 °C	
Partition coefficient (n−octanol/water):	log Pow: ca. 8,38 (value calculated)	
Autoignition temperature:	not applicable	
Ignition temperature:	ca. 440 °C	DIN 51794
Decomposition temperature:	ca. 150 °C	
Viscosity, dynamic:	ca. 958 mPa.s at 20 °C	DIN 53019
Flow time:	ca. 96 s at 20 °C at 6 mm nozzle	ISO 2431
Explosive properties:	Not explosive	
Dust explosion class:	not applicable	
Oxidising properties:	not established	
Other information:	The indicated values do not necessarily correspond to the product specification. Please refer to the technical information sheet for specification data	

10. STABILITY AND REACTIVITY

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

Hazardous decomposition products: No hazardous decomposition products when stored and handled correctly.

11. TOXICOLOGICAL INFORMATION

Acute toxicity, oral:
hexamethylene-1,6-diisocyanate homopolymer
LD50 rat: >= 5.000 mg/kg
Method: OECD Test Guideline 423

Acute toxicity, inhalation:
hexamethylene-1,6-diisocyanate homopolymer
LC50 rat, male: 543 mg/m3, 4 h
Method: OECD Test Guideline 403
Toxicological studies of a comparable product.

LC50 rat, female: 390 mg/m3, 4 h
Method: OECD Test Guideline 403
Toxicological studies of a comparable product.

Primary skin irritation:
hexamethylene-1,6-diisocyanate homopolymer
rabbit
Result: slight irritant
Method: OECD Test Guideline 404

Primary mucosae irritation:
hexamethylene-1,6-diisocyanate homopolymer
rabbit
Result: slight irritant
Method: OECD Test Guideline 405

Sensitisation:
hexamethylene-1,6-diisocyanate homopolymer
Skin sensitization (local lymph node assay (LLNA)): mouse
Result: Causes sensitization.
Method: OECD Test Guideline 429

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-1,6-diisocyanate homopolymer
Application Route: Subacute inhalation toxicity, rat

Method: OECD Test Guideline 412
Test concentration - 4,3 ; 14,7 and 89,8 mg aerosol/m^3
exposure time - 3 weeks
(6 hours a day, 5 days a week)
4,3 mg/m^3 was tolerated without damage (NOEL),
14,7 mg/m^3 caused increase of lung weight,
89,8 mg/m^3 inflammatory changes in the respiratory tract.
Evidence of damage to organs other than the organs of respiration was not found.

Toxicological studies of a comparable product.
Genotoxicity in vitro:
hexamethylene-1,6-diisocyanate homopolymer
Test type: Ames test
Result: negative
Method: OECD Test Guideline 471

Test type: Chromosome aberration test in vitro
Result: negative
Method: OECD Test Guideline 473
Toxicological studies of a comparable product.

Test type: Point mutation in mammalian cells (HPRT test)
Result: negative
Method: OECD Test Guideline 476
Toxicological studies of a comparable product.

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 UK Workplace Exposure Limit (WEL).
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.

12. ECOLOGICAL INFORMATION

Do not allow to escape into waterways, wastewater or soil.
Toxizität
Acute Fish toxicity:
hexamethylene-1,6-diisocyanate homopolymer
LC50 > 100 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: OECD Test Guideline 203
Sample preparation on account of the reactivity of the substance with water:
Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.
Acute toxicity for daphnia:
hexamethylene-1,6-diisocyanate homopolymer
EC50 > 100 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202
Sample preparation on account of the reactivity of the substance with water:
Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.

Acute toxicity for algae:
hexamethylene-1,6-diisocyanate homopolymer
IC50 199 mg/l
Tested on: scenedesmus subspicatus Duration of test: 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; Filtratio
Acute bacterial toxicity:
hexamethylene-1,6-diisocyanate homopolymer
EC50 > 10.000 mg/l
Tested on: activated sludge
Method: OECD Guideline for Testing of Chemicals, No.209
Persistence and degradability
Biodegradability:
hexamethylene-1,6-diisocyanate homopolymer
Biodegradation: 2 %, 28 d, i.e. not readily degradable
Method: OECD Guideline for Testing of Chemicals, No.301 D
Bioaccumulative potential
Partition coefficient (n–octanol/water):
log Pow: ca. 8,38(value calculated)
Mobility in soil
Surface tension: ca. 46,5 mN/m at 20 °C
Additional information on ecotoxicology:
The resin 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.

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.

Waste treatment methods
After final product withdrawal, all residues must be removed from containers (drip-free, powderfree 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 takeback scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations.

None disposal into waste water.

NCI CHEMICAL INDUSTRY LTD

SAFETY DATA SHEET

according to Regulation (EU) No. 1907/2006

POLYCOLD 100 PART B

14. TRANSPORT INFORMATION

ADR/RID	**Not dangerous goods**
ADN	**Not dangerous goods**

This classification data does not apply to transportation by tanker. If required, additional information can be requested from the manufacturer.

IATA	**Not dangerous goods**
IMDG	**Not dangerous goods**
Special precautions for user :	**Not dangerous cargo.** **Slight smell. Keep dry.** **Avoid heat above +50 °C.** **Keep away from foodstuffs, acids and alkalis.**

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
TA Luft List (Germany):
Type: Organic Substances
portion Class 1: 0,3 %
Fraction of other substances: > 99 %

Water contaminating class (Germany): 1 slightly water endangering
(in accordance with Annex 4 to the Directive on Water-Hazardous Substances)

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

Other regulations: The European Committee of Paint, Printing Ink and Artists' Colours Manufacturers' Associations (CEPE) provides the following information on coatings containing isocyanates: Ready-to-use paints containing isocyanates may have an irritant effect on mucous membranes - especially on breathing organs - and cause hypersensitivity reactions. Inhalation of vapor or spray mist may cause sensitisation. When handling paints containing isocyanates all precautions required for solvent-containing paints must be followed. Vapor and spray mist in particular should not be inhaled. Allergics and asthmatics as well as people prone to respiratory ailments should not work with isocyanate containing paints.

16. OTHER INFORMATION

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.**

Full text of R-phrases referred to under sections 2 and 3 of the EU classification (67/548/EEC,1999/45/EC).

R20	**Harmful by inhalation.**
R23	**Toxic by inhalation.**
R36/37/38	**Irritating to eyes, respiratory system and skin.**
R37	**Irritating to respiratory system.**
R42/43	**May cause sensitization by inhalation and skin contact.**
R43	**May cause sensitization by skin contact.**

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 homeworker (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