SAFETY DATA SHEET

Based upon Regulation (EC) No 1907/2006, as amended by Regulation (EU) No 2020/878

TWINBOND WP 1K

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

1.1. Product identifier

Product name : TWINBOND WP 1K
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

Professional use
Wood: cleaning product

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

Twinbond*
Industrielaan 5B
B-2250 Olen
☎ +32 14 25 76 40
🖷 +32 14 22 02 66
info@novatech.be
* Twinbond is a registered trademark of Novatech International N.V.

Manufacturer of the product

Novatech International N.V.
Industrielaan 5B
B-2250 Olen
☎ +32 14 85 97 37
🖷 +32 14 85 97 38
info@novatech.be

1.4. Emergency telephone number

24h/24h (Telephone advice: English, French, German, Dutch) :
+32 14 58 45 45 (BIG)

24h/24h :
Nederland - Nationaal Vergiftigingen Informatie Centrum (NVIC): +31 88 755 8000
(Uitsluitend bestemd om artsen te informeren bij accidentele vergiftigingen)
(Only for the purpose of informing medical personnel in cases of acute intoxications)

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
Flam. Liq.	category 3	H226: Flammable liquid and vapour.
Carc.	category 2	H351: Suspected of causing cancer.
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.
STOT RE	category 2	H373: May cause damage to organs through prolonged or repeated exposure.
Skin Irrit.	category 2	H315: Causes skin irritation.
Eye Irrit.	category 2	H319: Causes serious eye irritation.
Aquatic Chronic	category 3	H412: Harmful to aquatic life with long lasting effects.

2.2. Label elements

Contains: polytoluene isocyanate (oligomers); 1,2-ethanediamine, polymer with 2,4-diisocyanato-1-methylbenzene and 2-methyloxirane; reaction mass of ethylbenzene and xylene; polymethylene polyphenyl isocyanate, conc monomer <0.1%; m-tolylidene diisocyanate; reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate; 4,4'-methylenediphenyl diisocyanate.

Signal word Danger

H-statements

H226	Flammable liquid and vapour.
H351	Suspected of causing cancer.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H373	May cause damage to organs through prolonged or repeated exposure.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H412	Harmful to aquatic life with long lasting effects.

P-statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
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.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.

Supplemental information

As from 24 August 2023 adequate training is required before industrial or professional use.

2.3. Other hazards

Gas/vapour spreads at floor level: ignition hazard
Caution! Substance is absorbed through the skin

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name REACH Registration No	CAS No EC No List No	Conc. (C)	Classification according to CLP	Note	Remark	M-factors and ATE
polytoluene isocyanate (oligomers)	53317-61-6 500-120-8	10% <C<25%	Skin Sens. 1; H317 Eye Irrit. 2; H319	(1)(10)	Constituent	
1,2-ethanediamine, polymer with 2,4-diisocyanato-1-methylbenzene and 2-methyloxirane	103051-64-5	10% <C<25%	Skin Sens. 1; H317 Eye Irrit. 2; H319	(1)	Constituent	
reaction mass of ethylbenzene and xylene 01-2119486136-34	905-588-0	10% <C<25%	Flam. Liq. 3; H226 Acute Tox. 4; H332 Acute Tox. 4; H312 Asp. Tox. 1; H304 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Aquatic Chronic 3; H412	(1)(10)	Constituent	
polymethylene polyphenyl isocyanate	9016-87-9 618-498-9	1%<C<5%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Resp. Sens. 1; H334: C≥0.1%, (analogous to Annex VI) Skin Irrit. 2; H315: C≥5%, (analogous to Annex VI) Eye Irrit. 2; H319: C≥5%, (analogous to Annex VI) STOT SE 3; H335: C≥5%, (analogous to Annex VI)	(1)(2)(10)(V)	Constituent	

m-tolylidene diisocyanate 01-2119454791-34	26471-62-5 247-722-4	0.0573% <C<0.2292 %	Carc. 2; H351 Acute Tox. 1; H330 Resp. Sens. 1; H334 Skin Sens. 1; H317 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Aquatic Chronic 3; H412	(1)(2)(10)	Constituent	
reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl) phenyl isocyanate / methylene diphenyl diisocyanate 01-2119457015-45	905-806-4	0.1%<C<1%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Resp. Sens. 1; H334: C≥0.1%, (ECHA) Skin Irrit. 2; H315: C≥5%, (ECHA) Eye Irrit. 2; H319: C≥5%, (ECHA) STOT SE 3; H335: C≥5%, (ECHA)	(1)(2)(10)	Constituent	
2,6-di-tert-butyl-p-cresol 01-2119555270-46	128-37-0 204-881-4	C<1%	Aquatic Chronic 1; H410	(1)(2)	Constituent	M: 1 (Chronic, ECHA (registration dossier))
4,4'-methylenediphenyl diisocyanate 01-2119457014-47	101-68-8 202-966-0	0.1%<C<1%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Resp. Sens. 1; H334: C≥0.1%, (CLP Annex VI (ATP 1)) Skin Irrit. 2; H315: C≥5%, (CLP Annex VI (ATP 1)) Eye Irrit. 2; H319: C≥5%, (CLP Annex VI (ATP 1)) STOT SE 3; H335: C≥5%, (CLP Annex VI (ATP 1))	(1)(2)(10)	Constituent	

(1) For H- and EUH-statements in full: see section 16
(2) Substance with a Community workplace exposure limit
(10) Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006
(V) Exempted from registration under REACH (Regulation (EC) No 1907/2006, article 2 (9), polymers)
Note: numbers 9xx-xxx-x are provisional list numbers assigned by Echa pending an official EC inventory number

SECTION 4: First aid measures

4.1. Description of first aid measures

General:
Observe (own) safety. If possible, approach victim and check vital functions. In case of injury and/or intoxication, call the European emergency number 112. Treat symptoms starting with most life-threatening injuries and disorders. Keep victim under observation, possibility of delayed symptoms.

After inhalation:
Remove victim into fresh air. In case of respiratory problems, consult a doctor/medical service.

After skin contact:
If possible, wipe up/dry remove chemical. Then rinse/shower immediately with (lukewarm) water. If irritation persists, consult a doctor/medical service.

After eye contact:
Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation persists, consult a doctor/medical service.

After ingestion:
Rinse mouth with water. If you feel unwell, consult a doctor/medical service. Do not wait for symptoms to occur to consult Poison Center.

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

4.2.1 Acute symptoms

After inhalation:
No effects known.

After skin contact:

Tingling/irritation of the skin.

After eye contact:
Irritation of the eye tissue.

After ingestion:
No effects known.

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:
Small fire: Quick-acting ABC powder extinguisher, Quick-acting BC powder extinguisher, Quick-acting class B foam extinguisher, Quick-acting CO2 extinguisher.
Major fire: Class B foam (alcohol-resistant), Water spray if puddle cannot expand.

5.1.2 Unsuitable extinguishing media:
Small fire: Water (quick-acting extinguisher, reel); risk of puddle expansion.
Major fire: Water; risk of puddle expansion.

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).

5.3. Advice for firefighters
5.3.1 Instructions:
If exposed to fire cool the closed containers by spraying with water. Do not move the load if exposed to heat. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water. Take account of environmentally hazardous firefighting water. Use water moderately and if possible collect or contain it.

5.3.2 Special protective equipment for fire-fighters:
Gloves (EN 374). Protective goggles (EN 166). Head/neck protection. Protective clothing (EN 14605 or EN 13034). Heat/fire exposure: self-contained breathing apparatus (EN 136 + EN 137).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.

6.1.1 Protective equipment for non-emergency personnel
See section 8.2

6.1.2 Protective equipment for emergency responders
Gloves (EN 374). Protective goggles (EN 166). Head/neck protection. Protective clothing (EN 14605 or EN 13034).

Suitable protective clothing
See section 8.2

6.2. Environmental precautions
Contain released product. Dam up the liquid spill. Prevent spreading in sewers. Use appropriate containment to avoid environmental contamination.

6.3. Methods and material for containment and cleaning up
Take up liquid spill into absorbent material. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections
See section 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. Insufficient ventilation: use spark-/explosionproof appliances and lighting system. Insufficient ventilation: keep naked flames/sparks away. Insufficient ventilation: take precautions against electrostatic charges. Gas/vapour heavier than air at 20°C. Observe very strict hygiene - avoid contact. Remove contaminated clothing immediately. Keep container tightly closed. Do not discharge the waste into the drain.

7.2. Conditions for safe storage, including any incompatibilities
7.2.1 Safe storage requirements:
Meet the legal requirements. Store at room temperature. Keep container in a well-ventilated place. Keep out of direct sunlight. Keep container tightly closed.

7.2.2 Keep away from:

Heat sources, ignition sources, (strong) acids, (strong) bases.

7.2.3 Suitable packaging material:
No data available

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.

EU

Diisocyanates (measured as NCO) *shall apply from 2029-01-01*	Time-weighted average exposure limit 8 h (Binding occupational exposure limit value)	6 µg/m³ **(1)**
	Short time value (Binding occupational exposure limit value)	12 µg/m³ **(1)**
Diisocyanates (measured as NCO) *shall apply until 2028-12-31*	Time-weighted average exposure limit 8 h (Binding occupational exposure limit value)	10 µg/m³ **(1)**
	Short time value (Binding occupational exposure limit value)	20 µg/m³ **(1)**

(1) NCO refers to isocyanate functional groups of the diisocyanate compounds.

Belgium

2,6-Di-tert-butyl-p-crésol	Time-weighted average exposure limit 8 h	2 mg/m³ **(1)**
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/m³
Diisocyanate de toluène (mélange d'isomères)	Time-weighted average exposure limit 8 h	0.005 ppm
	Time-weighted average exposure limit 8 h	0.037 mg/m³
	Short time value	0.02 ppm
	Short time value	0.14 mg/m³

(1) vapeur et aérosol

France

2,6-Di-tert-butyl-p-crésol	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	10 mg/m³
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/m³
	Short time value (VL: Valeur non réglementaire indicative)	0.02 ppm **(1)**
	Short time value (VL: Valeur non réglementaire indicative)	0.2 mg/m³ **(1)**
Diisocyanate de toluylène	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)	0.08 mg/m³
	Short time value (VL: Valeur non réglementaire indicative)	0.02 ppm **(1)**
	Short time value (VL: Valeur non réglementaire indicative)	0.16 mg/m³ **(1)**

(1) Ces VLEP CT s'endendent pour des concentrations mesurées sur une durée de 5 min

Germany

2,6-Di-tert-butyl-p-kresol	Time-weighted average exposure limit 8 h (TRGS 900)	10 mg/m³ **(1)**
	Summe aus Dampf und Aerosolen.	
4,4'-Methylendiphenyldiisocyanat	Time-weighted average exposure limit 8 h (TRGS 900)	0.05 mg/m³ **(2)**
	Der Arbeitsplatzgrenzwert gilt in der Regel nur für die Monomeren. Zur Beurteilung von Oligomeren oder Polymeren siehe TRGS 430 „Isocyanate"	
	Summe aus Dampf und Aerosolen.	
pMDI (als MDI berechnet)	Time-weighted average exposure limit 8 h (TRGS 900)	0.05 mg/m³ **(2)**
	Der Arbeitsplatzgrenzwert gilt in der Regel nur für die Monomeren. Zur Beurteilung von Oligomeren oder Polymeren siehe TRGS 430 „Isocyanate"	
Toluylendiisocyanate	Time-weighted average exposure limit 8 h (MAK)	0.001 ppm **(3)**
	Time-weighted average exposure limit 8 h (MAK)	0.007 mg/m³ **(4)**
	Der Stoff kann gleichzeitig als Dampf und Aerosol vorliegen.	

(1) Einatembare Fraktion; UF: 4 (II)
(2) Einatembare Fraktion; UF: 1 (I) =2=
(3) UF: I(1)
(4) Ein Momentanwert von 0,005 ml/m3 entsprechend 0,035 mg/m3 sollte nicht überschritten werden.; UF: I(1)

Austria

2,6-Di-tert-butyl-p-kresol	Tagesmittelwert (MAK)	10 mg/m³
Diisocyanattoluole: m-Tolylidendiisocyanat 2,4-Diisocyanattoluol 2,6-Diisocyanattoluol	Tagesmittelwert (MAK)	0.005 ppm
	Tagesmittelwert (MAK)	0.035 mg/m³
	Kurzzeitwert 15(Miw) 4x (MAK)	0.02 ppm
	Kurzzeitwert 15(Miw) 4x (MAK)	0.14 mg/m³
Diphenylmethan-diisocyanat (alle Isomeren): Diphenylmethan-4,4'-diisocyanat Diphenylmethan-2,2'-diisocyanat Diphenylmethan-2,4'-diisocyanat	Tagesmittelwert (MAK)	0.005 ppm
	Tagesmittelwert (MAK)	0.05 mg/m³
	Kurzzeitwert 5(Mow) 8x (MAK)	0.01 ppm
	Kurzzeitwert 5(Mow) 8x (MAK)	0.1 mg/m³

UK

2,6-Di-tert-butyl-p-cresol	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	10 mg/m³
Isocyanates, all (as -NCO) Except methyl isocyanate	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.02 mg/m³
	Short time value (Workplace exposure limit (EH40/2005))	0.07 mg/m³

Ireland

2,6-Ditertiary-butyl-para-cresol	Time-weighted average exposure limit 8 h (Advisory occupational exposure limit values)	2 mg/m³
4,4'-Methylene-diphenyl diisocyanate (as —NCO)	Time-weighted average exposure limit 8 h (Advisory occupational exposure limit values)	0.005 ppm

USA (TLV-ACGIH)

Butylated hydroxytoluene	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	2 mg/m³ **(1)**
Methylene bisphenyl isocyanate	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.005 ppm
Toluene diisocyanate, 2,4- or 2,6 (or as a mixture)	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.001 ppm **(1)**
	Short time value (TLV - Adopted Value)	0.005 ppm **(1)**

(1) (IFV): Inhalable fraction and vapor

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
4,4-Methylenediphenyl isocyanate (MDI)	NIOSH	5522
Di-tert-butyl-p-cresol	OSHA	2108
Isocyanates	NIOSH	5521
Isocyanates	NIOSH	5522
Polymeric 4-4'-Methylene Diisocyanate	OSHA	5002

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 Threshold values

DNEL/DMEL - Workers

reaction mass of ethylbenzene and xylene

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	221 mg/m³	
	Acute systemic effects inhalation	442 mg/m³	
	Long-term local effects inhalation	221 mg/m³	
	Acute local effects inhalation	442 mg/m³	
	Long-term systemic effects dermal	212 mg/kg bw/day	

m-tolylidene diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	0.035 mg/m³	
	Acute systemic effects inhalation	0.14 mg/m³	
	Long-term local effects inhalation	0.035 mg/m³	
	Acute local effects inhalation	0.14 mg/m³	

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.05 mg/m³	
	Acute local effects inhalation	0.1 mg/m³	

2,6-di-tert-butyl-p-cresol

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	1.76 mg/m³	
	Long-term systemic effects dermal	0.5 mg/kg bw/day	

4,4'-methylenediphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.05 mg/m³	
	Acute local effects inhalation	0.1 mg/m³	

DNEL/DMEL - General population

reaction mass of ethylbenzene and xylene

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	65.3 mg/m³	
	Acute systemic effects inhalation	260 mg/m³	
	Long-term local effects inhalation	65.3 mg/m³	
	Acute local effects inhalation	260 mg/m³	
	Long-term systemic effects dermal	125 mg/kg bw/day	
	Long-term systemic effects oral	5 mg/kg bw/day	

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.025 mg/m³	
	Acute local effects inhalation	0.05 mg/m³	

2,6-di-tert-butyl-p-cresol

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	0.435 mg/m³	
	Long-term systemic effects dermal	0.25 mg/kg bw/day	
	Long-term systemic effects oral	0.25 mg/kg bw/day	

4,4'-methylenediphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.025 mg/m³	
	Acute local effects inhalation	0.05 mg/m³	

PNEC

reaction mass of ethylbenzene and xylene

Compartments	Value	Remark
Fresh water	0.327 mg/l	
Marine water	0.327 mg/l	
Fresh water sediment	12.46 mg/kg sediment dw	
Marine water sediment	12.46 mg/kg sediment dw	
Soil	2.31 mg/kg soil dw	
STP	6.58 mg/l	
Fresh water (intermittent releases)	0.327 mg/l	

m-tolylidene diisocyanate

Compartments	Value	Remark
Fresh water	0.013 mg/l	
Marine water	0.001 mg/l	
Aqua (intermittent releases)	0.125 mg/l	
STP	1 mg/l	
Soil	1 mg/kg soil dw	

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Compartments	Value	Remark
Fresh water	3.7 µg/l	
Marine water	0.37 µg/l	
Fresh water (intermittent releases)	37 µg/l	
Fresh water sediment	11.7 mg/kg sediment dw	
Marine water sediment	1.17 mg/kg sediment dw	
Soil	2.33 mg/kg soil dw	

2,6-di-tert-butyl-p-cresol

Compartments	Value	Remark
Fresh water	0.199 µg/l	
Fresh water (intermittent releases)	1.99 µg/l	
Marine water	0.02 µg/l	
STP	0.017 mg/l	
Fresh water sediment	0.458 mg/kg sediment dw	
Marine water sediment	0.046 mg/kg sediment dw	
Soil	0.054 mg/kg soil dw	
Oral	16.67 mg/kg food	

4,4'-methylenediphenyl diisocyanate

Compartments	Value	Remark
Fresh water	3.7 µg/l	
Marine water	0.37 µg/l	
Fresh water (intermittent releases)	37 µg/l	
Fresh water sediment	11.7 mg/kg sediment dw	
Marine water sediment	1.17 mg/kg sediment dw	
Soil	2.33 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. Insufficient ventilation: use spark-/explosionproof appliances and lighting system. Insufficient ventilation: keep naked flames/sparks away. Insufficient ventilation: take precautions against electrostatic charges. Measure the concentration in the air regularly. Work under local exhaust/ventilation.

8.2.2 Individual protection measures, such as personal protective equipment

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

a) Respiratory protection:

Full face mask with filter type A.

b) Hand protection:

Protective gloves against chemicals (EN 374).

c) Eye protection:

Combined eye and respiratory protection.

d) Skin protection:

Protective clothing (EN 14605 or EN 13034).

8.2.3 Environmental exposure controls:

See sections 6.2, 6.3 and 13

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical form	Liquid
Colour	Colourless
Odour	Characteristic odour
Odour threshold	No data available in the literature
Melting point	No data available in the literature
Boiling point	No data available in the literature
Flammability	Flammable liquid and vapour.
Explosion limits	No data available in the literature
Flash point	< 50 °C
Auto-ignition temperature	No data available in the literature
Decomposition temperature	No data available in the literature
pH	No data available in the literature
Kinematic viscosity	No data available in the literature
Dynamic viscosity	200 mPa.s - 500 mPa.s
Solubility	No data available in the literature
Log Kow	Not applicable (mixture)
Vapour pressure	No data available in the literature
Absolute density	No data available in the literature
Relative density	No data available in the literature
Relative vapour density	No data available in the literature
Particle size	Not applicable (liquid)

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

May be ignited by sparks. Gas/vapour spreads at floor level: ignition hazard.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

Precautionary measures

Keep away from naked flames/heat. Insufficient ventilation: use spark-/explosionproof appliances and lighting system. Insufficient ventilation: keep naked flames/sparks away. Insufficient ventilation: take precautions against electrostatic charges.

10.5. Incompatible materials

(strong) acids, (strong) bases.

10.6. Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

11.1.1 Test results

Acute toxicity

TWINBOND WP 1K

No (test)data on the mixture available

Judgement is based on the relevant ingredients

reaction mass of ethylbenzene and xylene

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to EU Method B.1	3523 mg/kg bw		Rat (male)	Experimental value	
Oral	LD50	Equivalent to EU Method B.1	> 4000 mg/kg bw		Rat (female)	Experimental value	
Dermal	LD50		12126 mg/kg bw	24 h	Rabbit (male)	Experimental value	
Dermal			category 4			Literature study	
Inhalation (vapours)	LC50	Equivalent to EU Method B.2	29.09 mg/l	4 h	Rat (male)	Experimental value	
Inhalation (vapours)			category 4			Literature study	

Classification of this substance is debatable as it does not correspond to the conclusion from the test

polymethylene polyphenyl isocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50		> 10000 mg/kg		Rat	Literature study	
Dermal	LD50		> 5000 mg/kg		Rabbit	Literature study	
Inhalation			category 4			Literature study	

m-tolylidene diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	4130 mg/kg bw - 5620 mg/kg bw		Mouse (male / female)	Experimental value	
Dermal	LD50	Equivalent to OECD 402	> 9400 mg/kg bw	24 h	Rabbit (male / female)	Experimental value	
Inhalation (vapours)	LC50	Equivalent to OECD 403	0.24 mg/l	4 h	Rat (male / female)	Experimental value	Converted value

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50		> 2000 mg/kg bw		Rat (male / female)	Experimental value	
Dermal	LD50	Equivalent to OECD 402	> 9400 mg/kg bw	24 h	Rabbit (male / female)	Read-across	
Inhalation (aerosol)	LC50	OECD 403	0.37 mg/l - 0.56 mg/l	4 h	Rat (male / female)	Experimental value	
Inhalation (aerosol)			category 4			Literature study	

2,6-di-tert-butyl-p-cresol

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 401	> 6000 mg/kg bw		Rat (male / female)	Experimental value	
Dermal	LD50	OECD 402	> 2000 mg/kg bw	24 h	Rat (male / female)	Experimental value	
Inhalation (vapours)	RD50		59.7 ppm	30 minutes	Mouse (male)	Experimental value	

4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50		> 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 (dust)	LD50	Equivalent to OECD 403	0.42 mg/l	4 h	Rat (male / female)	Experimental value	
Inhalation (dust)			category 4			Annex VI	

Conclusion

Not classified for acute toxicity

Corrosion/irritation

TWINBOND WP 1K

No (test)data on the mixture available

Classification is based on the relevant ingredients

polytoluene isocyanate (oligomers)

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating; category 2					Literature study	

1,2-ethanediamine, polymer with 2,4-diisocyanato-1-methylbenzene and 2-methyloxirane

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating; category 2					Literature study	

reaction mass of ethylbenzene and xylene

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Moderately irritating	Draize Test		24; 48; 72 hours	Rabbit	Experimental value	Single treatment without rinsing
Skin	Not corrosive	Equivalent to EU Method B.4	4 h	24; 48; 72 hours	Rabbit	Experimental value	
Skin	Moderately irritating	Equivalent to EU Method B.4	4 h	24; 48; 72 hours	Rabbit	Experimental value	
Inhalation (vapours)	Irritating; STOT SE cat.3					Literature study	

polymethylene polyphenyl isocyanate

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	

m-tolylidene diisocyanate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating		2 seconds - 4 seconds	24; 48; 72 hours	Rabbit	Experimental value	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	
Inhalation (vapours)	Irritating		3 h		Rat	Experimental value	

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405	24 h	24; 48; 72 hours	Rabbit	Experimental value	Single treatment with rinsing
Eye	Irritating	Human observation			Human	Weight of evidence	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	
Inhalation	Irritating	Human observation			Human	Weight of evidence	

2,6-di-tert-butyl-p-cresol

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Slightly irritating	Draize Test		24; 48; 72 hours	Rabbit	Experimental value	
Skin	Not irritating	Draize Test	24 h	24; 48 hours	Rabbit	Experimental value	

4,4'-methylenediphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating	OECD 405		24; 48; 72 hours	Rabbit	Experimental value	Single treatment
Eye	Irritating	Human observation			Human	Weight of evidence	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	
Inhalation	Irritating	Human observation			Human	Experimental value	

Conclusion

Causes skin irritation.
Causes serious eye irritation.
Not classified as irritating to the respiratory system

Respiratory or skin sensitisation

TWINBOND WP 1K

No (test)data on the mixture available
Classification is based on the relevant ingredients

polytoluene isocyanate (oligomers)

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

1,2-ethanediamine, polymer with 2,4-diisocyanato-1-methylbenzene and 2-methyloxirane

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

reaction mass of ethylbenzene and xylene

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal (on the ears)	Not sensitizing	Equivalent to OECD 429			Mouse	Experimental value	

polymethylene polyphenyl isocyanate

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	

m-tolylidene diisocyanate

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

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal	Sensitizing	Equivalent to OECD 406			Guinea pig (male / female)	Experimental value	
Skin	Sensitizing; category 1					Literature study	
Inhalation	Sensitizing	OECD GD-39			Guinea pig	Experimental value	

2,6-di-tert-butyl-p-cresol

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	Guinea pig maximisation test			Guinea pig (male / female)	Experimental value	
Skin	Not sensitizing				Human (male / female)	Experimental value	

4,4'-methylenediphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing	Equivalent to OECD 406			Guinea pig (male / female)	Experimental value	
Skin	Sensitizing	Patch test			Human	Experimental value	
Inhalation	Sensitizing				Guinea pig (female)	Experimental value	

Conclusion

May cause an allergic skin reaction.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Specific target organ toxicity

TWINBOND WP 1K

No (test)data on the mixture available
Classification is based on the relevant ingredients

reaction mass of ethylbenzene and xylene

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Oral (stomach tube)	NOAEL	Equivalent to EU Method B.32	250 mg/kg bw/day	No effect	103 weeks (daily, 5 days / week)	Rat (male / female)	Experimental value	
Oral (stomach tube)			STOT RE cat.2	Hearing organs (auditory disturbances)			Literature study	
Inhalation (vapours)	NOAEC	Subchronic toxicity test	1800 ppm	Hearing organs (no effect)	13 weeks (6h / day, 5 days / week)	Rat (male)	Experimental value	

polymethylene polyphenyl isocyanate

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

m-tolylidene diisocyanate

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Oral (stomach tube)	NOEL	Equivalent to OECD 407	< 30 mg/kg bw/day	No effect	4 weeks (daily)	Rat (male / female)	No reliable data available	
Dermal							Data waiving	
Inhalation (vapours)	NOAEC	Equivalent to OECD 453	0.05 ppm	No effect	113 weeks (6h / day, 5 days / week)	Rat (male)	Experimental value	
Inhalation (vapours)	LOAEC	Equivalent to OECD 453	0.15 ppm	Nose (irritation)	113 weeks (6h / day, 5 days / week)	Rat (male)	Experimental value	

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Inhalation (aerosol)	NOAEC	Equivalent to OECD 453	0.2 mg/m³ air	No effect		Rat (male / female)	Read-across	
Inhalation (aerosol)	LOAEC	Equivalent to OECD 453	1 mg/m³ air	Histopathology		Rat (male / female)	Read-across	

2,6-di-tert-butyl-p-cresol

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Oral (diet)	NOAEL	Subacute toxicity test	≥ 61 mg/kg bw/day	No effect		Pig (male / female)	Experimental value	
Oral (diet)	NOAEL		25 mg/kg bw/day	No effect		Rat (male)	Experimental value	
Oral (diet)	Dose level		100 mg/kg bw/day	Liver (enlargement /affection of the liver)		Rat (male)	Experimental value	
Dermal	Dose level	Subchronic toxicity test	2000 mg/l	No adverse systemic effects	4 weeks (3 times / week)	Rat (male / female)	Experimental value	

4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Inhalation (aerosol)	LOAEC	EPA OPPTS 870.3200	0.23 mg/m³ air	Respiratory tract (impairment/ degeneration)	104 weeks (6h / day, 5 days / week)	Rat (female)	Experimental value	

Conclusion

May cause damage to organs through prolonged or repeated exposure.

Mutagenicity (in vitro)

TWINBOND WP 1K

No (test)data on the mixture available

Judgement is based on the relevant ingredients

reaction mass of ethylbenzene and xylene

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	Equivalent to EU Method B.10	Chinese hamster ovary (CHO)		Experimental value	
Negative with metabolic activation, negative without metabolic activation	Equivalent to EU Method B.19	Chinese hamster ovary (CHO)		Experimental value	

m-tolylidene diisocyanate

Result	Method	Test substrate	Effect	Value determination	Remark
Ambiguous	OECD 471	Bacteria (S.typhimurium)		Experimental value	

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	EU Method B.13/14	Bacteria (S.typhimurium)		Experimental value	

2,6-di-tert-butyl-p-cresol

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S. typhimurium and E. coli)	No effect	Experimental value	
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 473	Chinese hamster ovary (CHO)	No effect	Experimental value	

4,4'-methylenediphenyl diisocyanate

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	EU Method B.13/14	Bacteria (S.typhimurium)	No effect	Experimental value	

Mutagenicity (in vivo)

TWINBOND WP 1K

No (test)data on the mixture available

Judgement is based on the relevant ingredients

reaction mass of ethylbenzene and xylene

Result	Method	Exposure time	Test substrate	Organ/Effect	Value determination	Remark
Negative (Subcutaneous)	Equivalent to OECD 478		Mouse (male / female)	No effect	Experimental value	Single exposure

m-tolylidene diisocyanate

Result	Method	Exposure time	Test substrate	Organ/Effect	Value determination	Remark
Negative		4 h	Rat (male)	No effect	Experimental value	
Negative	Equivalent to OECD 474	6 h	Mouse (male / female)	No effect	Experimental value	

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Result	Method	Exposure time	Test substrate	Organ/Effect	Value determination	Remark
Negative (Inhalation (aerosol))	OECD 474	3 week(s)	Rat (male)	No effect	Read-across	

2,6-di-tert-butyl-p-cresol

Result	Method	Exposure time	Test substrate	Organ/Effect	Value determination	Remark
Negative (Intraperitoneal)	Micronucleus test		Mouse (male / female)	No effect	Experimental value	Single intraperitoneal injection
Positive (Oral (diet))	Chromosome aberration assay	10 weeks (daily)	Rat (male)		Experimental value	Not relevant

4,4'-methylenediphenyl diisocyanate

Result	Method	Exposure time	Test substrate	Organ/Effect	Value determination	Remark
Negative (Inhalation (dust))	OECD 474	3 weeks (1h / day, 1 day / week)	Rat (male)	No effect	Experimental value	

Conclusion

Not classified for mutagenic or genotoxic toxicity

Carcinogenicity

TWINBOND WP 1K

No (test)data on the mixture available

Classification is based on the relevant ingredients

reaction mass of ethylbenzene and xylene

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Oral (stomach tube)	Dose level	Equivalent to EU Method B.32	> 500 mg/kg bw/day	No carcinogenic effect	103 weeks (5 days / week)	Rat (male / female)	Experimental value	

polymethylene polyphenyl isocyanate

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Unknown			category 2				Literature study	

m-tolylidene diisocyanate

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Inhalation (vapours)	NOAEC	Equivalent to OECD 453	0.15 ppm	No carcinogenic effect	113 weeks (6h / day, 5 days / week)	Rat (male / female)	Experimental value	

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Inhalation (aerosol)	NOAEC	Equivalent to OECD 453	1 mg/m³ air	No carcinogenic effect	2 year(s) (6h / day, 5 days / week)	Rat (male / female)	Read-across	
Inhalation (aerosol)	LOAEC	Equivalent to OECD 453	6 mg/m³ air	Carcinogenicity		Rat (male / female)	Read-across	

2,6-di-tert-butyl-p-cresol

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Oral (diet)	NOAEL	Carcinogenic toxicity study	25 mg/kg bw/day	No carcinogenic effect		Rat (male / female)	Experimental value	

4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Inhalation (aerosol)	NOAEC	Carcinogenic toxicity study	0.7 mg/m³ air	No carcinogenic effect	104 weeks (5 days / week)	Rat (female)	Experimental value	

Conclusion

Suspected of causing cancer.

Reproductive toxicity

TWINBOND WP 1K

No (test)data on the mixture available

Judgement is based on the relevant ingredients

reaction mass of ethylbenzene and xylene

Category	Parameter	Method	Value	Exposure time	Species	Effect	Value determination	Remark
Developmental toxicity (Inhalation (vapours))	BMCL10	Equivalent to OECD 414	1082 ppm	15 days (gestation, 6h / day)	Rat	Foetus (reduced fetal bodyweights)	Experimental value	
Maternal toxicity (Inhalation (vapours))	BMCL10	Equivalent to OECD 414	887 mg/kg bw/day	15 days (gestation, 6h / day)	Rat	Body weight reduction	Experimental value	
Effects on fertility (Inhalation (vapours))	NOAEC	EPA OPPTS 837.3800	> 500 ppm	> 131 days (6h / day)	Rat (male / female)	No effect	Experimental value	

m-tolylidene diisocyanate

Category	Parameter	Method	Value	Exposure time	Species	Effect	Value determination	Remark
Developmental toxicity	NOAEC	Equivalent to OECD 414	0.1 ppm	10 days (6h / day)	Rat	No effect	Experimental value	
Maternal toxicity	NOAEC	Equivalent to OECD 414	0.1 ppm	10 days (6h / day)	Rat	No effect	Experimental value	
Effects on fertility	NOAEC	Equivalent to OECD 416	0.3 ppm		Rat (male / female)	Reproductive organs (no effect)	Experimental value	

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Category	Parameter	Method	Value	Exposure time	Species	Effect	Value determination	Remark
Developmental toxicity (Inhalation (aerosol))	NOAEC	OECD 414	4 mg/m³ air	10 days (gestation, daily)	Rat	No effect	Read-across	
Maternal toxicity (Inhalation (aerosol))	NOAEC	OECD 414	4 mg/m³ air	10 days (gestation, daily)	Rat	No effect	Read-across	
Effects on fertility (Inhalation (vapours))	NOAEC	Equivalent to OECD 416	0.3 ppm		Rat (male / female)	No effect	Experimental value	

2,6-di-tert-butyl-p-cresol

Category	Parameter	Method	Value	Exposure time	Species	Effect	Value determination	Remark
Developmental toxicity (Oral (stomach tube))	NOAEL	Developmental toxicity study	800 mg/kg bw/day	7 days (gestation, daily)	Mouse	No effect	Experimental value	
Maternal toxicity (Oral (stomach tube))	NOAEL	Developmental toxicity study	240 mg/kg bw/day	7 days (gestation, daily)	Mouse	No effect	Experimental value	
Maternal toxicity (Oral (stomach tube))	LOAEL	Developmental toxicity study	800 mg/kg bw/day		Mouse	Maternal toxicity	Experimental value	
Effects on fertility (Oral (diet))	Dose level	Equivalent to OECD 416	250 mg/kg bw/day		Rat (male / female)	No effect	Experimental value	

4,4'-methylenediphenyl diisocyanate

Category	Parameter	Method	Value	Exposure time	Species	Effect	Value determination	Remark
Developmental toxicity (Inhalation (aerosol))	NOAEC	Equivalent to OECD 414	3 mg/m³ air	10 days (gestation, daily)	Rat	Foetus (no effect)	Experimental value	
Developmental toxicity (Inhalation (aerosol))	LOAEC	Equivalent to OECD 414	9 mg/kg bw/day	10 days (gestation, daily)	Rat	Foetus (minor skeletal variations)	Experimental value	
Maternal toxicity (Inhalation (aerosol))	LOAEC	Equivalent to OECD 414	≤ 9 mg/m³ air	10 days (gestation, daily)	Rat	Body weight, organ weight	Experimental value	
Effects on fertility (Inhalation (vapours))	NOAEC	Equivalent to OECD 416	0.3 ppm		Rat (male / female)	No effect	Experimental value	

Conclusion

Not classified for reprotoxic or developmental toxicity

Aspiration hazard

TWINBOND WP 1K

Judgement is based on the relevant ingredients

Not classified for aspiration toxicity

Toxicity other effects

TWINBOND WP 1K

No (test)data on the mixture available

Chronic effects from short and long-term exposure

TWINBOND WP 1K

Skin rash/inflammation. Respiratory difficulties.

11.2. Information on other hazards

No evidence of endocrine disrupting properties

SECTION 12: Ecological information

12.1. Toxicity

TWINBOND WP 1K

No (test)data on the mixture available

Classification is based on the relevant ingredients

reaction mass of ethylbenzene and xylene

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	2.6 mg/l	96 h	Oncorhynchus mykiss	Static renewal	Fresh water	Read-across; Specific isomer
Acute toxicity crustacea	IC50	OECD 202	2.2 mg/l	24 h	Daphnia magna	Static system	Fresh water	Read-across; Locomotor effect
Toxicity algae and other aquatic plants	ErC50	OECD 201	4.4 mg/l	73 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Read-across; GLP
	EC10	OECD 201	1.9 mg/l	73 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Read-across; Growth rate
Long-term toxicity fish	NOEC		> 1.3 mg/l	56 day(s)	Oncorhynchus mykiss	Flow-through system	Fresh water	Read-across; Lethal
Long-term toxicity aquatic crustacea	NOEC	EPA 600/4-91-003	0.96 mg/l	7 day(s)	Ceriodaphnia dubia	Static renewal	Fresh water	Read-across; Specific isomer

polymethylene polyphenyl isocyanate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity other aquatic organisms	LC50		> 1000 mg/l	96 h				Literature study
Toxicity aquatic micro-organisms	EC50	OECD 209	> 100 mg/l		Activated sludge			Literature study

m-tolylidene diisocyanate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	133 mg/l	96 h	Oncorhynchus mykiss	Static system	Fresh water	Experimental value
Acute toxicity crustacea	EC50	OECD 202	12.5 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; Nominal concentration
Toxicity algae and other aquatic plants	EC50	OECD 201	3230 mg/l	96 h	Skeletonema costatum			Experimental value; Nominal concentration
Long-term toxicity aquatic crustacea	NOEC	OECD 211	1.1 mg/l	21 day(s)	Daphnia magna	Static system	Fresh water	Experimental value; GLP
Toxicity aquatic micro-organisms	EC50	OECD 209	> 100 mg/l	3 h	Activated sludge			Experimental value

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl 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 crustacea	EC50	OECD 202	> 1000 mg/l	24 h	Daphnia magna	Static system	Fresh water	Read-across; Nominal concentration
Toxicity algae and other aquatic plants	ErC50	OECD 201	> 1640 mg/l	3 day(s)	Desmodesmus subspicatus	Static system	Fresh water	Read-across; Nominal concentration
	NOELR	OECD 201	1640 mg/l	3 day(s)	Desmodesmus subspicatus	Static system	Fresh water	Read-across; Growth rate
Long-term toxicity aquatic crustacea	NOEC	OECD 211	≥ 10 mg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Read-across; Nominal concentration

2,6-di-tert-butyl-p-cresol

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	ECOSAR v1.00	0.199 mg/l	96 h	Pisces			QSAR; Lethal
Acute toxicity crustacea	EC50	OECD 202	0.48 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; GLP
Toxicity algae and other aquatic plants	EC50	OECD 201	> 0.24 mg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Experimental value; Growth rate
	NOEC	OECD 201	0.24 mg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Experimental value; Growth rate
Long-term toxicity fish	NOEC	OECD 210	0.053 mg/l	30 day(s)	Oryzias latipes			Experimental value; GLP
Long-term toxicity aquatic crustacea	NOEC	OECD 211	0.069 mg/l	21 day(s)	Daphnia magna		Fresh water	Experimental value; GLP

Classification of this substance is debatable as it does not correspond to the conclusion from the test

4,4'-methylenediphenyl diisocyanate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LL50	OECD 203	> 100 mg/l	96 h	Danio rerio	Semi-static system	Fresh water	Experimental value; Nominal concentration
Acute toxicity crustacea	EL50	EU Method C.2	9 mg/l	48 h	Daphnia magna	Semi-static system	Fresh water	Experimental value; Locomotor effect
Toxicity algae and other aquatic plants	EL50	OECD 201	> 100 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Experimental value; Growth rate
	NOELR	OECD 201	≥ 100 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Experimental value; Growth rate
Long-term toxicity aquatic crustacea	NOEC		≥ 10 mg/l	21 day(s)	Daphnia sp.			Read-across; Reproduction
Toxicity aquatic micro-organisms	NOEC	OECD 209	250 mg/l	180 minutes	Activated sludge	Static system	Fresh water	Experimental value; Nominal concentration

Conclusion

Harmful to aquatic life with long lasting effects.

12.2. Persistence and degradability

reaction mass of ethylbenzene and xylene

Biodegradation water

Method	Value	Duration	Value determination
OECD 301F	90 % - 98 %; Oxygen consumption	28 day(s)	Experimental value

polymethylene polyphenyl isocyanate

Biodegradation water

Method	Value	Duration	Value determination
OECD 302C	< 60 %		Experimental value

m-tolylidene diisocyanate

Biodegradation water

Method	Value	Duration	Value determination
OECD 302C	0 %; Oxygen consumption	28 day(s)	Experimental value

Half-life water (t1/2 water)

Method	Value	Primary degradation/mineralisation	Value determination
	0.5 minutes	Primary degradation	Experimental value

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Biodegradation water

Method	Value	Duration	Value determination
OECD 302C	0 %; Oxygen consumption	28 day(s)	Read-across

2,6-di-tert-butyl-p-cresol

Biodegradation water

Method	Value	Duration	Value determination
	4.7 %	28 day(s)	Experimental value

4,4'-methylenediphenyl diisocyanate

Biodegradation water

Method	Value	Duration	Value determination
OECD 301F	0 %; Oxygen consumption	28 day(s)	Experimental value

Half-life water (t1/2 water)

Method	Value	Primary degradation/mineralisation	Value determination
OECD 111	5 minutes - 8 minutes; GLP	Primary degradation	Experimental value

Conclusion

Water

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)			

polytoluene isocyanate (oligomers)

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available in the literature			

1,2-ethanediamine, polymer with 2,4-diisocyanato-1-methylbenzene and 2-methyloxirane

Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available in the literature			

reaction mass of ethylbenzene and xylene

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF		7 - 26	56 day(s)	Oncorhynchus mykiss	Read-across

Log Kow

Method	Remark	Value	Temperature	Value determination
OECD 117		3.5	30 °C	Experimental value

polymethylene polyphenyl isocyanate

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF	BCFBAF v3.01	268 l/kg; Fresh weight			Estimated value

Log Kow

Method	Remark	Value	Temperature	Value determination
KOWWIN		10		Calculated

m-tolylidene diisocyanate

Log Kow

Method	Remark	Value	Temperature	Value determination
OECD 117		3.43	22 °C	Experimental value

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF	OECD 305	92 - 200; GLP	28 day(s)	Cyprinus carpio	Experimental value

Log Kow

Method	Remark	Value	Temperature	Value determination
OECD 117		4.5	22 °C	Experimental value

2,6-di-tert-butyl-p-cresol

Log Kow

Method	Remark	Value	Temperature	Value determination
		5.1		

4,4'-methylenediphenyl diisocyanate

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF	OECD 305	92 - 200; GLP	28 day(s)	Cyprinus carpio	Experimental value

Log Kow

Method	Remark	Value	Temperature	Value determination
OECD 117		4.5	22 °C	Experimental value

Conclusion

Contains bioaccumulative component(s)

12.4. Mobility in soil

reaction mass of ethylbenzene and xylene

(log) Koc

Parameter	Method	Value	Value determination
log Koc	OECD 121	2.7	Read-across

polymethylene polyphenyl isocyanate

(log) Koc

Parameter	Method	Value	Value determination
log Koc	SRC PCKOCWIN v2.0	9.1 - 11	Calculated value

Percent distribution

Method	Fraction air	Fraction biota	Fraction sediment	Fraction soil	Fraction water	Value determination
Fugacity Model Level III	0.039 %		64 %	34 %	1.3 %	Calculated value

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

(log) Koc

Parameter	Method	Value	Value determination
log Koc		4.5	Read-across

2,6-di-tert-butyl-p-cresol

(log) Koc

Parameter	Method	Value	Value determination
log Koc	SRC PCKOCWIN v1.66	4.4	Calculated value

Percent distribution

Method	Fraction air	Fraction biota	Fraction sediment	Fraction soil	Fraction water	Value determination
Mackay level III	0.37 %		30.4 %	58.5 %	10.7 %	Calculated value

4,4'-methylenediphenyl diisocyanate

(log) Koc

Parameter	Method	Value	Value determination
log Koc	SRC PCKOCWIN v2.0	4.5 - 5.5	Calculated value

Percent distribution

Method	Fraction air	Fraction biota	Fraction sediment	Fraction soil	Fraction water	Value determination
Fugacity Model Level III	0.31 %		56 %	39 %	4.7 %	Calculated value

Conclusion

Contains component(s) with potential for mobility in the soil
Contains component(s) that adsorb(s) into the soil

12.5. Results of PBT and vPvB assessment

Does not contain component(s) that meet(s) the criteria of PBT and/or vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006.

12.6. Endocrine disrupting properties

No evidence of endocrine disrupting properties

12.7. Other adverse effects

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Greenhouse gases

None of the known components is included in the list of fluorinated greenhouse gases (Regulation (EU) No 2024/573)

Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 2024/590)

reaction mass of ethylbenzene and xylene

Greenhouse gases

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 2024/573)

Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 2024/590)

Groundwater

Groundwater pollutant

polymethylene polyphenyl isocyanate

Greenhouse gases

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 2024/573)

m-tolylidene diisocyanate

Greenhouse gases

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 2024/573)

Groundwater

Groundwater pollutant

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Greenhouse gases

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 2024/573)

Groundwater

Groundwater pollutant

2,6-di-tert-butyl-p-cresol

Greenhouse gases

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 2024/573)

4,4'-methylenediphenyl diisocyanate

Greenhouse gases

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 2024/573)

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

European Union

Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.
Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).
08 05 01* (wastes not otherwise specified in 08: waste isocyanates). Depending on branch of industry and production process, also other waste codes may be applicable.

13.1.2 Disposal methods

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. Dispose of at authorized waste collection point.

13.1.3 Packaging/Container

European Union

Waste material code packaging (Directive 2008/98/EC).
15 01 10* (packaging containing residues of or contaminated by dangerous substances).

SECTION 14: Transport information

Road (ADR)

14.1. UN number or ID number

UN number	1866

14.2. UN proper shipping name

Proper shipping name	resin solution

14.3. Transport hazard class(es)

Hazard identification number	30
Class	3
Classification code	F1

14.4. Packing group

Packing group	III
Labels	3

14.5. Environmental hazards

Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	
Limited quantities	Combination packagings: not more than 5 liters per inner packaging for liquids. A package shall not weigh more than 30 kg (gross mass).

Rail (RID)

14.1. UN number or ID number

UN number	1866

14.2. UN proper shipping name

Proper shipping name	resin solution

14.3. Transport hazard class(es)

Hazard identification number	30
Class	3
Classification code	F1

14.4. Packing group

Packing group	III
Labels	3

14.5. Environmental hazards

Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	
Limited quantities	Combination packagings: not more than 5 liters per inner packaging for liquids. A package shall not weigh more than 30 kg (gross mass).

Inland waterways (ADN)

14.1. UN number or ID number

UN number/ID number	1866

14.2. UN proper shipping name

Proper shipping name	resin solution

14.3. Transport hazard class(es)

Class	3
Classification code	F1

14.4. Packing group

Packing group	III
Labels	3

14.5. Environmental hazards

Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	
Limited quantities	Combination packagings: not more than 5 liters per inner packaging for liquids. A package shall not weigh more than 30 kg (gross mass).

Sea (IMDG/IMSBC)

14.1. UN number or ID number

UN number	1866

14.2. UN proper shipping name

Proper shipping name	resin solution

14.3. Transport hazard class(es)

Class	3

14.4. Packing group

Packing group	III
Labels	3

14.5. Environmental hazards

Marine pollutant	-
Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	223
Special provisions	955
Limited quantities	Combination packagings: not more than 5 liters per inner packaging for liquids. A package shall not weigh more than 30 kg (gross mass).

14.7. Maritime transport in bulk according to IMO instruments

Annex II of MARPOL 73/78	Not applicable, based on available data

Air (ICAO-TI/IATA-DGR)

14.1. UN number or ID number

UN number/ID number	1866

14.2. UN proper shipping name

Proper shipping name	resin solution

14.3. Transport hazard class(es)

Class	3

14.4. Packing group

Packing group	III
Labels	3

14.5. Environmental hazards

Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	A3

Passenger and cargo transport

Limited quantities: maximum net quantity per packaging	10 L

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
10 % - 25 %	

4,4'-methylenediphenyl diisocyanate

Product name	Respiratory sensitation
Diisocyanates (measured as NCO)	The substance can cause sensitisation of the respiratory tract
	The substance can cause sensitisation of the respiratory tract

Product name	Skin sensitation
Diisocyanates (measured as NCO)	The substance can cause sensitisation of the skin
	The substance can cause sensitisation of the skin

Directive 2012/18/EU (Seveso III)

Threshold values under special circumstances

Substance or category	Special circumstances	Low tier (tonnes)	Top tier (tonnes)	Group	For this substance or mixture the summation rule has to be applied for:
P5a FLAMMABLE LIQUIDS	Maintained at a temperature above the boiling point	10	50	None	Flammability
P5b FLAMMABLE LIQUIDS	Particular processing conditions, such as high pressure or high temperature, may create major-accident hazards	50	200	None	Flammability

Threshold values under normal circumstances

Substance or category	Low tier (tonnes)	Top tier (tonnes)	Group	For this substance or mixture the summation rule has to be applied for:
P5c FLAMMABLE LIQUIDS	5000	50000	None	Flammability

REACH Candidate list

Does not contain component(s) included in candidate list of substances of very high concern (SVHC) for authorisation (Article 59 of Regulation (EC) No 1907/2006)

REACH Annex XIV - Authorisation

Does not contain component(s) included in Annex XIV of Regulation (EC) No 1907/2006: list of substances subject to authorisation

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
· reaction mass of ethylbenzene and xylene · polymethylene polyphenyl isocyanate · m-tolylidene diisocyanate · reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl) phenyl isocyanate / methylene diphenyl diisocyanate	Liquid substances or mixtures 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 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 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 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 H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.
· reaction mass of ethylbenzene and xylene	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to that Regulation or not.	1. Shall not be used, as substance or as mixtures in aerosol dispensers where these aerosol dispensers are intended for supply to the general public for entertainment and decorative purposes such as the following: — metallic glitter intended mainly for decoration, — artificial snow and frost, — “whoopee” cushions, — silly string aerosols, — imitation excrement, — horns for parties, — decorative flakes and foams, — artificial cobwebs,

		— stink bombs. 2. Without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances, suppliers shall ensure before the placing on the market that the packaging of aerosol dispensers referred to above is marked visibly, legibly and indelibly with: “For professional users only”. 3. By way of derogation, paragraphs 1 and 2 shall not apply to the aerosol dispensers referred to Article 8 (1a) of Council Directive 75/ 324/EEC. 4. The aerosol dispensers referred to in paragraphs 1 and 2 shall not be placed on the market unless they conform to the requirements indicated.
· 4,4'-methylenediphenyl diisocyanate	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. — 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.
· polytoluene isocyanate (oligomers) · m-tolylidene diisocyanate · reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl) phenyl isocyanate / methylene diphenyl diisocyanate · 4,4'-methylenediphenyl diisocyanate	Diisocyanates, O = C=N-R-N = C=O, with R an aliphatic or aromatic hydrocarbon unit of unspecified length	1. Shall not be used as substances on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) after 24 August 2023, unless: (a) the concentration of diisocyanates individually and in combination is less than 0,1 % by weight, or (b) the employer or self-employed ensures that industrial or professional user(s) have successfully completed training on the safe use of diisocyanates prior to the use of the substance(s) or mixture(s). 2. Shall not be placed on the market as substances on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) after 24 February 2022, unless: (a) the concentration of diisocyanates individually and in combination is less than 0,1 % by weight, or (b) the supplier ensures that the recipient of the substance(s) or mixture(s) is provided with information on the requirements referred to in point (b) of paragraph 1 and the following statement is placed on the packaging, in a manner that is visibly distinct from the rest of the label information: “As from 24 August 2023 adequate training is required before industrial or professional use”. 3. For the purpose of this entry “industrial and professional user(s)” means any worker or self-employed worker handling diisocyanates on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) or supervising these tasks. 4. The training referred to in point (b) of paragraph 1 shall include the instructions for the control of dermal and inhalation exposure to diisocyanates at the workplace without prejudice to any national occupational exposure limit value or other appropriate risk management measures at national level. Such training shall be conducted by an expert on occupational safety and health with competence acquired by relevant vocational training. That training shall cover as a minimum: (a) the training elements in point (a) of paragraph 5 for all industrial and professional use(s). (b) the training elements in points (a) and (b) of paragraph 5 for the following uses: — handling open mixtures at ambient temperature (including foam tunnels); — spraying in a ventilated booth; — application by roller; — application by brush; — application by dipping and pouring; — mechanical post treatment (e.g. cutting) of not fully cured articles which are not warm anymore; — cleaning and waste; — any other uses with similar exposure through the dermal and/or inhalation route; (c) the training elements in points (a), (b) and (c) of paragraph 5 for the following uses: — handling incompletely cured articles (e.g. freshly cured, still warm); — foundry applications; — maintenance and repair that needs access to equipment; — open handling of warm or hot formulations (> 45 °C); — spraying in open air, with limited or only natural ventilation (includes large industry working halls) and spraying with high energy (e.g. foams, elastomers); — and any other uses with similar exposure through the dermal and/or inhalation route. 5. Training elements: (a) general training, including on-line training, on: — chemistry of diisocyanates; — toxicity hazards (including acute toxicity); — exposure to diisocyanates; — occupational exposure limit values; — how sensitisation can develop; — odour as indication of hazard; — importance of volatility for risk; — viscosity, temperature, and molecular weight of diisocyanates; — personal hygiene; — personal protective equipment needed, including practical instructions for its correct

		use and its limitations; — risk of dermal contact and inhalation exposure; — risk in relation to application process used; — skin and inhalation protection scheme; — ventilation; — cleaning, leakages, maintenance; — discarding empty packaging; — protection of bystanders; — identification of critical handling stages; — specific national code systems (if applicable); — behaviour-based safety; — certification or documented proof that training has been successfully completed (b) intermediate level training, including on-line training, on: — additional behaviour-based aspects; — maintenance; — management of change; — evaluation of existing safety instructions; — risk in relation to application process used; — certification or documented proof that training has been successfully completed (c) advanced training, including on-line training, on: — any additional certification needed for the specific uses covered; — spraying outside a spraying booth; — open handling of hot or warm formulations (> 45 °C); — certification or documented proof that training has been successfully completed 6. The training shall comply with the provisions set by the Member State in which the industrial or professional user(s) operate. Member States may implement or continue to apply their own national requirements for the use of the substance(s) or mixture(s), as long as the minimum requirements set out in paragraphs 4 and 5 are met. 7. The supplier referred to in point (b) of paragraph 2 shall ensure that the recipient is provided with training material and courses pursuant to paragraphs 4 and 5 in the official language(s) of the Member State(s) where the substance(s) or mixture(s) are supplied. The training shall take into consideration the specificity of the products supplied, including composition, packaging, and design. 8. The employer or self-employed shall document the successful completion of the training referred to in paragraphs 4 and 5. The training shall be renewed at least every five years. 9. Member States shall include in their reports pursuant to Article 117(1) the following information: (a) any established training requirements and other risk management measures related to the industrial and professional uses of diisocyanates foreseen in national law; (b) the number of cases of reported and recognised occupational asthma and occupational respiratory and dermal diseases in relation to diisocyanates; (c) national exposure limits for diisocyanates, if there are any; (d) information about enforcement activities related to this restriction. 10. This restriction shall apply without prejudice to other Union legislation on the protection of safety and health of workers at the workplace.
· m-tolylidene diisocyanate · 4,4'-methylenediphenyl diisocyanate	Substances falling within one or more of the following points: (a) substances classified as any of the following in Part 3 of Annex VI to Regulation (EC) No 1272/2008: — carcinogen category 1A, 1B or 2, or germ cell mutagen category 1A, 1B or 2, but excluding any such substances classified due to effects only following exposure by inhalation — reproductive toxicant category 1A, 1B or 2 but excluding any such substances classified due to effects only following exposure by inhalation — skin sensitiser category 1, 1A or 1B — skin corrosive category 1, 1A, 1B or 1C or skin irritant category 2 — serious eye damage category 1 or eye irritant category 2 (b) substances listed in Annex II to Regulation (EC) No 1223/2009 of the European Parliament and of the Council (c) substances listed in Annex IV to Regulation (EC) No 1223/2009 for which a condition is specified in at least one of the columns g, h and i of the table in that Annex (d) substances listed in Appendix 13 to this Annex. The ancillary requirements in paragraphs 7 and 8 of column 2 of this entry apply to all mixtures for use for tattooing purposes, whether or not they contain a substance falling within points (a) to (d) of this column of this entry.	Mixtures for tattooing purposes are subject to the restrictions of Regulation (EU) 2020/2081

National legislation Belgium
TWINBOND WP 1K

No data available

m-tolylidene diisocyanate

Agents cancérigènes, mutagènes et reprotoxiques et aux agents possédant des propriétés perturbant le système endocrinien (Code du bien-être au travail, Livre VI, titre 2)	Toluène diisocyantes; VI.2.3.; Liste non limitative de substances, mélanges et procédés visés à l'article VI.2-1, alinéa 3

National legislation The Netherlands

TWINBOND WP 1K

Waterbezwaarlijkheid	A (3); Algemene Beoordelingsmethodiek (ABM)

National legislation France

TWINBOND WP 1K

No data available

m-tolylidene diisocyanate

Catégorie cancérogène	Diisocyanate de toluylène; C2

4,4'-methylenediphenyl diisocyanate

Catégorie cancérogène	4,4'-Diisocyanate de diphénylméthane; C2

National legislation Germany

TWINBOND WP 1K

Lagerklasse (TRGS510)	3: Entzündbare Flüssigkeiten
WGK	2; Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV) - 18. April 2017

reaction mass of ethylbenzene and xylene

TA-Luft	5.2.5

polymethylene polyphenyl isocyanate

TA-Luft	5.2.5/I
TRGS900 - Risiko der Fruchtschädigung	pMDI (als MDI berechnet); Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
TRGS905 - Krebserzeugend	Techn. ("Polymeres") MDI (pMDI) (in Form atembarer Aerosole, A-Fraktion); 2
TRGS905 - Erbgutverändernd	Techn. ("Polymeres") MDI (pMDI) (in Form atembarer Aerosole, A-Fraktion); -
TRGS905 - Fruchtbarkeitsgefährdend	Techn. ("Polymeres") MDI (pMDI) (in Form atembarer Aerosole, A-Fraktion); -
TRGS905 - Fruchtschädigend	Techn. ("Polymeres") MDI (pMDI) (in Form atembarer Aerosole, A-Fraktion); -
Hautresorptive Stoffe	pMDI (als MDI berechnet); H; Hautresorptiv

m-tolylidene diisocyanate

TA-Luft	5.2.5/I

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

TA-Luft	5.2.5/I

2,6-di-tert-butyl-p-cresol

TA-Luft	5.2.5/I
TRGS900 - Risiko der Fruchtschädigung	2,6-Di-tert-butyl-p-kresol; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden

4,4'-methylenediphenyl diisocyanate

TA-Luft	5.2.5/I
TRGS900 - Risiko der Fruchtschädigung	4,4'-Methylendiphenyldiisocyanat; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
Sensibilisierende Stoffe	4,4'-Methylendiphenyldiisocyanat; Sh; Hautsensibilisierende Stoffe
Hautresorptive Stoffe	4,4'-Methylendiphenyldiisocyanat; H; Hautresorptiv

National legislation Austria

TWINBOND WP 1K

No data available

m-tolylidene diisocyanate

Krebserzeugend	Diisocyanattoluole: m-Tolylidendiisocyanat 2,4-Diisocyanattoluol 2,6-Diisocyanattoluol; III B
Gefahr der Sensibilisierung der Haut	Diisocyanattoluole: m-Tolylidendiisocyanat 2,4-Diisocyanattoluol 2,6-Diisocyanattoluol; Sh
Gefahr der Sensibilisierung der Atemwege	Diisocyanattoluole: m-Tolylidendiisocyanat 2,4-Diisocyanattoluol 2,6-Diisocyanattoluol; Sa

4,4'-methylenediphenyl diisocyanate

Krebserzeugend	Diphenylmethan-diisocyanat (alle Isomeren):Diphenylmethan-4,4'-diisocyanat Diphenylmethan-2,2'-diisocyanat Diphenylmethan-2,4'-diisocyanat; III B
Gefahr der Sensibilisierung der Haut	Diphenylmethan-diisocyanat (alle Isomeren):Diphenylmethan-4,4'-diisocyanat Diphenylmethan-2,2'-diisocyanat Diphenylmethan-2,4'-diisocyanat; Sh
Gefahr der Sensibilisierung der Atemwege	Diphenylmethan-diisocyanat (alle Isomeren):Diphenylmethan-4,4'-diisocyanat Diphenylmethan-2,2'-diisocyanat Diphenylmethan-2,4'-diisocyanat; Sa

National legislation United Kingdom

TWINBOND WP 1K

No data available

polymethylene polyphenyl isocyanate

Skin Sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen
Respiratory sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen

m-tolylidene diisocyanate

Skin Sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen
Respiratory sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Skin Sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen
Respiratory sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen

4,4'-methylenediphenyl diisocyanate

Skin Sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen
Respiratory sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen

National legislation Ireland

TWINBOND WP 1K

No data available

4,4'-methylenediphenyl diisocyanate

Dermal sensitisation	4,4’-Methylene-diphenyl diisocyanate (as —NCO); Sens.
Respiratory sensitisation	4,4’-Methylene-diphenyl diisocyanate (as —NCO); Sens.

Other relevant data

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No data available

polymethylene polyphenyl isocyanate

IARC - classification	3; Polymethylene polyphenyl isocyanate

m-tolylidene diisocyanate

TLV - Carcinogen	Toluene diisocyanate, 2,4- or 2,6 (or as a mixture); A3
IARC - classification	2B; Toluene diisocyanates
TLV - Skin Sensitisation	Toluene diisocyanate, 2,4- or 2,6 (or as a mixture); SEN; Sensitization
TLV - Respiratory Sensitisation	Toluene diisocyanate, 2,4- or 2,6 (or as a mixture); SEN; Sensitization
TLV - Skin absorption	Toluene diisocyanate, 2,4- or 2,6 (or as a mixture); Skin; Danger of cutaneous absorption

2,6-di-tert-butyl-p-cresol

TLV - Carcinogen	Butylated hydroxytoluene; A4
IARC - classification	3; Butylated hydroxytoluene (bht)

4,4'-methylenediphenyl diisocyanate

IARC - classification	3; 4,4'-methylenediphenyl diisocyanate and polymeric 4,4'-methylenediphenyl diisocyanate

15.2. Chemical safety assessment

No chemical safety assessment is required for a mixture.

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

A chemical safety assessment has been performed.

SECTION 16: Other information

Full text of any H- and EUH-statements referred to under section 3:

H226 Flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H330 Fatal if inhaled.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H373 May cause damage to organs (respiratory system) through prolonged or repeated exposure if inhaled.
H373 May cause damage to organs (ears (hearing damage)) through prolonged or repeated exposure.
H373 May cause damage to organs through prolonged or repeated exposure if inhaled.
H373 May cause damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

(*)	INTERNAL CLASSIFICATION BY BIG
ADI	Acceptable daily intake
AOEL	Acceptable operator exposure level
ATE	Acute Toxicity Estimate
BCF	Bioconcentration Factor
BEI	Biological Exposure Indices
CLP (EU-GHS)	Classification, labelling and packaging (Globally Harmonised System in Europe)
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
EC10	Effect Concentration 10 %
EC50	Effect Concentration 50 %

ErC50	EC50 in terms of reduction of growth rate
GLP	Good Laboratory Practice
LC0	Lethal Concentration 0 %
LC50	Lethal Concentration 50 %
LD50	Lethal Dose 50 %
LOAEC/LOAEL	Lowest Observed Adverse Effect Concentration/Lowest Observed Adverse Effect Level
NOAEC/NOAEL	No Observed Adverse Effect Concentration/No Observed Adverse Effect Level
NOEC/NOEL	No Observed Effect Concentration/No Observed Effect Level
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent, Bioaccumulative & Toxic
PNEC	Predicted No Effect Concentration
STP	Sludge Treatment Process
vPvB	very Persistent & very Bioaccumulative

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. 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.