

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

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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):

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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-phrases(s)

R20 Harmful by inhalation.

R37 Irritating to respiratory system.

R43 May cause sensitization by skin contact.

S-phrases(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

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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 %

1

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.

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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

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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/m ³	=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 \geq 0,5mm; breakthrough time \geq 480min.

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

Recommendation: contaminated gloves should be disposed of.

Eye protection:

Wear eye/face protection.

Skin and body protection:

Wear suitable protective clothing.

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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.

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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/m³

exposure time - 3 weeks

(6 hours a day, 5 days a week)

4,3 mg/m³ was tolerated without damage (NOEL),

14,7 mg/m³ caused increase of lung weight,

89,8 mg/m³ inflammatory changes in the respiratory tract.

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



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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.

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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.

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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.

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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 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