

SAFETY DATA SHEET

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

PUB-1380 COMP A

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

1.1. Product identifier

Product name : PUB-1380 COMP A
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

2-component system
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

Novatio*
Industrielaan 5B
B-2250 Olen
☎ +32 14 25 76 40
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info@novatio.be
*NOVATIO 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
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1.4. Emergency telephone number

24h/24h (Telephone advice: English, French, German, Dutch) :
+32 14 58 45 45 (BIG)
Ireland - Beaumont Hospital, Dublin (NPIC): +353 1 809 2166 (Public 8 am- 10 pm)
Ireland - Beaumont Hospital, Dublin (NPIC): +353 1 809 2566 (Professionals)

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
Skin Sens.	category 1	H317: May cause an allergic skin reaction.
Acute Tox.	category 4	H332: Harmful if inhaled.
Eye Irrit.	category 2	H319: Causes serious eye irritation.
STOT SE	category 3	H335: May cause respiratory irritation.

2.2. Label elements



Contains: hexamethylene diisocyanate, oligomers.

Signal word Warning

H-statements

H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

P-statements

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.

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P302 + P352 IF ON SKIN: Wash with plenty of water and soap.
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.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

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 List No	Conc. (C)	Classification according to CLP	Note	Remark	M-factors and ATE
hexamethylene diisocyanate, oligomers 01-2119485796-17	931-274-8	40% ≤C<60%	Skin Sens. 1; H317 Acute Tox. 4; H332 STOT SE 3; H335	(1)(10)	Constituent	
3-(2,3-epoxypropoxy) propyltrimethoxysilane 01-2119513212-58	2530-83-8 219-784-2	0.1%≤C<3%	Eye Dam. 1; H318 Aquatic Chronic 3; H412	(1)(10)	Constituent	

(1) For H- and EUH-statements in full: see section 16

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

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:

Irritation of the respiratory tract. Irritation of the nasal mucous membranes.

After skin contact:

No effects known.

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:

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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:

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

5.3.2 Special protective equipment for fire-fighters:

Gloves (EN 374). Safety glasses (EN 166). 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

No naked flames. 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). Safety glasses (EN 166). Protective clothing (EN 14605 or EN 13034).

Suitable protective clothing

See section 8.2

6.2. Environmental precautions

Contain released product.

6.3. Methods and material for containment and cleaning up

Solid spill: cover with absorbent material. Scoop solid spill into closing containers. Clean contaminated surfaces with an excess of water.

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. Observe very strict hygiene - avoid contact. Remove contaminated clothing immediately. Keep container tightly closed.

7.2. Conditions for safe storage, including any incompatibilities

7.2.1 Safe storage requirements:

Meet the legal requirements. Store in a dry area. Store in a cool area. Keep container in a well-ventilated place.

7.2.2 Keep away from:

Heat 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) <i>shall apply from 2029-01-01</i>	Time-weighted average exposure limit 8 h (Binding occupational exposure limit value)	6 µg/m ³ (1)
	Short time value (Binding occupational exposure limit value)	12 µg/m ³ (1)
Diisocyanates (measured as NCO) <i>shall apply until 2028-12-31</i>	Time-weighted average exposure limit 8 h (Binding occupational exposure limit value)	10 µg/m ³ (1)
	Short time value (Binding occupational exposure limit value)	20 µg/m ³ (1)

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

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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
1,6-Hexamethylene Diisocyanate Homopolymer	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

hexamethylene diisocyanate, oligomers

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.5 mg/m ³	
	Acute local effects inhalation	1 mg/m ³	

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	70.5 mg/m ³	
	Long-term systemic effects dermal	10 mg/kg bw/day	

DNEL/DMEL - General population

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	17.4 mg/m ³	
	Long-term systemic effects dermal	5 mg/kg bw/day	
	Long-term systemic effects oral	5 mg/kg bw/day	

PNEC

hexamethylene diisocyanate, oligomers

Compartments	Value	Remark
STP	88 mg/l	

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Compartments	Value	Remark
Fresh water	0.45 mg/l	
Marine water	0.045 mg/l	
Fresh water (intermittent releases)	0.45 mg/l	
STP	8.2 mg/l	
Fresh water sediment	1.6 mg/kg sediment dw	
Marine water sediment	0.16 mg/kg sediment dw	
Soil	0.063 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. 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. Do not eat, drink or smoke during work.

a) Respiratory protection:

High gas/vapour concentration: full face mask with filter type A.

b) Hand protection:

Protective gloves against chemicals (EN 374).

c) Eye protection:

Safety glasses (EN 166).

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	Paste
Colour	White
Odour	No data available on 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	Not classified as flammable
Explosion limits	No data available in the literature
Flash point	> 60 °C
Auto-ignition temperature	400 °C

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Decomposition temperature	No data available in the literature
pH	No data available in the literature
Kinematic viscosity	> 20.5 mm²/s ; 40 °C
Dynamic viscosity	80000 mPa.s ; 20 °C
Solubility	No data available in the literature
Log Kow	Not applicable (mixture)
Vapour pressure	No data available in the literature
Absolute density	1540 kg/m³ ; 20 °C
Relative density	1.54 ; 20 °C
Relative vapour density	Not applicable
Particle size	Not applicable

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Heating increases the fire 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.

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

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No (test)data on the mixture available

Classification is based on the relevant ingredients

hexamethylene diisocyanate, oligomers

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 423	> 2500 mg/kg		Rat (female)	Experimental value	
Dermal	LD50	OECD 402	> 2000 mg/kg	24 h	Rat (male / female)	Experimental value	
Inhalation (mist)	LC50	OECD 403	0.39 mg/l - 0.54 mg/l	4 h	Rat (male / female)	Experimental value	
Inhalation (mist)			category 4			Literature study	

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	8025 mg/kg		Rat (male / female)	Experimental value	
Dermal	LD50	Equivalent to OECD 402	4248 mg/kg	24 h	Rabbit (male)	Experimental value	
Inhalation (aerosol)	LC50	Equivalent to OECD 403	> 5.3 mg/l air	4 h	Rat (male / female)	Experimental value	

Conclusion

Harmful if inhaled.

Not classified as acute toxic if swallowed

Not classified as acute toxic in contact with skin

Corrosion/irritation

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No (test)data on the mixture available

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Classification is based on the relevant ingredients
hexamethylene diisocyanate, oligomers

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405		24; 48; 72 hours	Rabbit	Experimental value	Single treatment without rinsing
Skin	Not irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	
Inhalation	Irritating; STOT SE cat.3					Literature study	

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Serious eye damage	OECD 405	4 h	24; 48; 72 hours	Rabbit	Experimental value	Single treatment with rinsing
Skin	Not irritating	Equivalent to OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	

Conclusion

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

Respiratory or skin sensitisation

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No (test)data on the mixture available
 Classification is based on the relevant ingredients
hexamethylene diisocyanate, oligomers

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal (on the ears)	Sensitizing	OECD 429			Mouse (female)	Experimental value	
Inhalation	Not sensitizing				Guinea pig (female)	Experimental value	

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	OECD 406			Guinea pig (female)	Experimental value	

Conclusion

May cause an allergic skin reaction.
 Not classified as sensitizing for inhalation

Specific target organ toxicity

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No (test)data on the mixture available
 Judgement is based on the relevant ingredients
hexamethylene diisocyanate, oligomers

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Inhalation (aerosol)	NOAEL	OECD 413	3.3 mg/m ³ air	Respiratory tract (no effect)	13 weeks (6h / day, 5 days / week)	Rat (male / female)	Experimental value	

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Oral (stomach tube)	NOAEL	OECD 408	≥ 1000 mg/kg bw/day	No effect	90 day(s)	Rat (male / female)	Experimental value	
Inhalation (aerosol)	NOAEC	Equivalent to OECD 412	225 mg/m ³ air	No effect	2 weeks (6h / day, 5 days / week)	Rat (male / female)	Experimental value	

Conclusion

Not classified for subchronic toxicity

Mutagenicity (in vitro)

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

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hexamethylene diisocyanate, oligomers

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 471	Bacteria (S. typhimurium and E. coli)	No effect	Experimental value	
Negative with metabolic activation, negative without metabolic activation	OECD 476	Chinese hamster ovary (CHO)	No effect	Experimental value	
Negative with metabolic activation, negative without metabolic activation	OECD 473	Chinese hamster lung fibroblasts (V79)	No effect	Experimental value	

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Result	Method	Test substrate	Effect	Value determination	Remark
Positive with metabolic activation, positive without metabolic activation	Equivalent to OECD 471	Bacteria (S.typhimurium)		Experimental value	
Positive with metabolic activation, positive without metabolic activation	Equivalent to OECD 476	Mouse (lymphoma L5178Y cells)		Experimental value	

Mutagenicity (in vivo)

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No (test)data on the mixture available

Judgement is based on the relevant ingredients

hexamethylene diisocyanate, oligomers

Result	Method	Exposure time	Test substrate	Organ/Effect	Value determination	Remark
Negative (Oral)	Equivalent to OECD 474		Mouse (male / female)	No effect	Experimental value	Single treatment

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Result	Method	Exposure time	Test substrate	Organ/Effect	Value determination	Remark
Negative (Oral (stomach tube))	OECD 488	28 day(s)	Rat (male)	No effect	Experimental value	

Conclusion

Not classified for mutagenic or genotoxic toxicity

Carcinogenicity

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No (test)data on the mixture available

Judgement is based on the relevant ingredients

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Dermal	NOAEL	Carcinogenic toxicity study	≥ 5 mg/kg bw/day	No carcinogenic effect		Mouse (male)	Experimental value	Lifetime (3x/week)

Conclusion

Not classified for carcinogenicity

Reproductive toxicity

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No (test)data on the mixture available

Judgement is based on the relevant ingredients

hexamethylene diisocyanate, oligomers

Category	Parameter	Method	Value	Exposure time	Species	Effect	Value determination	Remark
Maternal toxicity							Data waiving	
Effects on fertility (Oral (stomach tube))		OECD 421			Rat			Experimental study planned

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3-(2,3-epoxypropoxy)propyltrimethoxysilane

Category	Parameter	Method	Value	Exposure time	Species	Effect	Value determination	Remark
Developmental toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 414	1500 mg/kg bw/day	10 days (gestation, daily)	Rat	Skeleton (no effect)	Experimental value	
Maternal toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 414	1500 mg/kg bw/day	10 days (gestation, daily)	Rat	No effect	Experimental value	
Effects on fertility (Oral (stomach tube))	NOAEL (P/F1)	OECD 415	≥ 1000 mg/kg bw/day		Rat (male / female)	No effect	Experimental value	

Conclusion

Not classified for reprotoxic or developmental toxicity

Aspiration hazard

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Judgement is based on the relevant ingredients
Not classified for aspiration toxicity

Toxicity other effects

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No (test)data on the mixture available

Chronic effects from short and long-term exposure

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Skin rash/inflammation.

11.2. Information on other hazards

No evidence of endocrine disrupting properties

SECTION 12: Ecological information

12.1. Toxicity

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No (test)data on the mixture available

Judgement of the mixture is based on the relevant ingredients

hexamethylene diisocyanate, oligomers

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	EU Method C.1	> 100 mg/l	96 h	Danio rerio	Static system	Fresh water	Experimental value; Nominal concentration
Acute toxicity crustacea	EL50	EU Method C.2	127 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; Locomotor effect
Toxicity algae and other aquatic plants	ErC50	Equivalent to OECD 201	> 1000 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Experimental value; GLP
	EC10	Equivalent to OECD 201	370 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Experimental value; Growth rate
Toxicity aquatic micro-organisms	EC10	OECD 209	880 mg/l	3 h	Activated sludge	Static system	Fresh water	Experimental value; GLP

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3-(2,3-epoxypropoxy)propyltrimethoxysilane

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	EU Method C.1	55 mg/l	96 h	Cyprinus carpio	Semi-static system	Fresh water	Experimental value; Nominal concentration
Acute toxicity crustacea	LC50	US EPA	324 mg/l	48 h	Simocephalus vetulus	Static system	Fresh water	Experimental value; Nominal concentration
Toxicity algae and other aquatic plants	ErC50	OECD 201	350 mg/l	96 h	Scenedesmus subspicatus	Static system	Fresh water	Experimental value; Nominal concentration
	NOEC	OECD 201	130 mg/l	96 h	Scenedesmus subspicatus	Static system	Fresh water	Experimental value; Growth rate
Long-term toxicity aquatic crustacea	NOEC	OECD 211	≥ 100 mg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Experimental value; Nominal concentration
Toxicity aquatic micro-organisms	EC50	OECD 209	> 100 mg/l	3 h	Activated sludge	Static system	Fresh water	Experimental value; Nominal concentration

Conclusion

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

12.2. Persistence and degradability

hexamethylene diisocyanate, oligomers

Biodegradation water

Method	Value	Duration	Value determination
EU Method C.4-E	1 %; Oxygen consumption	28 day(s)	Experimental value

Half-life water (t1/2 water)

Method	Value	Primary degradation/mineralisation	Value determination
OECD 111	< 1 h; GLP	Primary degradation	Experimental value

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Biodegradation water

Method	Value	Duration	Value determination
EU Method C.4-A	37 %; GLP	28 day(s)	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)			

hexamethylene diisocyanate, oligomers

BCF other aquatic organisms

Parameter	Method	Value	Duration	Species	Value determination
BCF	BCFBAF v3.01	89 l/kg - 141 l/kg; Fresh weight			QSAR

Log Kow

Method	Remark	Value	Temperature	Value determination
KOWWIN		9.8	20 °C	Calculated

3-(2,3-epoxypropoxy)propyltrimethoxysilane

Log Kow

Method	Remark	Value	Temperature	Value determination
KOWWIN		0.5	20 °C	QSAR

Conclusion

Does not contain bioaccumulative component(s)

12.4. Mobility in soil

hexamethylene diisocyanate, oligomers

(log) Koc

Parameter	Method	Value	Value determination
log Koc	SRC PCKOCWIN v2.0	3.8 - 4.9	QSAR

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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

PMT conclusion

Due to insufficient data no statement can be made whether the component(s) fulfil(s) the criteria of PMT and vPvM according to Annex I of Regulation (EC) No 1272/2008

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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)

hexamethylene diisocyanate, oligomers

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)

3-(2,3-epoxypropoxy)propyltrimethoxysilane

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

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 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 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), Rail (RID), Inland waterways (ADN), Sea (IMDG/IMSBC), Air (ICAO-TI/IATA-DGR)

14.1. UN number or ID 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	

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14.7. Maritime transport in bulk according to IMO instruments

Annex II of MARPOL 73/78

Not applicable, based on available data

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
	No data available in the literature

hexamethylene diisocyanate, oligomers

Product name	Respiratory sensitisation
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 sensitisation
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)

Not subject to registration according to Directive 2012/18/EU (Seveso III)

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
· hexamethylene diisocyanate, oligomers · 3-(2,3-epoxypropoxy) propyltrimethoxysilane	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.
· hexamethylene diisocyanate, oligomers	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

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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 user(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;

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(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.

National legislation Belgium

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No data available

National legislation The Netherlands

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Waterbezwaarlijkheid	B (4); Algemene Beoordelingsmethodiek (ABM)
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National legislation France

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No data available

National legislation Germany

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WGK	1; Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV) - 18. April 2017
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hexamethylene diisocyanate, oligomers

TA-Luft	5.2.5
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3-(2,3-epoxypropoxy)propyltrimethoxysilane

TA-Luft	5.2.5
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National legislation Austria

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No data available

National legislation United Kingdom

PUB-1380 COMP A

No data available

National legislation Ireland

PUB-1380 COMP A

No data available

Other relevant data

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No data available

15.2. Chemical safety assessment

No chemical safety assessment is required for a mixture.

SECTION 16: Other information

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

H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
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
HS	Harmonized System of Nomenclature, a standardized international system for classifying goods under the Harmonized System Convention, as drawn up by the World Customs Organization Secretariat
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

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STP
vPvB

Sludge Treatment Process
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.

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