

Structan Express

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

1.1. Product identifier

Product name : Structan Express
 Registration number REACH : Not applicable (mixture)
 Product type REACH : Mixture

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

1.2.1 Relevant identified uses

Adhesive

1.2.2 Uses advised against

No uses advised against known

1.3. Details of the supplier of the safety data sheet

Supplier of the safety data sheet

PCL Adhesives Limited
 PO Box 204025, Highbrook, Auckland 2161
 New Zealand
 ☎ +649 271 3556
 Fax +649 271 3557
 sales@pcladhesives.co.nz

Manufacturer of the product

Rectavit N.V.
 Ambachtenlaan 4
 B-9080 Lochristi
 ☎ +32 9 216 85 20
 ☎ +32 9 216 85 30
 msds@rectavit.be

1.4. Emergency telephone number

24h 0800 764 766 National Poisons Centre NZ

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Class	Category	Hazard statements
Carc.	category 2	H351: Suspected of causing cancer.
Acute Tox.	category 4	H332: Harmful if inhaled.
STOT RE	category 2	H373: May cause damage to organs through prolonged or repeated exposure if inhaled.
Eye Irrit.	category 2	H319: Causes serious eye irritation.
STOT SE	category 3	H335: May cause respiratory irritation.
Skin Irrit.	category 2	H315: Causes skin irritation.
Resp. Sens.	category 1	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin Sens.	category 1	H317: May cause an allergic skin reaction.

2.2. Label elements



Contains: 4,4'-methylenediphenyl diisocyanate; o-(p-isocyanatobenzyl)phenyl isocyanate; aromatic polyisocyanate prepolymer.

Signal word

Danger

H-statements

H351	Suspected of causing cancer.
H332	Harmful if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure if inhaled.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H315	Causes skin irritation.

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H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
P-statements	
P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P280	Wear protective gloves, protective clothing and eye protection/face protection.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P302 + P352	IF ON SKIN: Wash with plenty of water and soap.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER/doctor if you feel unwell.
P501	Dispose of contents/container in accordance with local/regional/national/international regulation.

Supplemental information

- Persons already sensitised to diisocyanates may develop allergic reactions when using this product. - Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. - This product should not be used under conditions of poor ventilation unless a protective mask with an appropriate gas filter (i.e. type A1 according to standard EN 14387) is used.

2.3. Other hazards

No other hazards known

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name REACH Registration No	CAS No EC No	Conc. (C)	Classification according to CLP	Note	Remark
4,4'-methylenediphenyl diisocyanate 01-2119457014-47	101-68-8 202-966-0	10%<C<20%	Carc. 2; H351 Acute Tox. 4; H332 STOT RE 2; H373 Eye Irrit. 2; H319 STOT SE 3; H335 Skin Irrit. 2; H315 Resp. Sens. 1; H334 Skin Sens. 1; H317	(1)(2)(8)(10)	Constituent
o-(p-isocyanatobenzyl)phenyl isocyanate 01-2119480143-45	5873-54-1 227-534-9	10%<C<20%	Carc. 2; H351 Acute Tox. 4; H332 STOT RE 2; H373 Eye Irrit. 2; H319 STOT SE 3; H335 Skin Irrit. 2; H315 Resp. Sens. 1; H334 Skin Sens. 1; H317	(1)(2)(8)(10)	Constituent
aromatic polyisocyanate prepolymer	99784-49-3	C>50 %	Acute Tox. 4; H332 STOT RE 2; H373 Eye Irrit. 2; H319 STOT SE 3; H335 Skin Irrit. 2; H315 Resp. Sens. 1; H334 Skin Sens. 1; H317	(1)(10)	Constituent

(1) For H-statements in full: see heading 16

(2) Substance with a Community workplace exposure limit

(8) Specific concentration limits, see heading 16

(10) Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006

SECTION 4: First aid measures

4.1. Description of first aid measures

General:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

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Wash immediately with lots of water. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

After eye contact:

Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

After ingestion:

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Consult a doctor/medical service if you feel ...

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

4.2.1 Acute symptoms

After inhalation:

Dry/sore throat. Coughing. Runny nose. Irritation of the respiratory tract. Irritation of the nasal mucous membranes.

After skin contact:

Tingling/irritation of the skin.

After eye contact:

Irritation of the eye tissue.

After ingestion:

Irritation of the gastric/intestinal mucosa.

4.2.2 Delayed symptoms

No effects known.

4.3. Indication of any immediate medical attention and special treatment needed

If applicable and available it will be listed below.

SECTION 5: Firefighting measures

5.1. Extinguishing media

5.1.1 Suitable extinguishing media:

Polyvalent foam. BC powder. Carbon dioxide. MAJOR FIRE: Water spray.

5.1.2 Unsuitable extinguishing media:

No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Reacts slowly with water (moisture): release of carbon dioxide.

5.3. Advice for firefighters

5.3.1 Instructions:

Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water.

5.3.2 Special protective equipment for fire-fighters:

Gloves. Safety glasses. Protective clothing. Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

No naked flames.

6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

6.1.2 Protective equipment for emergency responders

Gloves. Safety glasses. Protective clothing.

Suitable protective clothing

See heading 8.2

6.2. Environmental precautions

Contain leaking substance. Dam up the solid spill. Use appropriate containment to avoid environmental contamination. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

Scoop solid spill into closing containers. Containers must not be sealed hermetically. Carefully collect the spill/leftovers. Clean (treat) contaminated surfaces with acetone. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

See heading 13.

SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

7.1. Precautions for safe handling

Keep away from naked flames/heat. Observe very strict hygiene - avoid contact. Keep container tightly closed. Remove contaminated clothing immediately. Do not discharge the waste into the drain.

7.2. Conditions for safe storage, including any incompatibilities

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7.2.1 Safe storage requirements:

Store in a dry area. Keep container in a well-ventilated place. Keep only in the original container. Meet the legal requirements. Max. storage time: 1 year(s).

7.2.2 Keep away from:

Heat sources, (strong) acids, (strong) bases, alcohols, amines, water/moisture.

7.2.3 Suitable packaging material:

Polyethylene.

7.2.4 Non suitable packaging material:

No data available

7.3. Specific end use(s)

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 Occupational exposure

a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

The Netherlands

Difenylnmethaan-4,4'-diisocyaanat	Time-weighted average exposure limit 8 h (Private occupational exposure limit value)	0.0048 ppm
	Time-weighted average exposure limit 8 h (Private occupational exposure limit value)	0.05 mg/m ³
	Short time value (Private occupational exposure limit value)	0.02 ppm
	Short time value (Private occupational exposure limit value)	0.21 mg/m ³

Belgium

4,4'-Diisocyanate de diphénylméthane (MDI)	Time-weighted average exposure limit 8 h	0.005 ppm
	Time-weighted average exposure limit 8 h	0.052 mg/m ³

USA (TLV-ACGIH)

Methylene bisphenyl isocyanate (MDI)	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.005 ppm
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Germany

4,4'-Methylendiphenyldiisocyanat	Time-weighted average exposure limit 8 h (TRGS 900)	0.05 mg/m ³
o-(p-Isocyanatobenzyl)phenylisocyanat	Time-weighted average exposure limit 8 h (TRGS 900)	0.05 mg/m ³

France

4,4'-Diisocyanate de diphénylméthane	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	0.01 ppm
	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	0.1 mg/m ³
	Short time value (VL: Valeur non réglementaire indicative)	0.02 ppm
	Short time value (VL: Valeur non réglementaire indicative)	0.2 mg/m ³

UK

Isocyanates, all (as -NCO) Except methyl isocyanate	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.02 mg/m ³
	Short time value (Workplace exposure limit (EH40/2005))	0.07 mg/m ³

b) National biological limit values

If limit values are applicable and available these will be listed below.

8.1.2 Sampling methods

Product name	Test	Number
4,4'-Methylene Bisphenyl Isocyanate (MDI) (Isocyanates)	NIOSH	5521
4,4'-Methylenebis(phenylisocyanate)	NIOSH	5525
Isocyanates	NIOSH	5521
Isocyanates	NIOSH	5522
Methylene Bisphenyl Isocyanate - (MDI)	OSHA	18
Methylene Bisphenyl Isocyanate (MDI)	OSHA	47
Methylene Bisphenyl Isocyanate	OSHA	33

8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

8.1.4 DNEL/PNEC values

DNEL/DMEL - Workers

4,4'-methylendiphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.05 mg/m ³	
	Acute local effects inhalation	0.1 mg/m ³	

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o-(p-isocyanatobenzyl)phenyl isocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	0.05 mg/m ³	
	Acute systemic effects inhalation	0.1 mg/m ³	
	Long-term local effects inhalation	0.05 mg/m ³	
	Acute local effects inhalation	0.1 mg/m ³	
	Acute systemic effects dermal	50 mg/kg bw/day	
	Acute local effects dermal	28.7 mg/cm ³	

DNEL/DMEL - General population

4,4'-methylenediphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.025 mg/m ³	
	Acute systemic effects inhalation	0.05 mg/m ³	

o-(p-isocyanatobenzyl)phenyl isocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	0.025 mg/m ³	
	Acute systemic effects inhalation	0.05 mg/m ³	
	Long-term local effects inhalation	0.025 mg/m ³	
	Acute local effects inhalation	0.05 mg/m ³	
	Acute systemic effects dermal	25 mg/kg bw/day	
	Acute local effects dermal	17.2 mg/cm ³	
	Acute systemic effects oral	20 mg/kg bw/day	

PNEC

4,4'-methylenediphenyl diisocyanate

Compartments	Value	Remark
Fresh water	1 mg/l	
Marine water	0.1 mg/l	
Aqua (intermittent releases)	10 mg/l	
STP	1 mg/l	
Soil	1 mg/kg soil dw	

o-(p-isocyanatobenzyl)phenyl isocyanate

Compartments	Value	Remark
Fresh water	1 mg/l	
Marine water	0.1 mg/l	
Aqua (intermittent releases)	10 mg/l	
STP	1 mg/l	
Soil	1 mg/kg soil dw	

8.1.5 Control banding

If applicable and available it will be listed below.

8.2. Exposure controls

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

8.2.1 Appropriate engineering controls

Keep away from naked flames/heat. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

8.2.2 Individual protection measures, such as personal protective equipment

Observe very strict hygiene - avoid contact. Keep container tightly closed. Do not eat, drink or smoke during work.

a) Respiratory protection:

Insufficient ventilation: wear respiratory protection.

b) Hand protection:

Gloves.

- materials (good resistance)

Polyethylene.

c) Eye protection:

Safety glasses.

d) Skin protection:

Protective clothing.

8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical form	Paste
Odour	Characteristic odour
Odour threshold	No data available
Colour	Colourless

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Particle size	No data available
Explosion limits	No data available
Flammability	Non-flammable
Log Kow	Not applicable (mixture)
Dynamic viscosity	No data available
Kinematic viscosity	No data available
Melting point	No data available
Boiling point	No data available
Flash point	> 165 °C
Evaporation rate	No data available
Relative vapour density	> 2
Vapour pressure	No data available
Solubility	water ; insoluble
Relative density	1.1
Decomposition temperature	No data available
Auto-ignition temperature	No data available
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	No data available

9.2. Other information

Absolute density	1146 kg/m ³
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SECTION 10: Stability and reactivity

10.1. Reactivity

No data available.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

Keep away from naked flames/heat.

10.5. Incompatible materials

(strong) acids, (strong) bases, alcohols, amines, water/moisture.

10.6. Hazardous decomposition products

On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Reacts slowly with water (moisture): release of carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

11.1.1 Test results

Acute toxicity

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No (test)data on the mixture available

4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	> 7616 mg/kg		Rat (female)	Read-across	
Dermal	LD50	Equivalent to OECD 402	> 9400 mg/kg bw	24 h	Rabbit (male/female)	Read-across	
Dermal	Percutaneous absorption rate	EPA OPPTS 870.7600	0.9 %	8 h	Rat (male)	Experimental value	
Inhalation (aerosol)	LC50	Equivalent to OECD 403	0.49 mg/l air	4 h	Rat (male/female)	Read-across	
			category 4			Annex VI	

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o-(p-isocyanatobenzyl)phenyl isocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Other	> 2000 mg/kg bw		Rat (male/female)	Read-across	
Dermal	LD50	Equivalent to OECD 402	> 9400 mg/kg bw	24 h	Rabbit (male/female)	Read-across	
Inhalation (aerosol)	LC50	OECD 403	387 mg/m ³ air	4 h	Rat (male)	Experimental value	
Inhalation (aerosol)	LC50	OECD 403	645 mg/m ³ air	4 h	Rat (female)	Experimental value	

aromatic polyisocyanate prepolymer

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Inhalation			category 4			Literature study	

Classification is based on the relevant ingredients

Conclusion

Harmful if inhaled.

Not classified as acute toxic if swallowed

Not classified as acute toxic in contact with skin

Corrosion/irritation

Structan Express

No (test) data on the mixture available

4,4'-methylenediphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Slightly irritating				Rabbit	Experimental value	
Eye	Irritating				Human	Weight of evidence	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Read-across	
Skin	Irritating				Human	Weight of evidence	
Inhalation	Irritating				Human	Weight of evidence	

o-(p-isocyanatobenzyl)phenyl isocyanate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating				Human	Weight of evidence	
Eye	Not irritating	OECD 405	24 h	24; 48; 72 hours	Rabbit	Read-across	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Read-across	
Skin	Irritating				Human	Weight of evidence	
Inhalation	Irritating				Human	Weight of evidence	

aromatic polyisocyanate prepolymer

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating; category 2					Literature study	
Skin	Irritating; category 2					Literature study	
Inhalation	Irritating; STOT SE cat.3					Literature study	

Classification is based on the relevant ingredients

Conclusion

Causes skin irritation.

Causes serious eye irritation.

May cause respiratory irritation.

Specific target organ toxicity, single exposure: classified as irritant to respiratory organs

Respiratory or skin sensitisation

Structan Express

No (test) data on the mixture available

4,4'-methylenediphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing	OECD 429			Mouse	Experimental value	
Inhalation	Sensitizing				Rat (male)	Experimental value	
Inhalation	Sensitizing				Guinea pig (female)	Experimental value	

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o-(p-isocyanatobenzyl)phenyl isocyanate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	Equivalent to OECD 406	12 h	24; 48 hours	Guinea pig (male/female)	Read-across	
Skin	Sensitizing					Annex VI	
Inhalation	Sensitizing	Other			Guinea pig (female)	Read-across	
Inhalation	Sensitizing				Human (male)	Weight of evidence	

aromatic polyisocyanate prepolymer

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing; category 1					Literature study	
Inhalation	Sensitizing; category 1					Literature study	

Classification is based on the relevant ingredients

Conclusion

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

Specific target organ toxicity

Structan Express

No (test)data on the mixture available

4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation (aerosol)	LOAEC	Other	0.23 mg/m ³ air	Lungs	Lung tissue affection/degeneration	≤ 104 weeks (17h/day, 5 days/week)	Rat (female)	Experimental value

o-(p-isocyanatobenzyl)phenyl isocyanate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation (aerosol)	NOAEC	Equivalent to OECD 453	0.2 mg/m ³ air	Respiratory tract	No effect	2 year(s) (6h/day, 5 days/week)	Rat (male/female)	Read-across
Inhalation (aerosol)	LOAEC	Equivalent to OECD 453	1 mg/m ³ air	Respiratory tract	Histopathology	2 year(s) (6h/day, 5 days/week)	Rat (male/female)	Read-across

aromatic polyisocyanate prepolymer

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation			STOT RE cat.2					Literature study

Classification is based on the relevant ingredients

Conclusion

May cause damage to organs through prolonged or repeated exposure if inhaled.

Not classified as sub-chronically toxic in contact with skin

Not classified as sub-chronically toxic if swallowed

Mutagenicity (in vitro)

Structan Express

No (test)data on the mixture available

4,4'-methylenediphenyl diisocyanate

Result	Method	Test substrate	Effect	Value determination
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (<i>S.typhimurium</i>)	No effect	Experimental value

o-(p-isocyanatobenzyl)phenyl isocyanate

Result	Method	Test substrate	Effect	Value determination
Negative with metabolic activation, negative without metabolic activation	OECD 471	Bacteria (<i>S.typhimurium</i>)	No effect	Experimental value

Mutagenicity (in vivo)

Structan Express

No (test)data on the mixture available

4,4'-methylenediphenyl diisocyanate

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative	OECD 474	3 weeks (1h/day, 1 day/week)	Rat (male)		Experimental value

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o-(p-isocyanatobenzyl)phenyl isocyanate

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative	OECD 474	3 weeks (1h/day, 1 day/week)	Rat (male)		Read-across

Carcinogenicity

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Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation			category 2					Literature

4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOAEC	Other	0.7 mg/m ³ air	104 weeks (17h/day, 5 days/week)	Rat (female)	No carcinogenic effect		Experimental value

o-(p-isocyanatobenzyl)phenyl isocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOAEC	Equivalent to OECD 453	1 mg/m ³ air	2 year(s) (6h/day, 5 days/week)	Rat (male/female)	No effect	Respiratory tract	Read-across
Inhalation (aerosol)	LOAEC	Equivalent to OECD 453	6 mg/m ³ air	2 year(s) (6h/day, 5 days/week)	Rat (male/female)	Tumor formation	Respiratory tract	Read-across

Reproductive toxicity

Structan Express

No (test) data on the mixture available

4,4'-methylenediphenyl diisocyanate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity	NOAEL	OECD 414	3 mg/m ³ air	10 days (6h/day)	Rat (female)	No effect		Experimental value
	LOAEL	OECD 414	9 mg/m ³ air	10 days (6h/day)	Rat (female)	Embryotoxicity		Experimental value
Maternal toxicity	NOAEL	OECD 414	4 mg/kg bw/day	10 day(s)	Rat (female)	No effect		Read-across
Effects on fertility								Data waiving

o-(p-isocyanatobenzyl)phenyl isocyanate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity	NOAEL	OECD 414	4 mg/m ³ air	10 days (6h/day)	Rat	No adverse systemic effects		Read-across
Maternal toxicity	NOAEL	OECD 414	4 mg/m ³ air	10 days (6h/day)	Rat (female)	No adverse systemic effects		Read-across

Classification is based on the relevant ingredients

Conclusion CMR

Suspected of causing cancer.

Not classified for mutagenic or genotoxic toxicity

Not classified for reprotoxic or developmental toxicity

Toxicity other effects

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No (test) data on the mixture available

4,4'-methylenediphenyl diisocyanate

Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
LD50		100 mg/kg bw				Mouse (male)	Experimental value

Chronic effects from short and long-term exposure

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ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Itching. Skin rash/inflammation. Feeling of weakness. Coughing. Possible inflammation of the respiratory tract. Respiratory difficulties.

SECTION 12: Ecological information

12.1. Toxicity

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4,4'-methylenediphenyl diisocyanate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	> 1000 mg/l	96 h	Danio rerio	Static system	Fresh water	Read-across; Nominal concentration
Acute toxicity invertebrates	EC50	OECD 202	129.7 mg/l	24 h	Daphnia magna	Static system	Fresh water	Read-across; Locomotor effect
Toxicity algae and other aquatic plants	EC50	OECD 201	> 1640 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Read-across; Growth rate
Long-term toxicity aquatic invertebrates	NOEC	OECD 211	≥ 10 mg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Read-across; Reproduction
Toxicity aquatic micro-organisms	EC50	OECD 209	> 100 mg/l	3 h	Activated sludge	Static system	Fresh water	Read-across; Nominal concentration

o-(p-isocyanatobenzyl)phenyl isocyanate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	> 1000 mg/l	96 h	Brachydanio rerio	Static system	Fresh water	Read-across; Nominal concentration
Acute toxicity invertebrates	EC50	OECD 202	> 1000 mg/l	24 h	Daphnia magna	Static system	Fresh water	Read-across; Nominal concentration
Toxicity algae and other aquatic plants	EC50	OECD 201	> 1640 mg/l	72 h	Scenedesmus subspicatus	Static system	Fresh water	Read-across; GLP
Long-term toxicity aquatic invertebrates	NOEC	OECD 211	≥ 10 mg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Read-across; Nominal concentration
Toxicity aquatic micro-organisms	EC50	OECD 209	> 100 mg/l	3 h	Activated sludge	Static system	Fresh water	Read-across; GLP

	Parameter	Method	Value	Duration	Species	Value determination
Toxicity soil macro-organisms	NOEC	OECD 207	≥ 1000 mg/kg soil dw	14 day(s)	Eisenia fetida	Read-across
Toxicity terrestrial plants	NOEC	Equivalent to OECD 208	≥ 1000 mg/kg soil dw	14 day(s)	Avena sativa	Read-across
	NOEC	Equivalent to OECD 208	≥ 1000 mg/kg soil dw	14 day(s)	Lactuca sativa	Read-across

Judgement is based on the relevant ingredients

Conclusion

Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008

12.2. Persistence and degradability

4,4'-methylenediphenyl diisocyanate

Biodegradation water

Method	Value	Duration	Value determination
OECD 302C: Inherent Biodegradability: Modified MITI Test (II)	0 %	28 day(s)	Read-across

Phototransformation air (DT50 air)

Method	Value	Conc. OH-radicals	Value determination
AOPWIN v1.92	0.92 day(s)		QSAR

Half-life water (t1/2 water)

Method	Value	Primary degradation/mineralisation	Value determination
	20 h		Read-across

o-(p-isocyanatobenzyl)phenyl isocyanate

Biodegradation water

Method	Value	Duration	Value determination
OECD 302C: Inherent Biodegradability: Modified MITI Test (II)	0 %	28 day(s)	Read-across

Phototransformation air (DT50 air)

Method	Value	Conc. OH-radicals	Value determination
AOPWIN v1.92	0.89 day(s); GLP	1500000 /cm ³	Experimental value

Half-life water (t1/2 water)

Method	Value	Primary degradation/mineralisation	Value determination
	20 h; GLP		Read-across

Conclusion

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Contains non readily biodegradable component(s)

12.3. Bioaccumulative potential

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Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (mixture)			

4,4'-methylenediphenyl diisocyanate

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF	OECD 305	92 - 200	4 week(s)	Cyprinus carpio	Experimental value

Log Kow

Method	Remark	Value	Temperature	Value determination
		5.22		Estimated value
OECD 117		4.51	22 °C	Experimental value

o-(p-isocyanatobenzyl)phenyl isocyanate

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF	OECD 305	92 - 200	28 day(s)	Cyprinus carpio	Read-across

Log Kow

Method	Remark	Value	Temperature	Value determination
OECD 117		4.51	22 °C	Conclusion by analogy

aromatic polyisocyanate prepolymer

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

Conclusion

Contains bioaccumulative component(s)

12.4. Mobility in soil

4,4'-methylenediphenyl diisocyanate

Volatility (Henry's Law constant H)

Value	Method	Temperature	Remark	Value determination
8.95E-7 atm m ³ /mol		25 °C		Estimated value

Conclusion

No (test)data on mobility of the components available

12.5. Results of PBT and vPvB assessment

Due to insufficient data no statement can be made whether the component(s) fulfil(s) the criteria of PBT and vPvB according to Annex XIII of Regulation (EC) No 1907/2006.

12.6. Other adverse effects

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Global warming potential (GWP)

None of the known components is included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014)

Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

13.1. Waste treatment methods

13.1.1 Provisions relating to waste

Hazardous waste according to Regulation (EU) No 1357/2014.

Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).

08 04 09* (wastes from MFSU of adhesives and sealants (including waterproofing products): waste adhesives and sealants containing organic solvents or other hazardous substances). Depending on branch of industry and production process, also other waste codes may be applicable.

13.1.2 Disposal methods

Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Do not discharge into drains or the environment.

13.1.3 Packaging/Container

Waste material code packaging (Directive 2008/98/EC).

15 01 10* (packaging containing residues of or contaminated by dangerous substances).

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SECTION 14: Transport information

Road (ADR)

14.1. UN number

Transport	Not subject
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14.2. UN proper shipping name

14.3. Transport hazard class(es)

Hazard identification number	
Class	
Classification code	

14.4. Packing group

Packing group	
Labels	

14.5. Environmental hazards

Environmentally hazardous substance mark	no
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14.6. Special precautions for user

Special provisions	
Limited quantities	

Rail (RID)

14.1. UN number

Transport	Not subject
-----------	-------------

14.2. UN proper shipping name

14.3. Transport hazard class(es)

Hazard identification number	
Class	
Classification code	

14.4. Packing group

Packing group	
Labels	

14.5. Environmental hazards

Environmentally hazardous substance mark	no
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14.6. Special precautions for user

Special provisions	
Limited quantities	

Inland waterways (ADN)

14.1. UN number

Transport	Not subject
-----------	-------------

14.2. UN proper shipping name

14.3. Transport hazard class(es)

Class	
Classification code	

14.4. Packing group

Packing group	
Labels	

14.5. Environmental hazards

Environmentally hazardous substance mark	no
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14.6. Special precautions for user

Special provisions	
Limited quantities	

Sea (IMDG/IMSBC)

14.1. UN number

Transport	Not subject
-----------	-------------

14.2. UN proper shipping name

14.3. Transport hazard class(es)

Class	
-------	--

14.4. Packing group

Packing group	
Labels	

14.5. Environmental hazards

Marine pollutant	-
Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	
Limited quantities	

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

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Annex II of MARPOL 73/78

Air (ICAO-TI/IATA-DGR)

14.1. UN number

Transport	Not subject
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14.2. UN proper shipping name

14.3. Transport hazard class(es)

Class	
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14.4. Packing group

Packing group	
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Labels	
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14.5. Environmental hazards

Environmentally hazardous substance mark	no
--	----

14.6. Special precautions for user

Special provisions	
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Passenger and cargo transport: limited quantities: maximum net quantity per packaging	
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SECTION 15: Regulatory information

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

European legislation:

VOC content Directive 2010/75/EU

VOC content	Remark
0 %	
0 g/l	

REACH Annex XVII - Restriction

Contains component(s) subject to restrictions of Annex XVII of Regulation (EC) No 1907/2006: restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

	Designation of the substance, of the group of substances or of the mixture	Conditions of restriction
aromatic polyisocyanate prepolymer	Liquid substances or mixtures which are regarded as dangerous in accordance with Directive 1999/45/EC or are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: (a) hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F; (b) hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10; (c) hazard class 4.1; (d) hazard class 5.1.	1. Shall not be used in: — ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays, — tricks and jokes, — games for one or more participants, or any article intended to be used as such, even with ornamental aspects, 2. Articles not complying with paragraph 1 shall not be placed on the market. 3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they: — can be used as fuel in decorative oil lamps for supply to the general public, and, — present an aspiration hazard and are labelled with R65 or H304, 4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN), 5. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met: a) lamp oils, labelled with R65 or H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: "Keep lamps filled with this liquid out of the reach of children"; and, by 1 December 2010, "Just a sip of lamp oil — or even sucking the wick of lamps — may lead to life-threatening lung damage"; b) grill lighter fluids, labelled with R65 or H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: "Just a sip of grill lighter may lead to life threatening lung damage"; c) lamp oils and grill lighters, labelled with R65 or H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010. 6. No later than 1 June 2014, the Commission shall request the European Chemicals Agency to prepare a dossier, in accordance with Article 69 of the present Regulation with a view to ban, if appropriate, grill lighter fluids and fuel for decorative lamps, labelled R65 or H304, intended for supply to the general public. 7. Natural or legal persons placing on the market for the first time lamp oils and grill lighter fluids, labelled with R65 or H304, shall by 1 December 2011, and annually thereafter, provide data on alternatives to lamp oils and grill lighter fluids labelled R65 or H304 to the competent authority in the Member State concerned. Member States shall make those data available to the Commission.'
4,4'-methylenediphenyl diisocyanate o-(p-isocyanatobenzyl)phenyl isocyanate	Methylenediphenyl diisocyanate (MDI) including the following specific isomers: 4,4'-Methylenediphenyl diisocyanate; 2,4'-Methylenediphenyl diisocyanate; 2,2'-Methylenediphenyl diisocyanate	1. Shall not be placed on the market after 27 December 2010, as a constituent of mixtures in concentrations equal to or greater than 0,1 % by weight of MDI for supply to the general public, unless suppliers shall ensure before the placing on the market that the packaging: (a) contains protective gloves which comply with the requirements of Council Directive 89/686/EEC; (b) is marked visibly, legibly and indelibly as follows, and without prejudice to other Community legislation concerning the classification, packaging and labelling of substances and mixtures: "— Persons already sensitised to diisocyanates may develop allergic reactions when using this product.

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— Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.
 — This product should not be used under conditions of poor ventilation unless a protective mask with an appropriate gas filter (i.e. type A1 according to standard EN 14387) is used.2.
 By way of derogation, paragraph 1(a) shall not apply to hot melt adhesives.

National legislation The Netherlands

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Waste identification (the Netherlands)	LWCA (the Netherlands): KGA category 03
Waterbezwaarljkheid	10

National legislation Germany

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WGK	1; Classification water polluting based on the components in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 4)
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4,4'-methylenediphenyl diisocyanate

MAK - Krebszeugend Kategorie	4
Schwangerschaft Gruppe	C
MAK 8-Stunden-Mittelwert mg/m ³	Diphenylmethan-4,4'-diisocyanat (MDI) (einatembare Fraktion); 0.05 mg/m ³ ; gemessen als einatembare Fraktion (vgl. Abschn. Vd) S. 191)
TA-Luft	5.2.5; I
	5.2.5

o-(p-isocyanatobenzyl)phenyl isocyanate

TA-Luft	5.2.5; I
	5.2.5

National legislation France

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No data available

4,4'-methylenediphenyl diisocyanate

Catégorie cancérogène	C2
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National legislation Belgium

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No data available

Other relevant data

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No data available

4,4'-methylenediphenyl diisocyanate

IARC - classification	3; 4,4'-methylenediphenyl diisocyanate and polymeric 4,4'-methylenediphenyl diisocyanate
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15.2. Chemical safety assessment

No chemical safety assessment is required.

SECTION 16: Other information

Full text of any H-statements referred to under headings 2 and 3:

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.
 H351 Suspected of causing cancer.
 H373 May cause damage to organs through prolonged or repeated exposure if inhaled.
 H373 May cause damage to organs (lungs) through prolonged or repeated exposure if inhaled.
 (*) = INTERNAL CLASSIFICATION BY BIG
 PBT-substances = persistent, bioaccumulative and toxic substances
 CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

Specific concentration limits CLP

4,4'-methylenediphenyl diisocyanate	C ≥ 5 %	Eye Irrit. 2; H319	CLP Annex VI (ATP 1)
	C ≥ 5 %	Skin Irrit. 2; H315	CLP Annex VI (ATP 1)
	C ≥ 0.1 %	Resp. Sens. 1; H334	CLP Annex VI (ATP 1)
	C ≥ 5 %	STOT SE 3; H335	CLP Annex VI (ATP 1)
o-(p-isocyanatobenzyl)phenyl isocyanate	C ≥ 5 %	Eye Irrit. 2; H319	CLP Annex VI (ATP 1)
	C ≥ 5 %	Skin Irrit. 2; H315	CLP Annex VI (ATP 1)
	C ≥ 0.1 %	Resp. Sens. 1; H334	CLP Annex VI (ATP 1)
	C ≥ 5 %	STOT SE 3; H335	CLP Annex VI (ATP 1)

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The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided and cannot be held liable for any changes by third parties. This safety data sheet is only to be used within the European Union, Switzerland, Iceland, Norway and Liechtenstein. Any use outside of this area is at your own risk. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement or when this is failing the general conditions of BIG. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult the mentioned agreement/conditions for details.



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