

SAFETY DATA SHEET

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

PUC-001 B

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

1.1. Product identifier

Product name : PUC-001 B
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

Epoxy resin: hardener

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
☎ +32 14 22 02 66
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
☎ +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)

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.
Skin Sens.	category 1	H317: May cause an allergic skin reaction.
STOT SE	category 3	H335: May cause respiratory irritation.
STOT SE	category 3	H336: May cause drowsiness or dizziness.

2.2. Label elements



Contains: n-butyl acetate; hexamethylene diisocyanate, oligomers.

Signal word Warning

H-statements

H226 Flammable liquid and vapour.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

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.

Created by: Brandweerinformatiecentrum voor gevaarlijke stoffen vzw (BIG)

Technische Schoolstraat 43 A, B-2440 Geel

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P233
P403 + P235

Supplemental information
EUH066

Keep container tightly closed.
Store in a well-ventilated place. Keep cool.

Repeated exposure may cause skin dryness or cracking.
As from 24 August 2023 adequate training is required before industrial or professional use.

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
n-butyl acetate 01-2119485493-29	123-86-4 204-658-1	50% <C<100%	Flam. Liq. 3; H226 STOT SE 3; H336 EUH066	(1)(2)(10)	Constituent	
hexamethylene diisocyanate, oligomers 01-2119485796-17	931-274-8	25% <C<50%	Skin Sens. 1; H317 Acute Tox. 4; H332 STOT SE 3; H335	(1)(10)	Constituent	
2-methoxy-1-methylethyl acetate 01-2119475791-29	108-65-6 203-603-9	2.5% ≤C<10%	Flam. Liq. 3; H226 STOT SE 3; H336	(1)(2)(10)	Constituent	
2-butoxyethyl acetate 01-2119475112-47	112-07-2 203-933-3	2.5%≤C<5%	Acute Tox. 4; H332 Acute Tox. 4; H312 Acute Tox. 4; H302	(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

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 (lukewarm) 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. Dizziness. Drowsiness.

After skin contact:

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Dry skin. Cracking of the skin.

After eye contact:

No effects known.

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.

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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 (not alcohol-resistant).

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). On heating: release of toxic/combustible gases/vapours (hydrogen cyanide).

5.3. Advice for firefighters

5.3.1 Instructions:

If exposed to fire cool the closed containers by spraying with water. 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). 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.

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. Try to reduce evaporation. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

Take up liquid spill into inert 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: take precautions against electrostatic charges. Insufficient ventilation: keep naked flames/sparks away. 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 in a cool area. Keep container in a well-ventilated place.

7.2.2 Keep away from:

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

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.

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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

2-Butoxyethyl acetate	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	20 ppm
	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	133 mg/m ³
	Short time value (Indicative occupational exposure limit value)	50 ppm
	Short time value (Indicative occupational exposure limit value)	333 mg/m ³
n-Butyl acetate	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	50 ppm
	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	241 mg/m ³
	Short time value (Indicative occupational exposure limit value)	150 ppm
	Short time value (Indicative occupational exposure limit value)	723 mg/m ³

Belgium

Acétate de 2-(1-méthoxy)propyle	Time-weighted average exposure limit 8 h	50 ppm
	Time-weighted average exposure limit 8 h	275 mg/m ³
	Short time value	100 ppm
	Short time value	550 mg/m ³
Acétate de 2-butoxyéthyle	Time-weighted average exposure limit 8 h	20 ppm
	Time-weighted average exposure limit 8 h	133 mg/m ³
	Short time value	50 ppm
	Short time value	333 mg/m ³
Acétate de butyle, tous isomères: n-, iso, sec, tert	Time-weighted average exposure limit 8 h	50 ppm
	Time-weighted average exposure limit 8 h	238 mg/m ³
	Short time value	150 ppm
	Short time value	712 mg/m ³

The Netherlands

1-Methoxy-2-propylacetaat	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	100 ppm
1-methoxy-2-propylacetaat	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	550 mg/m ³
2-Butoxyethylacetaat	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	20 ppm
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	135 mg/m ³
	Short time value (Public occupational exposure limit value)	50 ppm
	Short time value (Public occupational exposure limit value)	333 mg/m ³
n-Butylacetaat	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	50 ppm
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	241 mg/m ³
	Short time value (Public occupational exposure limit value)	150 ppm
	Short time value (Public occupational exposure limit value)	723 mg/m ³

France

Acétate de 2-butoxyéthyle	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	10 ppm
	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	66.5 mg/m ³
	Short time value (VRC: Valeur réglementaire contraignante)	50 ppm
	Short time value (VRC: Valeur réglementaire contraignante)	333 mg/m ³
Acétate de 2-méthoxy-1-méthyléthyle	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	50 ppm
	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	275 mg/m ³
	Short time value (VRC: Valeur réglementaire contraignante)	100 ppm
	Short time value (VRC: Valeur réglementaire contraignante)	550 mg/m ³
Acétate de n-butyle	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	150 ppm

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Acétate de n-butyle	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	710 mg/m ³
	Short time value (VL: Valeur non réglementaire indicative)	200 ppm
	Short time value (VL: Valeur non réglementaire indicative)	940 mg/m ³

Germany

2-Butoxyethyl-acetat	Time-weighted average exposure limit 8 h (TRGS 900)	10 ppm
	Time-weighted average exposure limit 8 h (TRGS 900)	65 mg/m ³
2-Methoxy-1-methylethylacetat	Time-weighted average exposure limit 8 h (TRGS 900)	50 ppm
	Time-weighted average exposure limit 8 h (TRGS 900)	270 mg/m ³
n-Butylacetat	Time-weighted average exposure limit 8 h (TRGS 900)	62 ppm
	Time-weighted average exposure limit 8 h (TRGS 900)	300 mg/m ³

Austria

1-Methoxypropylacetat-2	Tagesmittelwert (MAK)	50 ppm
	Tagesmittelwert (MAK)	275 mg/m ³
	Kurzzeitwert 5(Mow) 8x (MAK)	100 ppm
	Kurzzeitwert 5(Mow) 8x (MAK)	550 mg/m ³
2-Butoxyethylacetat	Tagesmittelwert (MAK)	20 ppm
	Tagesmittelwert (MAK)	133 mg/m ³
	Kurzzeitwert 30(Miw) 4x (MAK)	40 ppm
	Kurzzeitwert 30(Miw) 4x (MAK)	270 mg/m ³
Butylacetat alle Isomere (außer tert-Butylacetat): Isobutylacetat n-Butylacetat sec-Butylacetat	Tagesmittelwert (MAK)	50 ppm
	Tagesmittelwert (MAK)	241 mg/m ³
	Kurzzeitwert Mow (MAK)	100 ppm
	Kurzzeitwert Mow (MAK)	480 mg/m ³

UK

1-Methoxypropyl acetate	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	50 ppm
	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	274 mg/m ³
	Short time value (Workplace exposure limit (EH40/2005))	100 ppm
	Short time value (Workplace exposure limit (EH40/2005))	548 mg/m ³
2-Butoxyethyl acetate	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	20 ppm
	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	133 mg/m ³
	Short time value (Workplace exposure limit (EH40/2005))	50 ppm
	Short time value (Workplace exposure limit (EH40/2005))	332 mg/m ³
Butyl acetate	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	150 ppm
	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	724 mg/m ³
	Short time value (Workplace exposure limit (EH40/2005))	200 ppm
	Short time value (Workplace exposure limit (EH40/2005))	966 mg/m ³

USA (TLV-ACGIH)

2-Butoxyethyl acetate	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	20 ppm
Butyl acetates, all isomers	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	50 ppm
	Short time value (TLV - Adopted Value)	150 ppm

b) National biological limit values

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

Germany

2-Butoxyethylacetat (Butoxyessigsäure (nach Hydrolyse))	Urin: expositionsende, bzw. schichtende bei langzeitexposition: nach mehreren vorangegangenen schichten	150 mg/g	
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8.1.2 Sampling methods

Product name	Test	Number
1,6-Hexamethylene Diisocyanate Homopolymer	OSHA	2125
1-Methoxy-2-Propyl Acetate	OSHA	99
2-butoxyethyl acetate:	NIOSH	8316
Butyl acetate (Volatile Organic compounds)	NIOSH	2549
Butyl Cellosolve Acetate	OSHA	73
Butyl Cellosolve Acetate	OSHA	83

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Product name	Test	Number
n-Butyl Acetate (Esters I)	NIOSH	1450
n-Butyl Acetate	OSHA	1009
Propylene glycol monomethyl ether acetate (glycol ethers)	NIOSH	2554

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

n-butyl acetate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	300 mg/m ³	
	Acute systemic effects inhalation	600 mg/m ³	
	Long-term local effects inhalation	300 mg/m ³	
	Acute local effects inhalation	600 mg/m ³	
	Long-term systemic effects dermal	11 mg/kg bw/day	
	Acute systemic effects dermal	11 mg/kg bw/day	

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	

2-methoxy-1-methylethyl acetate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	275 mg/m ³	
	Acute local effects inhalation	550 mg/m ³	
	Long-term systemic effects dermal	796 mg/kg bw	

2-butoxyethyl acetate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	133 mg/m ³	
	Acute local effects inhalation	333 mg/m ³	
	Long-term systemic effects dermal	169 mg/kg bw/day	
	Acute systemic effects dermal	120 mg/kg bw/day	

DNEL/DMEL - General population

n-butyl acetate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	35.7 mg/m ³	
	Acute systemic effects inhalation	300 mg/m ³	
	Long-term local effects inhalation	35.7 mg/m ³	
	Acute local effects inhalation	300 mg/m ³	
	Long-term systemic effects dermal	6 mg/kg bw/day	
	Acute systemic effects dermal	6 mg/kg bw/day	
	Long-term systemic effects oral	2 mg/kg bw/day	
	Acute systemic effects oral	2 mg/kg bw/day	

2-methoxy-1-methylethyl acetate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	33 mg/m ³	
	Long-term local effects inhalation	33 mg/m ³	
	Long-term systemic effects dermal	320 mg/kg bw	
	Long-term systemic effects oral	36 mg/kg bw	

2-butoxyethyl acetate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	80 mg/m ³	
	Acute local effects inhalation	200 mg/m ³	
	Long-term systemic effects dermal	102 mg/kg bw/day	
	Acute systemic effects dermal	72 mg/kg bw/day	
	Long-term systemic effects oral	8.6 mg/kg bw/day	
	Acute systemic effects oral	36 mg/kg bw/day	

PNEC

n-butyl acetate

Compartments	Value	Remark
Fresh water	0.18 mg/l	
Marine water	0.018 mg/l	
Fresh water (intermittent releases)	0.36 mg/l	
STP	35.6 mg/l	
Fresh water sediment	0.981 mg/kg sediment dw	
Marine water sediment	0.098 mg/kg sediment dw	
Soil	0.09 mg/kg soil dw	

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hexamethylene diisocyanate, oligomers

Compartments	Value	Remark
Fresh water	0.127 mg/l	
Salt water	0.013 mg/l	
Aqua (intermittent releases)	1.27 mg/l	
STP	88 mg/l	
Fresh water sediment	266701 mg/kg sediment dw	
Marine water sediment	26670 mg/kg sediment dw	
Soil	53183 mg/kg soil dw	

2-methoxy-1-methylethyl acetate

Compartments	Value	Remark
Fresh water	0.635 mg/l	
Marine water	0.064 mg/l	
Aqua (intermittent releases)	6.35 mg/l	
STP	100 mg/l	
Fresh water sediment	3.29 mg/kg sediment dw	
Marine water sediment	0.329 mg/kg sediment dw	
Soil	0.29 mg/kg soil dw	

2-butoxyethyl acetate

Compartments	Value	Remark
Fresh water	0.304 mg/l	
Fresh water (intermittent releases)	0.56 mg/l	
Marine water	0.03 mg/l	
STP	90 mg/l	
Fresh water sediment	2.03 mg/kg sediment dw	
Marine water sediment	0.203 mg/kg sediment dw	
Soil	0.415 mg/kg soil dw	
Oral	60 mg/kg food	

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: take precautions against electrostatic charges. Insufficient ventilation: keep naked flames/sparks away. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

8.2.2 Individual protection measures, such as personal protective equipment

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

a) Respiratory protection:

Full face mask with filter type A at conc. in air > exposure limit.

b) Hand protection:

Protective gloves against chemicals (EN 374).

Materials	Remark
butyl rubber	Good resistance

c) Eye protection:

Protective goggles (EN 166).

d) Skin protection:

Protective clothing (EN 14605 or EN 13034). Head/neck protection.

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
Odour	Characteristic odour
Odour threshold	No data available in the literature
Colour	Black
Particle size	Not applicable (liquid)
Explosion limits	1.2 - 7.5 vol %
Flammability	Flammable liquid and vapour.
Log Kow	Not applicable (mixture)
Dynamic viscosity	No data available in the literature
Kinematic viscosity	No data available in the literature
Melting point	No data available in the literature
Boiling point	124 °C - 128 °C
Relative vapour density	No data available in the literature
Vapour pressure	10.7 hPa ; 20 °C

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Solubility	No data available in the literature
Relative density	0.97 ; 20 °C
Absolute density	974 kg/m ³ ; 20 °C
Decomposition temperature	No data available in the literature
Auto-ignition temperature	315 °C ; DIN 51794
Flash point	27 °C ; DIN 53213
pH	No data available in the literature

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

May be ignited by sparks.

10.2. Chemical stability

No data available.

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: take precautions against electrostatic charges. Insufficient ventilation: keep naked flames/sparks away.

10.5. Incompatible materials

(strong) acids, (strong) bases, reducing agents.

10.6. Hazardous decomposition products

On heating: release of toxic/combustible gases/vapours (hydrogen cyanide). 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

Judgement is based on the relevant ingredients

n-butyl acetate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 423	10760 mg/kg bw - 12789 mg/kg bw		Rat (male / female)	Experimental value	
Dermal	LD50	Equivalent to OECD 402	> 14112 mg/kg bw		Rabbit (male / female)	Experimental value	
Inhalation (aerosol)	LC50	OECD 403	0.74 mg/l	4 h	Rat (male / female)	Experimental value	

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 (aerosol)	LC50	OECD 403	0.39 mg/l - 0.54 mg/l	4 h	Rat (male / female)	Experimental value	
Inhalation (aerosol)			category 4			Literature study	

2-methoxy-1-methylethyl acetate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	6190 mg/kg bw		Rat (male / female)	Experimental value	
Dermal	LD50	Equivalent to OECD 402	> 5000 mg/kg bw	24 h	Rabbit (male / female)	Experimental value	
Inhalation	LC0	Equivalent to OECD 403	10.8 mg/l	3 h	Rat (male)	Experimental value	

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2-butoxyethyl acetate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	1880 mg/kg		Rat (male / female)	Experimental value	
Dermal	LD50		1500 mg/kg	24 h	Rabbit	Experimental value	
Inhalation (vapours)	LC0	Equivalent to OECD 403	> 2.66 mg/l	4 h	Rat (male / female)	Experimental value	(maximum achievable concentration)
Inhalation			category 4			Annex VI	

Conclusion

Not classified as acute toxic in contact with skin
 Not classified as acute toxic if swallowed
 Not classified as acute toxic if inhaled

Corrosion/irritation

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No (test) data on the mixture available
 Classification is based on the relevant ingredients
n-butyl acetate

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
Dermal	Not irritating	Equivalent to OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	

hexamethylene diisocyanate oligomers

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Slightly irritating	OECD 405		24; 48; 72 hours	Rabbit	Experimental value	Single treatment without rinsing
Skin	Slightly irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	
Inhalation	Irritating; STOT SE cat.3					Literature study	

2-methoxy-1-methylethyl acetate

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

Conclusion

May cause respiratory irritation.
 Not classified as irritating to the skin
 Not classified as irritating to the eyes

Respiratory or skin sensitisation

PUC-001 B

No (test) data on the mixture available
 Classification is based on the relevant ingredients
n-butyl acetate

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

hexamethylene diisocyanate oligomers

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

2-methoxy-1-methylethyl acetate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	Equivalent to OECD 406		24; 48 hours	Guinea pig (male / female)	Experimental value	

Conclusion

May cause an allergic skin reaction.

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Not classified as sensitizing for inhalation

Specific target organ toxicity

PUC-001 B

No (test)data on the mixture available

Classification is based on the relevant ingredients

n-butyl acetate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (stomach tube)	NOAEL	Subchronic toxicity test	125 mg/kg bw/day		No effect	13 week(s)	Rat (male / female)	Read-across
Oral (stomach tube)	LOAEL	Subchronic toxicity test	500 mg/kg bw/day	Central nervous system	Central nervous system depression	13 day(s)	Rat (male / female)	Read-across
Inhalation (vapours)	NOAEC	EPA OTS 798.2450	500 ppm		No adverse systemic effects	13 weeks (daily, 5 days / week)	Rat (male / female)	Experimental value

hexamethylene diisocyanate, oligomers

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral								Data waiving
Dermal								Data waiving
Inhalation (aerosol)	NOAEL	OECD 413	3.3 mg/m ³ air		No effect	90 days (6h / day)	Rat (male / female)	Experimental value

2-methoxy-1-methylethyl acetate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (stomach tube)	NOAEL	OECD 422	≥ 1000 mg/kg		No effect	41 day(s) - 45 day(s)	Rat (male / female)	Experimental value
Dermal	NOAEL	Equivalent to OECD 410	> 1000 mg/kg bw/day		No effect	3 weeks (5 days / week)	Rabbit (male / female)	Read-across
Inhalation (vapours)	NOEL	OECD 453	300 ppm		No effect	104 weeks (6h / day, 5 days / week)	Rat (male / female)	Read-across
			STOT SE cat.3		Drowsiness, dizziness			Literature study

Conclusion

May cause drowsiness or dizziness.

Not classified for subchronic toxicity

Mutagenicity (in vitro)

PUC-001 B

No (test)data on the mixture available

Judgement is based on the relevant ingredients

n-butyl acetate

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S.typhimurium)		Experimental value	

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	

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2-methoxy-1-methylethyl acetate

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

Mutagenicity (in vivo)

PUC-001 B

No (test)data on the mixture available

Judgement is based on the relevant ingredients

n-butyl acetate

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Oral (stomach tube))	OECD 474		Mouse (male / female)		Read-across

hexamethylene diisocyanate, oligomers

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Oral)	Equivalent to OECD 474		Mouse (male / female)		Experimental value

Conclusion

Not classified for mutagenic or genotoxic toxicity

Carcinogenicity

PUC-001 B

No (test)data on the mixture available

Judgement is based on the relevant ingredients

2-methoxy-1-methylethyl acetate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (vapours)	NOEL	OECD 453	≥ 11.07 mg/l air	104 weeks (6h / day, 5 days / week)	Mouse (male / female)	No carcinogenic effect		Read-across

Conclusion

Not classified for carcinogenicity

Reproductive toxicity

PUC-001 B

No (test)data on the mixture available

Judgement is based on the relevant ingredients

n-butyl acetate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Inhalation (vapours))	LOAEC	Equivalent to OECD 414	1500 ppm		Rat	Fetotoxicity		Experimental value
Maternal toxicity (Inhalation (vapours))	LOAEC	Equivalent to OECD 414	1500 ppm		Rat	Maternal toxicity		Experimental value
Effects on fertility (Inhalation (vapours))	NOAEC	OECD 416	2000 ppm	> 90 day(s)	Rat (male / female)	No effect		Experimental value

hexamethylene diisocyanate, oligomers

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Inhalation)	NOAEC	OECD 414	1 mg/m ³ air	14 days (6h / day)	Rat (female)	No effect		Read-across
Maternal toxicity (Inhalation)	NOAEC	OECD 414	1 mg/m ³ air	14 days (6h / day)	Rat (female)	No effect		Read-across
Effects on fertility (Inhalation (vapours))	NOEL (P)	OECD 422	0.3 ppm		Rat (male / female)	No effect		Read-across

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2-methoxy-1-methylethyl acetate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Inhalation)	NOAEL	OECD 414	> 4000 ppm	6 days (gestation, 6h / day) - 15 days (gestation, 6h / day)	Rat	No effect	Foetus	Experimental value
	NOAEL	OECD 414	3000 ppm	6 days (gestation, 6h / day) - 18 days (gestation, 6h / day)	Rabbit	No effect	Foetus	Read-across
Maternal toxicity (Inhalation)	NOAEL	OECD 414	500 ppm	10 days (gestation, 6h / day)	Rat	No effect		Experimental value
	NOAEL	OECD 414	1500 ppm	6 days (gestation, 6h / day) - 18 days (gestation, 6h / day)	Rabbit	No effect		Experimental value
Effects on fertility (Inhalation (vapours))	NOEL	OECD 416	1000 ppm		Rat (male / female)	No effect		Read-across

Conclusion

Not classified for reprotoxic or developmental toxicity

Toxicity other effects

PUC-001 B

Classification is based on the relevant ingredients
n-butyl acetate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
	NOEC	EPA OTS 798.6050	1500 ppm		Hypoactivity	6 h	Rat (male / female)	Experimental value
	NOAEC	EPA OTS 798.6050	500 ppm		no neurotoxic effects	13 week(s)	Rat (male / female)	Experimental value

Conclusion

Repeated exposure may cause skin dryness or cracking.

Chronic effects from short and long-term exposure

PUC-001 B

Skin rash/inflammation.

11.2. Information on other hazards

No evidence of endocrine disrupting properties

SECTION 12: Ecological information

12.1. Toxicity

PUC-001 B

No (test)data on the mixture available

Judgement of the mixture is based on the relevant ingredients
n-butyl acetate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	Equivalent to OECD 203	18 mg/l	96 h	Pimephales promelas	Flow-through system	Fresh water	Experimental value; Lethal
Acute toxicity crustacea	EC50	Equivalent to OECD 202	44 mg/l	48 h	Daphnia sp.	Static system	Fresh water	Experimental value; Locomotor effect
Toxicity algae and other aquatic plants	ErC50	OECD 201	397 mg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Read-across; GLP
	NOEC	OECD 201	196 mg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Read-across; Growth rate
Long-term toxicity aquatic crustacea	NOEC	OECD 211	23.2 mg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Read-across; Reproduction
Toxicity aquatic micro-organisms	IC50	TETRATOX assay	356 mg/l	40 h	Tetrahymena pyriformis	Static system	Fresh water	Experimental value; Growth
	Parameter	Method	Value	Duration	Species	Value determination		
Toxicity terrestrial plants	EC50	Equivalent to OECD 208	> 1000 mg/kg soil dw	14 day(s)	Lactuca sativa			Experimental value

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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			Experimental value
Acute toxicity crustacea	EC50	EU Method C.2	> 100 mg/l	48 h	Daphnia magna			Experimental value
Toxicity algae and other aquatic plants	EC50	DIN 38412	> 1000 mg/l	72 h	Scenedesmus subspicatus	Static system	Fresh water	Experimental value
Long-term toxicity fish								Data waiving
Long-term toxicity aquatic crustacea								Data waiving
Toxicity aquatic micro-organisms	EC10	OECD 209	880 mg/l	3 h	Activated sludge	Static system	Fresh water	Experimental value; GLP

2-methoxy-1-methylethyl acetate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	100 mg/l - 180 mg/l	96 h	Oncorhynchus mykiss	Static system	Fresh water	Experimental value; Nominal concentration
Acute toxicity crustacea	EC50	EU Method C.2	> 500 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; Nominal concentration
Toxicity algae and other aquatic plants	NOEC	OECD 201	≥ 1000 mg/l	96 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Experimental value; Nominal concentration
	EC50	OECD 201	> 1000 mg/l	96 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Experimental value; Nominal concentration
Long-term toxicity fish	NOEC	OECD 204	47.5 mg/l	14 day(s)	Oryzias latipes	Flow-through system	Fresh water	Experimental value; GLP
Long-term toxicity aquatic crustacea	NOEC	OECD 211	≥ 100 mg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Experimental value; GLP
Toxicity aquatic micro-organisms	EC10	Equivalent to OECD 209	> 1000 mg/l	30 minutes	Activated sludge	Static system	Fresh water	Experimental value

2-butoxyethyl acetate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	20 mg/l - 40 mg/l	96 h	Oncorhynchus mykiss		Fresh water	Experimental value
Acute toxicity crustacea	EC50	DIN 38412-11	37 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value
Toxicity algae and other aquatic plants	EC50	ISO 8692	1570 mg/l	72 h	Pseudokirchneriella subcapitata	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

n-butyl acetate

Biodegradation water

Method	Value	Duration	Value determination
OECD 301D	83 %; Oxygen consumption	28 day(s)	Experimental value

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

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2-methoxy-1-methylethyl acetate

Biodegradation water

Method	Value	Duration	Value determination
OECD 301F	83 %; GLP	28 day(s)	Experimental value

Biodegradation soil

Method	Value	Duration	Value determination
Equivalent to OECD 304A	> 57 %	1 day(s)	Experimental value

Half-life water (t1/2 water)

Method	Value	Primary degradation/mineralisation	Value determination
OECD 111	> 10 day(s); pH < 7	Primary degradation	Experimental value
OECD 111	> 10 day(s); pH = 7	Primary degradation	Experimental value
OECD 111	8.1 day(s); pH > 7	Primary degradation	Experimental value

2-butoxyethyl acetate

Biodegradation water

Method	Value	Duration	Value determination
EU Method C.4-D	88 %	28 day(s)	Experimental value

Conclusion

Water

Contains non readily biodegradable component(s)

12.3. Bioaccumulative potential

PUC-001 B

Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (mixture)			

n-butyl acetate

Log Kow

Method	Remark	Value	Temperature	Value determination
OECD 117		2.3	25 °C	Experimental value

hexamethylene diisocyanate, oligomers

BCF other aquatic organisms

Parameter	Method	Value	Duration	Species	Value determination
BCF	BCFBAF v3.01	88.7 l/kg - 141 l/kg; Fresh weight			QSAR

Log Kow

Method	Remark	Value	Temperature	Value determination
KOWWIN		9.81	20 °C	Calculated

2-methoxy-1-methylethyl acetate

Log Kow

Method	Remark	Value	Temperature	Value determination
Equivalent to OECD 117		1.2	20 °C	Experimental value

2-butoxyethyl acetate

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
					Data waiving

Log Kow

Method	Remark	Value	Temperature	Value determination
BASF test		1.51	25 °C	

Conclusion

Does not contain bioaccumulative component(s)

12.4. Mobility in soil

n-butyl acetate

(log) Koc

Parameter	Method	Value	Value determination
log Koc	SRC PCKOCWIN v2.0	1.268 - 1.844	Calculated value

hexamethylene diisocyanate, oligomers

(log) Koc

Parameter	Method	Value	Value determination
log Koc	SRC PCKOCWIN v2.0	3.838 - 4.915	QSAR

PUC-001 B

2-methoxy-1-methylethyl acetate

(log) Koc

Parameter	Method	Value	Value determination
log Koc		0.264	QSAR

Percent distribution

Method	Fraction air	Fraction biota	Fraction sediment	Fraction soil	Fraction water	Value determination
Mackay level III	10.22 %	0 %	0.02 %	0.03 %	89.73 %	Calculated value

2-butoxyethyl acetate

(log) Koc

Parameter	Method	Value	Value determination
			Data waiving

Percent distribution

Method	Fraction air	Fraction biota	Fraction sediment	Fraction soil	Fraction water	Value determination
Mackay level I	46.2 %	0 %	0.4 %	29.3 %	24.1 %	QSAR

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

PUC-001 B

Greenhouse gases

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

Ozone-depleting potential (ODP)

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

Groundwater

Groundwater pollutant

n-butyl acetate

Groundwater

Groundwater pollutant

2-methoxy-1-methylethyl acetate

Groundwater

Groundwater pollutant

Water ecotoxicity pH

pH shift

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 01 11* (wastes from MFSU and removal of paint and varnish: waste paint and varnish 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)

14.1. UN number

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UN number	1263
14.2. UN proper shipping name	
Proper shipping name	paint related material
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	163
Special provisions	367
Special provisions	650
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	
UN number	1263
14.2. UN proper shipping name	
Proper shipping name	paint related material
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	163
Special provisions	367
Special provisions	650
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	
UN number	1263
14.2. UN proper shipping name	
Proper shipping name	paint related material
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	163
Special provisions	367
Special provisions	650
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	
UN number	1263
14.2. UN proper shipping name	
Proper shipping name	paint related material
14.3. Transport hazard class(es)	
Class	3
14.4. Packing group	
Packing group	III
Labels	3
14.5. Environmental hazards	

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Marine pollutant	-
Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	163
Special provisions	223
Special provisions	367
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
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Air (ICAO-TI/IATA-DGR)

14.1. UN number

UN number	1263
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14.2. UN proper shipping name

Proper shipping name	paint related material
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14.3. Transport hazard class(es)

Class	3
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14.4. Packing group

Packing group	III
Labels	3

14.5. Environmental hazards

Environmentally hazardous substance mark	no
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14.6. Special precautions for user

Special provisions	A192
Special provisions	A3
Special provisions	A72

Passenger and cargo transport

Limited quantities: maximum net quantity per packaging	10 L
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SECTION 15: Regulatory information

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

European legislation:

VOC content Directive 2010/75/EU

VOC content	Remark
63.92 %	
622.58 g/l	

Indicative occupational exposure limit values (Directive 98/24/EC, 2000/39/EC, 2004/37/EC and amendments)

2-butoxyethyl acetate

Product name	Skin resorption
2-Butoxyethyl acetate	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:
P5b FLAMMABLE LIQUIDS	Particular processing conditions, such as high pressure or high temperature, may create major-accident hazards	50	200	None	Flammability
P5a FLAMMABLE LIQUIDS	Maintained at a temperature above the boiling point	10	50	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 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
· n-butyl acetate · hexamethylene diisocyanate, oligomers	Liquid substances or mixtures fulfilling the criteria for any of the following hazard	1. Shall not be used in: — ornamental articles intended to produce light or colour effects by means of different

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<p>· 2-methoxy-1-methylethyl acetate · 2-butoxyethyl acetate</p>	<p>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.</p>	<p>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.</p>
<p>· n-butyl acetate · 2-methoxy-1-methylethyl acetate</p>	<p>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.</p>	<p>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.</p>
<p>· hexamethylene diisocyanate, oligomers</p>	<p>Diisocyanates, O = C=N-R-N = C=O, with R an aliphatic or aromatic hydrocarbon unit of unspecified length</p>	<p>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:</p>

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— 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.

National legislation Belgium

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No data available

2-methoxy-1-methylethyl acetate

Résorption peau	Acétate de 2-(1-méthoxy)propyle; D; La mention "D" signifie que la résorption de l'agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l'exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l'agent dans l'air.
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2-butoxyethyl acetate

Résorption peau	Acétate de 2-butoxyéthyle; D; La mention "D" signifie que la résorption de l'agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l'exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l'agent dans l'air.
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National legislation The Netherlands

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Waterbezwaarlijkheid	B (3); Algemene Beoordelingsmethodiek (ABM)
2-butoxyethyl acetate	
Huidopname (wettelijk)	2-Butoxyethylacetaat; H

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National legislation France

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No data available

2-methoxy-1-methylethyl acetate

Risque de pénétration percutanée	Acétate de 2-méthoxy-1-méthyléthyle; Risque de pénétration percutanée
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2-butoxyethyl acetate

Risque de pénétration percutanée	Acétate de 2-butoxyéthyle; Risque de pénétration percutanée
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National legislation Germany

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Lagerklasse (TRGS510)	3: Entzündbare Flüssigkeiten
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WGK	1; Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV) - 18. April 2017
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n-butyl acetate

TA-Luft	5.2.5/I
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TRGS900 - Risiko der Fruchtschädigung	n-Butylacetat; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
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hexamethylene diisocyanate, oligomers

TA-Luft	5.2.5
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2-methoxy-1-methylethyl acetate

TA-Luft	5.2.5
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TRGS900 - Risiko der Fruchtschädigung	2-Methoxy-1-methylethylacetat; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
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2-butoxyethyl acetate

TA-Luft	5.2.5
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TRGS900 - Risiko der Fruchtschädigung	2-Butoxyethyl-acetat; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
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Hautresorptive Stoffe	2-Butoxyethyl-acetat; H; Hautresorptiv
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National legislation Austria

PUC-001 B

No data available

2-methoxy-1-methylethyl acetate

besondere Gefahr der Hautresorption	1-Methoxypropylacetat-2; H
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2-butoxyethyl acetate

besondere Gefahr der Hautresorption	2-Butoxyethylacetat; H
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National legislation United Kingdom

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No data available

2-methoxy-1-methylethyl acetate

Skin absorption	1-Methoxypropyl acetate; Sk
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2-butoxyethyl acetate

Skin absorption	2-Butoxyethyl acetate; Sk
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Other relevant data

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No data available

2-butoxyethyl acetate

TLV - Carcinogen	2-Butoxyethyl acetate; A3
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15.2. Chemical safety assessment

No chemical safety assessment has been conducted for the mixture.

SECTION 16: Other information

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

- H226 Flammable liquid and vapour.
- H302 Harmful if swallowed.
- H312 Harmful in contact with skin.
- H317 May cause an allergic skin reaction.
- H332 Harmful if inhaled.
- H335 May cause respiratory irritation.
- H336 May cause drowsiness or dizziness.
- EUH066 Repeated exposure may cause skin dryness or cracking.

(*)	INTERNAL CLASSIFICATION BY BIG
ADI	Acceptable daily intake
AOEL	Acceptable operator exposure level
ATE	Acute Toxicity Estimate
CLP (EU-GHS)	Classification, labelling and packaging (Globally Harmonised System in Europe)

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DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
EC50	Effect Concentration 50 %
ErC50	EC50 in terms of reduction of growth rate
LC50	Lethal Concentration 50 %
LD50	Lethal Dose 50 %
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
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.

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