

SAFETY DATA SHEET

according to the Globally Harmonized System

HUNTSMAN

Enriching lives through innovation

POLYRESYST® S3040-70 RE

Version	Revision Date:	SDS Number:	Date of last issue: 20.04.2023
2.3	01.04.2024	400000007969	Date of first issue: 09.09.2021

Print Date 12.03.2025

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : POLYRESYST® S3040-70 RE

Manufacturer or supplier's details

Company : HUNTSMAN SOLUTIONS INDIA PRIVATE LIMITED

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+86 532 83889090
India: + 91 22 42 87 5333
Australia: 1 800 786 152
New Zealand: 0 800 767 437

Recommended use of the chemical and restrictions on use

Recommended use : Component of a Polyurethane System.

Restrictions on use : For industrial use only.

2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral) : Category 4

Acute toxicity (Dermal) : Category 5

Skin corrosion/irritation : Sub-category 1B

Serious eye damage/eye irritation : Category 1

Specific target organ toxicity - repeated exposure (Oral) : Category 2 (Pancreas, Liver, Kidney)

Short-term (acute) aquatic hazard : Category 2

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Long-term (chronic) aquatic hazard : Category 2

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H302 Harmful if swallowed.
H313 May be harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H373 May cause damage to organs (Pancreas, Liver, Kidney) through prolonged or repeated exposure if swallowed.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
Response:
P301 + P317 + P330 IF SWALLOWED: Get medical help. Rinse mouth.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302 + P352 + P317 IF ON SKIN: Wash with plenty of water. Get medical help.
P302 + P361 + P354 IF ON SKIN: Take off immediately all contaminated clothing. Immediately rinse with water for several minutes.
P304 + P340 + P316 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get emergency medical help immediately.
P305 + P354 + P338 + P317 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical help.
P319 Get medical help if you feel unwell.
P363 Wash contaminated clothing before reuse.
P391 Collect spillage.
Storage:
P405 Store locked up.
Disposal:
P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

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Other hazards which do not result in classification

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Amines

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Diaminopolypropylene glycol	9046-10-0	>= 50 - < 70
diethylmethylbenzenediamine	68479-98-1	>= 20 - < 25
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.,.alpha.',.alpha."-1,2,3- propanetriyltris[.omega.-(2-aminomethylethoxy)-	64852-22-8	>= 3 - < 10

4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.
- In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
If on skin, rinse well with water.
If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
Do NOT induce vomiting.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.
- Most important symptoms : None known.

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and effects, both acute and delayed

Notes to physician : Treat symptomatically.

5. FIREFIGHTING MEASURES

- | | |
|---|---|
| Suitable extinguishing media | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Unsuitable extinguishing media | : High volume water jet |
| Specific hazards during firefighting | : Do not allow run-off from fire fighting to enter drains or water courses. |
| Hazardous combustion products | : Carbon oxides
Nitrogen oxides (NOx)

Carbon oxides
Nitrogen oxides (NOx) |
| Specific extinguishing methods | : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Special protective equipment for firefighters | : Wear self-contained breathing apparatus for firefighting if necessary. |

6. ACCIDENTAL RELEASE MEASURES

- | | |
|---|---|
| Personal precautions, protective equipment and emergency procedures | : Use personal protective equipment.
Refer to protective measures listed in sections 7 and 8. |
| Environmental precautions | : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials for containment and cleaning up | : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal. |

7. HANDLING AND STORAGE

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Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Advice on safe handling : Do not breathe vapours/dust.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Keep in properly labelled containers.

Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.

Storage period : 12 Months

Further information on storage stability : Stable under normal conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : No data is available on the product itself.

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection

Remarks

: The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection

: Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection

: Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures

: When using do not eat or drink.
When using do not smoke.

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Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: grey
Odour	: No data is available on the product itself.
Odour Threshold	: No data is available on the product itself.
pH	: substance/mixture is non-soluble (in water)
Melting point/freezing point	: No data is available on the product itself.
Boiling point	: No data is available on the product itself.
Flash point	: > 100 °C
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: No data is available on the product itself.
Relative vapour density	: No data is available on the product itself.
Relative density	: No data is available on the product itself.
Density	: No data is available on the product itself.
Solubility(ies)	
Water solubility	: No data is available on the product itself.
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.
Auto-ignition temperature	: No data is available on the product itself.
Decomposition temperature	: No data is available on the product itself.

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Self-Accelerating decomposition temperature (SADT)	:	No data is available on the product itself.
Viscosity	:	No data is available on the product itself.
Explosive properties	:	No data is available on the product itself.
Oxidizing properties	:	No data is available on the product itself.
Particle size	:	No data is available on the product itself.

10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No hazards to be specially mentioned.
Conditions to avoid	:	None known.
Incompatible materials	:	None known.
Hazardous decomposition products	:	carbon dioxide carbon monoxide

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity	:	Acute toxicity estimate: 661.64 mg/kg Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate: 3,715 mg/kg Method: Calculation method

Components:

Diaminopolypropylene glycol:

Acute oral toxicity	:	LD50 (Rat): 480 mg/kg LD50 (Rat, male and female): 2,885 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	:	LC0 (Rat, male and female): > 0.74 mg/l Exposure time: 8 h Test atmosphere: vapour Method: OECD Test Guideline 403 GLP: no

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Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: Information given is based on data obtained from similar substances.

Acute dermal toxicity : LD50 (Rabbit): 2,085.8 mg/kg
Assessment: The component/mixture is low toxic after single contact with skin.

diethylmethylenediamine:

Acute oral toxicity : LD50 (Rat, male and female): 738 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity : Acute toxicity estimate (Rat, male and female): 1,128 mg/kg
Assessment: The component/mixture is moderately toxic after single contact with skin.

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.,.alpha.',.alpha."-1,2,3-propanetriyltris[.omega.-(2-aminomethylethoxy)-]:

Acute oral toxicity : LD50 (Rat): 2,690 mg/kg

Acute dermal toxicity : LD50 (Rabbit): 12,500 mg/kg

Skin corrosion/irritation

Components:

Diaminopolypropylene glycol:

Species : Rabbit
Method : OECD Test Guideline 404
Result : Corrosive after 3 minutes to 1 hour of exposure

diethylmethylenediamine:

Species : Rabbit
Assessment : No skin irritation

Method : OECD Test Guideline 404
Result : No skin irritation
GLP : yes

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.,.alpha.',.alpha."-1,2,3-propanetriyltris[.omega.-(2-aminomethylethoxy)-]:

Species : Rabbit
Exposure time : 24 h
Assessment : Irritating to skin.

Method : Draize Test
Result : Irritating to skin.

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Serious eye damage/eye irritation

Components:

Diaminopolypropylene glycol:

Species	:	Rabbit
Assessment	:	Risk of serious damage to eyes.
Result	:	Risk of serious damage to eyes.
Remarks	:	Risk of serious damage to eyes.

diethylmethylbenzenediamine:

Species	:	Rabbit
Assessment	:	Irritant
Result	:	Irritating to eyes.

Species	:	Rabbit
Assessment	:	Irritating to eyes.
Method	:	Other guidelines
Result	:	Irritation to eyes, reversing after 7 to 21 days

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.,.alpha.',.alpha."-1,2,3-propanetriyltris[.omega.-(2-aminomethylethoxy)-:

Species	:	Rabbit
Exposure time	:	4 h
Assessment	:	Severe eye irritation
Method	:	Draize Test
Result	:	Risk of serious damage to eyes.

Respiratory or skin sensitisation

Components:

diethylmethylbenzenediamine:

Exposure routes	:	Intradermal
Species	:	Guinea pig
Assessment	:	Did not cause sensitisation on laboratory animals.
Result	:	Did not cause sensitisation on laboratory animals.
GLP	:	no

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.,.alpha.',.alpha."-1,2,3-propanetriyltris[.omega.-(2-aminomethylethoxy)-:

Exposure routes	:	Skin
Species	:	Guinea pig
Method	:	Buehler Test
Result	:	Does not cause skin sensitisation.

Germ cell mutagenicity

Components:

Diaminopolypropylene glycol:

Genotoxicity in vitro	:	Test Type: gene mutation test
	:	Test system: Salmonella typhimurium

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Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male and female)
Cell type: Bone marrow
Application Route: Oral
Dose: 125, 250 and 500 mg/kg
Method: OECD Test Guideline 474
Result: negative

diethylmethylbenzenediamine:

Genotoxicity in vitro : Metabolic activation: no
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: Not classified due to inconclusive data.
GLP: yes

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male and female)
Application Route: Oral
Dose: 125/250/500 mg/kg bw/d
Method: OECD Test Guideline 474
Result: negative
GLP: yes

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.,.alpha.',.alpha."-1,2,3-propanetriyltris[.omega.-(2-aminomethylethoxy)-:

Genotoxicity in vitro : Test Type: reverse mutation assay
Test system: Salmonella tryphimurium and E. coli
Metabolic activation: with and without metabolic activation
Result: negative

Carcinogenicity

Components:

diethylmethylbenzenediamine:

Species : Rat, male and female
Application Route : Oral
Exposure time : 24 month(s)
Dose : 10/35/70 ppm

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Frequency of Treatment	:	7 daily
LOAEL	:	1.4 - 3.8 mg/kg body weight
Method	:	OECD Test Guideline 451
Result	:	negative
GLP	:	yes

Reproductive toxicity

Components:

Diaminopolypropylene glycol:

Effects on fertility	:	Test Type: reproductive and developmental toxicity study
		Species: Rat, male and female
		Application Route: Dermal
		Dose: 3, 10, 30 mg/kg bw/day
		General Toxicity - Parent: NOAEL: 10 mg/kg body weight
		General Toxicity F1: NOAEL: 30 mg/kg body weight
		Method: OECD Test Guideline 421

diethylmethylbenzenediamine:

Effects on foetal development	:	Test Type: Pre-natal
		Species: Rat, female
		Application Route: Oral
		Dose: 0/50/150/500 mg/kg bw/d
		Duration of Single Treatment: 20 d
		Frequency of Treatment: 7 days/week
		General Toxicity Maternal: NOEL: 2.63 mg/kg body weight
		Developmental Toxicity: NOAEL: 7.83 mg/kg body weight
		Method: OECD Test Guideline 414
		Result: No data available
		GLP: yes

STOT - single exposure

No data available

STOT - repeated exposure

Components:

diethylmethylbenzenediamine:

Exposure routes	:	Ingestion
Target Organs	:	Pancreas
Assessment	:	May cause damage to organs through prolonged or repeated exposure., The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

Diaminopolypropylene glycol:

Species	:	Rat, male and female
NOAEL	:	250 mg/kg
Method	:	OECD Test Guideline 411

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diethylmethybenzenediamine:

Species	: Rat, male and female
NOAEL	: 8 - 10 mg/kg
Application Route	: oral (feed)
Exposure time	: 90 d
Number of exposures	: daily
Dose	: 0/50/125/320 ppm
Method	: OECD Test Guideline 408
GLP	: yes

Species	: Rabbit, male and female
NOAEL	: > 100 mg/kg
Application Route	: Skin contact
Exposure time	: 21 d
Number of exposures	: 5 days/week
Dose	: 1/10/100 mg/kg bw/d
Method	: Subchronic toxicity
GLP	: yes

Aspiration toxicity

No data available

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Diaminopolypropylene glycol:

Toxicity to fish	: LC50: > 100 mg/l
	Exposure time: 96 h

LC50 (Cyprinodon variegatus (sheepshead minnow)): 600 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 80 mg/l
	Exposure time: 48 h
	Test Type: static test
	Method: OECD Test Guideline 202

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Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (algae)): 15 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (activated sludge): 750 mg/l
Test Type: static test
Method: OECD Test Guideline 209

diethylmethylenediamine:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 200 mg/l
End point: mortality
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38412
GLP: no

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.5 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.2.
GLP: no

Toxicity to algae/aquatic plants : ErC50 (Desmodesmus subspicatus (green algae)): ca. 104 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

ErC10 (Desmodesmus subspicatus (green algae)): ca. 54 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

M-Factor (Acute aquatic toxicity) : 1

Toxicity to microorganisms : EC50 (Pseudomonas putida): > 170 mg/l
Exposure time: 24 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
GLP: no

M-Factor (Chronic aquatic toxicity) : 1

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toxicity)

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.,.alpha.',.alpha."-1,2,3-propanetriyltris[.omega.-(2-aminomethylethoxy)-:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 68 mg/l
Exposure time: 96 h

Ecotoxicology Assessment

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

Persistence and degradability

Components:

diethylmethylbenzenediamine:

Biodegradability : Result: Not readily biodegradable.
Method: QSAR
GLP: no

Photodegradation : Test Type: Air
Rate constant: < .00001

Bioaccumulative potential

Components:

diethylmethylbenzenediamine:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 2.75
GLP: no
Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 1.17 (25 °C)
Method: OECD Test Guideline 107
GLP: yes

Mobility in soil

Components:

diethylmethylbenzenediamine:

Distribution among environmental compartments : Koc: 31.72 - 551

Other adverse effects

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

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13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company. Dispose of as hazardous waste in compliance with local and national regulations. Dispose of contents/ container to an approved waste disposal plant.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	:	UN 2735
Proper shipping name	:	AMINES, LIQUID, CORROSIVE, N.O.S. (POLYOXYPROPYLENEDIAMINE)
Class	:	8
Packing group	:	II
Labels	:	8
Environmentally hazardous	:	no

IATA-DGR

UN/ID No.	:	UN 2735
Proper shipping name	:	Amines, liquid, corrosive, n.o.s. (POLYOXYPROPYLENEDIAMINE)
Class	:	8
Packing group	:	II
Labels	:	Corrosive
Packing instruction (cargo aircraft)	:	855
Packing instruction (passenger aircraft)	:	851

IMDG-Code

UN number	:	UN 2735
Proper shipping name	:	AMINES, LIQUID, CORROSIVE, N.O.S. (POLYOXYPROPYLENEDIAMINE)
Class	:	8
Packing group	:	II
Labels	:	8
EmS Code	:	F-A, S-B
Marine pollutant	:	yes(DIETHYLTOLUENEDIAMINE)

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Transport in bulk according to IMO instruments

Not applicable for product as supplied.

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

15. REGULATORY INFORMATION

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

The components of this product are reported in the following inventories:

DSL	: All components of this product are on the Canadian DSL
AIIC	: Exempted introduction, please contact your sales representative for applicable exemptions before import into Australia
ENCS	: Not in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: Not in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory

Inventories

AIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TECI (Thailand), TSCA (USA)

16. OTHER INFORMATION

Revision Date	: 01.04.2024
Date format	: dd.mm.yyyy

The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

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according to the Globally Harmonized System

HUNTSMAN

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POLYRESYST® S3040-70 RE

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IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

The trademarks above are the property of Huntsman Corporation or an affiliate thereof.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

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POLYRESYST® S3040 HA

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1. PRODUCT AND COMPANY IDENTIFICATION

Product name : POLYRESYST® S3040 HA

Manufacturer or supplier's details

Company : HUNTSMAN SOLUTIONS INDIA PRIVATE LIMITED

Address : Unit No. 2501, 25th Floor, Rupa Renaissance, Plot No. D33,
Juinagar, MIDC Road, TTC Industrial Area,
Navi Mumbai,
Maharashtra 400 705
India

Telephone : +91 22 42875100

E-mail address : Global_Product_EHS_HPU@huntsman.com

Emergency telephone number : EUROPE: +32 35 75 1234
USA: +1 800 424 9300
ASIA: +65 6542 9595
China: +86 20 39377888
+86 532 83889090
India: + 91 22 42 87 5333
Australia: 1 800 786 152
New Zealand: 0 800 767 437

Recommended use of the chemical and restrictions on use

Recommended use : Component of a Polyurethane System.

Restrictions on use : Professional use of aprotic polar solvents for cleaning.
Consumer spray applications.
Consumer products requiring heating above 40°C.

2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Inhalation)	: Category 4
Skin corrosion/irritation	: Category 2
Serious eye damage/eye irritation	: Category 2A
Respiratory sensitisation	: Category 1
Skin sensitisation	: Category 1
Specific target organ toxicity -	: Category 3 (Respiratory system)

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single exposure

GHS label elements

Hazard pictograms



Signal word

: Danger

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.

Precautionary statements

: **Prevention:**
P261 Avoid breathing mist or vapours.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/ eye protection/ face protection.
P284 Wear respiratory protection.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of water.
P304 + P340 + P317 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical help.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P317 If skin irritation or rash occurs: Get medical help.
P337 + P317 If eye irritation persists: Get medical help.
P342 + P316 If experiencing respiratory symptoms: Get emergency medical help immediately.
P362 + P364 Take off contaminated clothing and wash it before reuse.
Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
Disposal:
P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Other hazards which do not result in classification

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

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Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]	39420-98-9	>= 50 - < 70
4,4'-methylenediphenyl diisocyanate	101-68-8	>= 20 - < 30
2,4'-methylenediphenyl diisocyanate	5873-54-1	>= 10 - < 20
propylene carbonate	108-32-7	>= 1 - < 10

4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Do not leave the victim unattended.
Get medical attention immediately if symptoms occur.
Show this safety data sheet to the doctor in attendance.
- If inhaled : If breathed in, move person into fresh air.
Call a physician or poison control centre immediately.
Keep patient warm and at rest.
Keep respiratory tract clear.
If breathing is difficult, give oxygen.
If breathing is irregular or stopped, administer artificial respiration.
If unconscious, place in recovery position and seek medical advice.
Consult a physician immediately if symptoms such as shortness of breath or asthma are observed.
A hyper-reactive response to even minimal concentrations of diisocyanates may develop in sensitised persons.
The exposed person may need to be kept under medical surveillance for 48 hours.
LC50 (rat) : ca. 490 mg/m³ (4 hours) : using experimentally produced respirable aerosol having aerodynamic diameter <5microns.
Methods used to generate the exposure concentrations in the animal studies use extreme laboratory conditions and does not represent actual exposure conditions of the material in the workplace, storage, transportation or expected use on the market due to the very low vapor pressure. Therefore, these test results cannot be used to for hazard classification of the material. Rather, an acute toxicity estimate is calculated based on weight of evidence and expert judgement and is used to justify a modified classification for acute inhalation toxicity.
- In case of skin contact : In case of contact, immediately flush skin with soap and plenty of water.
Take off contaminated clothing and shoes immediately.
Wash contaminated clothing before reuse.

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- Thoroughly clean shoes before reuse.
Call a physician if irritation develops or persists.
An MDI study has demonstrated that a polyglycol-based skin cleanser (such as D-Tam™, PEG-400) or corn oil may be more effective than soap and water.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Protect unharmed eye.
Keep eye wide open while rinsing.
Seek medical advice.
- If swallowed : Gently wipe or rinse the inside of the mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Keep respiratory tract clear.
Keep at rest.
If a person vomits when lying on his back, place him in the recovery position.
Never give anything by mouth to an unconscious person.
Take victim immediately to hospital.
If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : Severe allergic skin reactions, bronchospasm and anaphylactic shock
This product is a respiratory irritant and potential respiratory sensitizer: repeated inhalation of vapour or aerosol at levels above the occupational exposure limit could cause respiratory sensitisation.
Symptoms may include irritation to the eyes, nose, throat and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing.
The onset of the respiratory symptoms may be delayed for several hours after exposure.
A hyper-reactive response to even minimal concentrations of MDI may develop in sensitised persons.
- Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
First Aid responders should pay attention to self-protection and use the recommended protective clothing
- Notes to physician : Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

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5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Foam
Carbon dioxide (CO₂)
Dry powder
- Unsuitable extinguishing media : Water may be used if no other available and then in copious quantities. Reaction between water and hot isocyanate may be vigorous.
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
The pressure in sealed containers can increase under the influence of heat.
Exposure to decomposition products may be a hazard to health.
- Hazardous combustion products : Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>500 degrees C), aniline is suspected of being formed.
- Specific extinguishing methods : Cool containers/tanks with water spray.
Standard procedure for chemical fires.
Due to reaction with water producing CO₂-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Prevent fire extinguishing water from contaminating surface water or the ground water system.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for firefighters : Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Immediately evacuate personnel to safe areas.
Use personal protective equipment.
If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials.
Ensure adequate ventilation.
Keep people away from and upwind of spill/leak.
Only qualified personnel equipped with suitable protective equipment may intervene.
For additional precautions and advice on safe handling, see section 7.

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Never return spills in original containers for re-use.
Make sure that there is a sufficient amount of neutralizing/absorbent material near the storage area.
The danger areas must be delimited and identified using relevant warning and safety signs.
Treat recovered material as described in the section "Disposal considerations".
For disposal considerations see section 13.

Environmental precautions : Do not allow uncontrolled discharge of product into the environment.
Do not allow material to contaminate ground water system.
Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
Local authorities should be advised if significant spillages cannot be contained.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Clean-up methods - small spillage
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Clean contaminated surface thoroughly.
Sweep up or vacuum up spillage and collect in suitable container for disposal.
Neutralize small spillages with decontaminant.
The compositions of liquid decontaminants are given in Section 16.
Remove and dispose of residues.
Clean-up methods - large spillage
If the product is in its solid form:
Spilled MDI flakes should be picked up carefully.
The area should be vacuum cleaned to remove remaining dust particles completely.
If the product is in its liquid form:
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Leave to react for at least 30 minutes.
Shovel into open-top drums for further decontamination.
Wash the spillage area with water.
Test atmosphere for MDI vapour.
Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Technical measures : Ensure that eyewash stations and safety showers are close to the workstation location.

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- Local/Total ventilation : Use only with adequate ventilation.
- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Advice on safe handling : For personal protection see section 8.
Avoid formation of aerosol.
Do not breathe vapours or spray mist.
Do not breathe vapours/dust.
Do not swallow.
Do not get in eyes or mouth or on skin.
Do not get on skin or clothing.
Avoid exposure - obtain special instructions before use.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Keep container closed when not in use.
Open drum carefully as content may be under pressure.
Dispose of rinse water in accordance with local and national regulations.
Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons.
Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended.
Persons allergic to isocyanates, and particularly those suffering from asthma or other respiratory conditions, should not work with isocyanates.
Industrial use of aprotic polar solvents for cleaning can release hazardous primary aromatic amines (>0.1%)
Sudden Release of Pressure Hazard
- Conditions for safe storage : Keep containers tightly closed in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
Observe label precautions.
Protect from moisture.
Electrical installations / working materials must comply with the technological safety standards.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
- Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.
- Further information on storage stability : No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible	Basis
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			concentration	
4,4'-methylenediphenyl diisocyanate	101-68-8	TWA	0.005 ppm	ACGIH

Engineering measures : No data is available on the product itself.

Personal protective equipment

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. In emergency, non-routine and unknown exposure situations, including confined space entries, a NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied air respirator (SAR) with auxiliary self-contained air supply, should be used.

Hand protection

Remarks

: The suitability for a specific workplace should be discussed with the producers of the protective gloves. Protective gloves should be worn when handling freshly made polyurethane products to avoid contact with trace residual materials which may be hazardous in contact with skin.

Use chemical resistant gloves classified under Standard EN374: protective gloves against chemicals and microorganisms. Examples of glove materials that might provide suitable protection include: Butyl rubber, Chlorinated polyethylene, Polyethylene, Ethyl vinyl alcohol copolymers laminated ("EVAL"), Polychloroprene (Neoprene*), Nitrile/butadiene rubber ("nitrile" or "NBR"), Polyvinyl chloride ("PVC" or "vinyl"), Fluoroelastomer (Viton*).

When prolonged or frequently repeated contact may occur, a glove with 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 protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN374) is recommended.

Notice: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all requisite workplace factors such as, but not limited to : other chemicals that may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as instructions/specifications provided by the glove supplier. By industrial use of aprotic polar solvents for cleaning : Butyl rubber (0.7mm), Nitrile rubber (0.4mm), Chloroprene (0.5mm)

Eye protection : Safety eyewear complying with an approved standard should

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be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Chemical splash goggles.

Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.

Please follow all applicable local/national requirements when selecting protective measures for a specific workplace.

Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Recommended:
Overall (preferably heavy cotton) or Tyvek-Pro Tech 'C' , Tyvek Pro 'F' disposable coverall.

Protective measures : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Ensure that eye flushing systems and safety showers are located close to the working place.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
Wash face, hands and any exposed skin thoroughly after handling.
Remove contaminated clothing and protective equipment before entering eating areas.
When using do not eat, drink or smoke.
Contaminated work clothing should not be allowed out of the workplace.
Wash hands before breaks and immediately after handling the product.
Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: light yellow
Odour	: No data is available on the product itself.
Odour Threshold	: No data is available on the product itself.
pH	: substance/mixture reacts with water
Melting point/freezing point	: No data is available on the product itself.

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Boiling point	: No data is available on the product itself.
Flash point	: > 105 °C Method: closed cup
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: No data is available on the product itself.
Relative vapour density	: No data is available on the product itself.
Relative density	: No data is available on the product itself.
Density	: 1.12 g/cm ³ (25 °C)
Solubility(ies)	
Water solubility	: No data is available on the product itself.
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.
Auto-ignition temperature	: No data is available on the product itself.
Decomposition temperature	: No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	: No data is available on the product itself.
Viscosity	
Viscosity, dynamic	: 350 mPa.s (25 °C)
Explosive properties	: No data is available on the product itself.
Oxidizing properties	: No data is available on the product itself.
Particle size	: No data is available on the product itself.

10. STABILITY AND REACTIVITY

Reactivity : No dangerous reaction known under conditions of normal use.

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Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Reaction with water (moisture) produces CO₂-gas. Exothermic reaction with materials containing active hydrogen groups. The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents. MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface. A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.
Conditions to avoid	:	Extremes of temperature and direct sunlight. Exposure to air or moisture over prolonged periods.
Incompatible materials	:	Acids Amines Bases Metals water
Hazardous decomposition products	:	Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>500 degrees C), aniline is suspected of being formed.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute inhalation toxicity : Assessment: The substance/mixture is not toxic on inhalation as defined by dangerous goods regulations.

Remarks: Methods used to generate the exposure concentrations in the animal studies use extreme laboratory conditions and does not represent actual exposure conditions of the material in the workplace, storage, transportation or expected use on the market due to the very low vapor pressure. Therefore, these test results cannot be used to for hazard classification of the material. Rather, an acute toxicity estimate is calculated based on weight of evidence and expert judgement and is used to justify a modified classification for acute inhalation toxicity.

Acute toxicity estimate: 1.56 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Method: Calculation method

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Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Acute oral toxicity : LD50 (Rat, male): > 10,000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): 0.49 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

LC50 (Rat, male and female): > 2.24 mg/l
Exposure time: 1 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The component/mixture is moderately toxic after short term inhalation.

Acute dermal toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg
Method: OECD Test Guideline 402

4,4'-methylenediphenyl diisocyanate:

Acute oral toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity
Remarks: Information given is based on data obtained from similar substances.

Acute inhalation toxicity : LC50 (Rat, male and female): 431.18 mg/m3
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The component/mixture is moderately toxic after short term inhalation.

Acute dermal toxicity : LD50 (Rabbit): > 9,400 mg/kg
Remarks: Information given is based on data obtained from similar substances.

2,4'-methylenediphenyl diisocyanate:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity
Remarks: Information given is based on data obtained from similar substances.

Acute inhalation toxicity : LC50 (Rat, male and female): 431.18 mg/m3
Exposure time: 4 h
Test atmosphere: dust/mist

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Method: OECD Test Guideline 403

Assessment: The component/mixture is moderately toxic after short term inhalation.

Acute dermal toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg
Method: OECD Test Guideline 402
GLP: no
Remarks: Information given is based on data obtained from similar substances.

propylene carbonate:

Acute oral toxicity : LD50 (Rat, male and female): 33,520 mg/kg

Acute dermal toxicity : LD50 (Rabbit, male and female): > 3,000 mg/kg
Method: OECD Test Guideline 402

LD50 (Rabbit, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Species : Rabbit
Assessment : Irritant

Method : OECD Test Guideline 404
Result : Irritating to skin.

4,4'-methylenediphenyl diisocyanate:

Species : Rabbit
Assessment : Irritating to skin.

Method : OECD Test Guideline 404
Result : Irritating to skin.

2,4'-methylenediphenyl diisocyanate:

Species : Rabbit
Assessment : Irritating to skin.

Method : OECD Test Guideline 404
Result : Irritating to skin.

propylene carbonate:

Species : Rabbit
Assessment : No skin irritation

Method : OECD Test Guideline 404
Result : No skin irritation

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Serious eye damage/eye irritation

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Species	:	Rabbit
Assessment	:	Irritant
Method	:	No information available.
Result	:	Mild eye irritation
Remarks	:	Mild eye irritation largely based on human evidence

4,4'-methylenediphenyl diisocyanate:

Species	:	Rabbit
Assessment	:	Irritating to eyes.
Method	:	OECD Test Guideline 405
Result	:	Irritating to eyes.

2,4'-methylenediphenyl diisocyanate:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	Eye irritation
Remarks	:	Information given is based on data obtained from similar substances. largely based on human evidence

propylene carbonate:

Species	:	Rabbit
Assessment	:	Irritating to eyes.
Method	:	OPPTS 870.2400
Result	:	Eye irritation

Respiratory or skin sensitisation

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Exposure routes	:	Skin
Species	:	Mouse
Assessment	:	May cause sensitisation by skin contact.
Result	:	Causes sensitisation.

Exposure routes	:	Respiratory Tract
Species	:	Guinea pig
Assessment	:	May cause sensitisation by inhalation.
Result	:	Causes sensitisation.

Assessment	:	Mild eye irritation
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4,4'-methylenediphenyl diisocyanate:

Exposure routes	: Skin
Species	: Guinea pig
Assessment	: May cause sensitisation by skin contact.
Method	: OECD Test Guideline 406
Result	: May cause sensitisation by skin contact.
Test Type	: Local lymph node assay (LLNA)
Exposure routes	: Respiratory Tract
Species	: Guinea pig
Assessment	: May cause sensitisation by inhalation.
Result	: May cause sensitisation by inhalation.
Assessment	: May cause allergy or asthma symptoms or breathing difficulties if inhaled., May cause an allergic skin reaction.

2,4'-methylenediphenyl diisocyanate:

Exposure routes	: Respiratory Tract
Species	: Guinea pig
Assessment	: May cause sensitisation by inhalation.
Result	: May cause sensitisation by inhalation.
Remarks	: Information given is based on data obtained from similar substances.
Species	: Guinea pig
Assessment	: May cause sensitisation by skin contact.
Method	: OECD Test Guideline 406
Result	: May cause sensitisation by skin contact.

propylene carbonate:

Exposure routes	: Skin
Species	: Humans
Result	: Does not cause skin sensitisation.

Germ cell mutagenicity

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Genotoxicity in vitro	: Concentration: 200 ug/plate Metabolic activation: with and without metabolic activation Method: Directive 67/548/EEC, Annex, B.13/14 Result: negative
Genotoxicity in vivo	: Application Route: Inhalation Exposure time: 3 Weeks Dose: 118 mg/m3 Method: OECD Test Guideline 474 Result: negative

4,4'-methylenediphenyl diisocyanate:

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Genotoxicity in vitro : Test Type: reverse mutation assay
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: Directive 67/548/EEC, Annex, B.13/14
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Rat (male)
Cell type: Somatic
Application Route: Inhalation
Exposure time: 3 Weeks
Method: OECD Test Guideline 474
Result: negative

Test Type: comet assay
Species: Rat (male)
Cell type: Liver cells
Application Route: inhalation (dust/mist/fume)
Dose: 2.5/4.9/12 mg/m3
Method: OECD Test Guideline 489
Result: negative

2,4'-methylenediphenyl diisocyanate:

Genotoxicity in vitro : Test Type: reverse mutation assay
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Genotoxicity in vivo : Test Type: comet assay
Result: negative
Remarks: Information given is based on data obtained from similar substances.

Test Type: Micronucleus test
Species: Rat (male)
Cell type: Somatic
Application Route: Inhalation
Exposure time: 3 Weeks
Method: OECD Test Guideline 474
Result: negative
Remarks: Information given is based on data obtained from similar substances.

propylene carbonate:

Genotoxicity in vitro : Concentration: 5000 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Metabolic activation: negative
Method: OECD Test Guideline 482
Result: negative

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Genotoxicity in vivo : Application Route: Intraperitoneal injection
Dose: 1666 mg/kg
Method: OECD Test Guideline 474
Result: negative

Carcinogenicity

Product:

Remarks : Rats have been exposed for two years to a respirable aerosol of polymeric MDI which resulted in a chronic pulmonary irritation at high concentrations. Only at the top level (6 mg/m³), there was a significant incidence of a benign tumour of the lung (adenoma) and one malignant tumour (adenocarcinoma). There were no lung tumours at 1 mg/m³ and no effects at 0.2 mg/m³. Overall, the tumour incidence, both benign and malignant, and the number of animals with the tumours were not different from controls. The increased incidence of lung tumours is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumour formation will occur.

Remarks : Industrial use of aprotic polar solvents for cleaning can release hazardous primary aromatic amines (>0.1%)
Based on animal studies, primary aromatic amines are considered as potential carcinogen to humans. Some of those chemicals are proven carcinogens to humans
Provided the recommended personal protective equipment and hygiene measures are applied, no adverse effects to human health are to be expected

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Species	: Rat, male and female
Application Route	: Inhalation
Exposure time	: 24 month(s)
Dose	: 1 mg/m ³
Frequency of Treatment	: 5 daily
Method	: OECD Test Guideline 453
Result	: positive
Target Organs	: Lungs

4,4'-methylenediphenyl diisocyanate:

Species	: Rat, female
Application Route	: Inhalation
Exposure time	: 24 month(s)
Activity duration	: 17 h
Dose	: 0, 0.2, 0.7, 2.1 mg/m ³ mg/m ³

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Frequency of Treatment : 5 days/week
NOEL : 0.7 mg/m³
LOAEL : 0.23 mg/m³
Result : positive
Target Organs : Lungs

2,4'-methylenediphenyl diisocyanate:

Species : Rat, male and female
Application Route : Inhalation
Exposure time : 24 month(s)
Dose : 1 mg/m³
Frequency of Treatment : 5 daily
NOAEL : 1 mg/m³
Method : OECD Test Guideline 453
Target Organs : Lungs
Remarks : Information given is based on data obtained from similar substances.

propylene carbonate:

Species : Mouse, male
Application Route : Dermal
Exposure time : 104 weeks
Dose : 1500 - 2000 mg/kg
Frequency of Treatment : 2 daily
Method : OECD Test Guideline 451
Result : negative

Reproductive toxicity

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Effects on foetal development : Species: Rat, male and female
Application Route: Inhalation
Method: OECD Test Guideline 414
Result: No teratogenic effects

2,4'-methylenediphenyl diisocyanate:

Effects on foetal development : Test Type: Pre-natal
Species: Rat, females
Application Route: Inhalation
General Toxicity Maternal: NOAEC: 4 mg/m³
Developmental Toxicity: NOAEC: 4 mg/m³
Result: No teratogenic effects
Remarks: Information given is based on data obtained from similar substances.

propylene carbonate:

Effects on fertility : Species: Rat

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Application Route: Oral
Method: OECD Test Guideline 414
Result: negative

Effects on foetal development : Species: Rat, male and female
Application Route: Oral
General Toxicity Maternal: NOAEL: 1,000 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

STOT - single exposure

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Exposure routes : inhalation (dust/mist/fume)
Target Organs : Respiratory Tract
Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

4,4'-methylenediphenyl diisocyanate:

Exposure routes : Inhalation
Target Organs : Respiratory system
Assessment : May cause respiratory irritation., The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

2,4'-methylenediphenyl diisocyanate:

Exposure routes : Inhalation
Target Organs : Respiratory Tract
Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation., May cause respiratory irritation.

STOT - repeated exposure

Components:

4,4'-methylenediphenyl diisocyanate:

Exposure routes : Inhalation
Target Organs : Respiratory system
Assessment : May cause damage to organs through prolonged or repeated exposure., The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

2,4'-methylenediphenyl diisocyanate:

Exposure routes : Inhalation
Target Organs : Respiratory Tract
Assessment : May cause damage to organs through prolonged or repeated exposure., The substance or mixture is classified as specific

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target organ toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Species	: Rat, male and female
NOEC	: 0.2 mg/m3
Exposure time	: 2 yr
Number of exposures	: 5 d
Method	: OECD Test Guideline 453

Repeated dose toxicity - : Mild eye irritation
Assessment

4,4'-methylenediphenyl diisocyanate:

Species	: Rat, female
LOEC	: 1 mg/m3
Application Route	: Inhalation
Test atmosphere	: dust/mist
Exposure time	: 2 years 17 h
Number of exposures	: 5 days/week
Dose	: 0, 0.2, 0.7, 2.1 mg/m3
Method	: Chronic toxicity
Assessment	: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

2,4'-methylenediphenyl diisocyanate:

Species	: Rat, female
LOEC	: 1 mg/m3
Application Route	: Inhalation
Test atmosphere	: dust/mist
Exposure time	: 2 years 17 h
Number of exposures	: 5 days/week
Dose	: 0, 0.2, 0.7, 2.1 mg/m3
Method	: Chronic toxicity
Assessment	: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

propylene carbonate:

Species	: Rat, male and female
NOEC	: ca. 100 mg/m3
Application Route	: Inhalation
Test atmosphere	: dust/mist
Exposure time	: 2,232 h
Number of exposures	: 6 h
Method	: OECD Test Guideline 413

Aspiration toxicity

No data available

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Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Product:

Remarks : No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 24 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to microorganisms : EC50 (activated sludge): > 100 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: >= 10 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

Toxicity to soil dwelling organisms : NOEC: >= 1,000 mg/kg
Exposure time: 336 h
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 207

4,4'-methylenediphenyl diisocyanate:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l
End point: mortality

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Exposure time: 96 h
Test substance: Fresh water
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): 9 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l
Exposure time: 3 h
Test Type: static test
Method: OECD Test Guideline 209
GLP:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: >= 10 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211
Remarks: Information given is based on data obtained from similar substances.

Toxicity to soil dwelling organisms : NOEC: >= 1,000 mg/kg
Exposure time: 336 h
Species: Eisenia fetida (earthworms)

Plant toxicity : EC50: >1000 milligram per kilogram
Exposure time: 14 d
Species: Avena sativa (oats)

EC50: >1000 milligram per kilogram
Exposure time: 14 d
Species: Lactuca sativa (lettuce)

Ecotoxicology Assessment

Acute aquatic toxicity : Toxic to aquatic life.

2,4'-methylenediphenyl diisocyanate:

Toxicity to fish : LL50 (Danio rerio (zebra fish)): > 100 mg/l
End point: mortality
Exposure time: 96 h
Test substance: Fresh water

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Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): 3.7 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EL10 (algae): > 100 mg/l
Exposure time: 72 h
Test substance: Fresh water
Method: OECD Test Guideline 201

NOELR (algae): >= 100 mg/l
Exposure time: 72 h
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l
Exposure time: 3 h
Test substance: Fresh water
Method: OECD Test Guideline 209
Remarks: Information given is based on data obtained from similar substances.

NOEC (activated sludge): 250 mg/l
Exposure time: 3 h
Test substance: Fresh water
Method: OECD Test Guideline 209
Remarks: Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: >= 10 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211
Remarks: Information given is based on data obtained from similar substances.

Toxicity to soil dwelling organisms : EC50: > 1,000 mg/kg
Exposure time: 14 d
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 207
Remarks: Information given is based on data obtained from similar substances.

Plant toxicity : EC50: >1000 milligram per kilogram
Exposure time: 14 d
Species: Avena sativa (oats)
Method: OECD Test Guideline 208

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NOEC: >=1000 milligram per kilogram
Exposure time: 14 d
Species: Avena sativa (oats)
Method: OECD Test Guideline 208

EC50: >1000 milligram per kilogram
Exposure time: 14 d
Species: Lactuca sativa (lettuce)
Method: OECD Test Guideline 208

NOEC: >=1000 milligram per kilogram
Exposure time: 14 d
Species: Lactuca sativa (lettuce)
Method: Terrestrial Plants Test: Seedling Emergence and Seedling Growth Test

Ecotoxicology Assessment

Acute aquatic toxicity : Toxic to aquatic life.

propylene carbonate:

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): > 1,000 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.1.
Remarks: No-observed-effect level

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202
Remarks: No-observed-effect level

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): > 929 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

ErC50 (Desmodesmus subspicatus (green algae)): > 900 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (Pseudomonas putida): 25,619 mg/l
Exposure time: 16 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38 412 Part 8

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Persistence and degradability

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Biodegradability : Inoculum: Domestic sewage
Concentration: 30 mg/l
Result: Not biodegradable
Biodegradation: 0 %
Exposure time: 28 d
Method: Inherent Biodegradability: Modified MITI Test (II)

4,4'-methylenediphenyl diisocyanate:

Biodegradability : aerobic
Inoculum: activated sludge, non-adapted
Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Test substance: Fresh water

Stability in water : Degradation half life (DT50): 20 hrs (25 °C)
Remarks: Fresh water

2,4'-methylenediphenyl diisocyanate:

Biodegradability : Inoculum: Domestic sewage
Concentration: 30 mg/l
Result: Not biodegradable
Biodegradation: 0 %
Exposure time: 28 d
Method: Inherent Biodegradability: Modified MITI Test (II)
Remarks: Information given is based on data on the components and the ecotoxicology of similar products.

Biochemical Oxygen Demand (BOD) : 77 mg/l

propylene carbonate:

Biodegradability : Concentration: 20 mg/l
Result: Readily biodegradable.
Biodegradation: 83.5 %
Exposure time: 29 d
Method: OECD Test Guideline 301B

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Bioaccumulative potential

Components:

Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 200
Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: 4.51 (20 °C)
pH: 7
Method: OECD Test Guideline 117

4,4'-methylenediphenyl diisocyanate:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Exposure time: 28 d
Concentration: 0.08 µg/l
Bioconcentration factor (BCF): 200
Method: OECD Test Guideline 305
Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: 4.51 (22 °C)
pH: 7
Method: OECD Test Guideline 117

2,4'-methylenediphenyl diisocyanate:

Bioaccumulation : Species: Fish
Concentration: 0.08 µg/l
Bioconcentration factor (BCF): 200
Method: OECD Test Guideline 305
GLP: yes
Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: 4.52 (20 °C)
pH: 7
Method: OECD Test Guideline 117
GLP: no

propylene carbonate:

Partition coefficient: n-octanol/water : log Pow: -0.5 (20 °C)

Mobility in soil

Components:

4,4'-methylenediphenyl diisocyanate:

Distribution among environmental compartments : log Koc: 4.5
Method: QSAR

Stability in soil : Soil temperature: 22 °C
Dissipation time: 24 h

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Method: OECD Test Guideline 307

2,4'-methylenediphenyl diisocyanate:

Distribution among : Koc: 4.5
environmental compartments Method: QSAR

Other adverse effects

Product:

Additional ecological : No data available
information

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with
chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

Not regulated as dangerous goods

IATA-DGR

Not regulated as dangerous goods

IMDG-Code

Not regulated as dangerous goods

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

Special precautions for user

Not applicable

15. REGULATORY INFORMATION

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

The components of this product are reported in the following inventories:

DSL : All components of this product are on the Canadian DSL

AIIC : On the inventory, or in compliance with the inventory

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ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: Not in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory

Inventories

AIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TECI (Thailand), TSCA (USA)

16. OTHER INFORMATION

Revision Date : 01.04.2024

Further information

Other information : Liquid decontaminants (percentages by weight or volume) :
Decontaminant 1 : *- sodium carbonate : 5 - 10 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %
Decontaminant 2 : *- concentrated ammonia solution : 3 - 8 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %
Decontaminant 1 reacts slower with diisocyanates but is more environmentally friendly than decontaminant 2.
Decontaminant 2 contains ammonia. Ammonia presents health hazards. (See supplier safety information.)

Date format : dd.mm.yyyy

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

ACGIH / TWA : 8-hour, time-weighted average

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SAFETY DATA SHEET

according to the Globally Harmonized System

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THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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