



DRIVING SURFACE PERFECTION

SYSTEM 20 SLOW HARDENER

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Product Reference code: according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
SDS Ref. (EU): S2033-SDS
Issue date: 10/07/2015 Revision date: 28/08/2020 Supersedes version of: 03/07/2019 Version: 4.0

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

1.1. Product identifier

Product form : Mixture
Trade name : SYSTEM 20 SLOW HARDENER
UFI : SJV0-T07X-500Q-DEAE
Product code : S2033/SM, S2033/M, S2033/1, S2033/25
Product group : 2K Hardener

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

1.2.1. Relevant identified uses

Main use category : Industrial use, Professional use
Use of the substance/mixture : Coatings and paints, thinners, paint removers
Function or use category : Hardener (Crosslinker)

1.2.2. Uses advised against

Restrictions on use : Consumer uses: Private households (= general public = consumers)

1.3. Details of the supplier of the safety data sheet

Manufacturer

U-POL Limited Ltd
Denington Road
GB- NN8 2QH Wellingborough – Northamptonshire
United Kingdom
T +44 (0) 1933 230310
technicalsupport@u-pol.com - www.u-pol.com

Importer

U-POL Netherlands B.V. B.V.
Hoorgoordreef 15
NL- 1101BA Amsterdam
Netherlands
T +31 20 240 2216
technicalsupport@u-pol.com - www.u-pol.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: +44 (0) 870 8200418 (24 hrs)

Country	Organisation/Company	Address	Emergency number	Comment
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals- 24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	
United Kingdom	NHS England, Scotland & Wales	-	Call 111 or a Doctor	In Northern Ireland, contact your local GP or pharmacist during normal hours (www.gpoutofhours.hscni.net)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flammable liquids, Category 3 H226
Skin sensitisation, Category 1 H317
Specific target organ toxicity — Single exposure, Category 3, Narcosis H336
Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation H335

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Aspiration hazard, Category 1 H304
Hazardous to the aquatic environment — Chronic Hazard, Category 2 H411
Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

Flammable liquid and vapour. May cause drowsiness or dizziness. May cause respiratory irritation. May cause an allergic skin reaction. May be fatal if swallowed and enters airways. Toxic to aquatic life with long lasting effects.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



Signal word (CLP) : Danger
Contains : hexamethylene-di-isocyanate, solvent naphtha (petroleum), light aromatic, hexamethylene diisocyanate oligomers
Hazard statements (CLP) : H226 - Flammable liquid and vapour.
H304 - May be fatal if swallowed and enters airways.
H317 - May cause an allergic skin reaction.
H335 - May cause respiratory irritation.
H336 - May cause drowsiness or dizziness.
H411 - Toxic to aquatic life with long lasting effects.
Precautionary statements (CLP) : P210 - Keep away from heat, hot surfaces, open flames, sparks. — No smoking.
P261 - Avoid breathing spray, vapours.
P280 - Wear face protection, protective clothing, protective gloves.
P301+P310+P331 - IF SWALLOWED: Immediately call a doctor. Do NOT induce vomiting.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P391 - Collect spillage.
EUH-statements : EUH204 - Contains isocyanates. May produce an allergic reaction.
EUH066 - Repeated exposure may cause skin dryness or cracking.

2.3. Other hazards

Contains no PBT/vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

Component	
2-methoxy-1-methylethyl acetate (108-65-6)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
n-butyl acetate (123-86-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
hexamethylene-di-isocyanate (822-06-0)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

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3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
hexamethylene diisocyanate oligomers	CAS-No.: 28182-81-2 EC-No.: 500-060-2 REACH-no: 01-2119485796-17	23-43	Acute Tox. 4 (Inhalation:vapour), H332 Skin Sens. 1, H317 STOT SE 3, H335
solvent naphtha (petroleum), light aromatic (Note H)(Note 5)(Note P)	CAS-No.: 64742-95-6 EC-No.: 265-199-0 EC Index-No.: 649-356-00-4 REACH-no: 01-2119455851-35	< 50	Flam. Liq. 3, H226 STOT SE 3, H336 STOT SE 3, H335 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
2-methoxy-1-methylethyl acetate substance with a Community workplace exposure limit	CAS-No.: 108-65-6 EC-No.: 203-603-9 EC Index-No.: 607-195-00-7 REACH-no: 01-2119475791-29	10 – 25	Flam. Liq. 3, H226
n-butyl acetate substance with a Community workplace exposure limit	CAS-No.: 123-86-4 EC-No.: 204-658-1 EC Index-No.: 607-025-00-1 REACH-no: 01-2119485493-29	5-23	Flam. Liq. 3, H226 STOT SE 3, H336
hexamethylene-di-isocyanate	CAS-No.: 822-06-0 EC-No.: 212-485-8 EC Index-No.: 615-011-00-1 REACH-no: 01-2119457571-37	< 0.1	Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Inhalation), H331 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 STOT SE 3, H335

Specific concentration limits:

Name	Product identifier	Specific concentration limits
hexamethylene-di-isocyanate	CAS-No.: 822-06-0 EC-No.: 212-485-8 EC Index-No.: 615-011-00-1 REACH-no: 01-2119457571-37	(0.5 ≤ C < 100) Resp. Sens. 1, H334 (0.5 ≤ C < 100) Skin Sens. 1, H317

Note 5 : The concentration limits for gaseous mixtures are expressed as volume per volume percentage.

Note H : The classification and labelling shown for this substance applies to the hazardous property(ies) indicated by the hazard statement(s) in combination with the hazard class(es) and category(ies) shown. The requirements of Article 4 for manufacturers, importers or downstream users of this substance apply to all other hazard classes and categories. For hazard classes where the route of exposure or the nature of the effects leads to a differentiation of the classification of the hazard class, the manufacturer, importer or downstream user is required to consider the routes of exposure or the nature of the effects not already considered.

Note P: The harmonised classification as a carcinogen or mutagen applies unless it can be shown that the substance contains less than 0,1 % w/w benzene (Einecs No 200-753-7), in which case a classification in accordance with Title II of this Regulation shall be performed also for those hazard classes. Where the substance is not classified as a carcinogen or mutagen, at least the precautionary statements (P102)-P260-P262-P301 + P310-P331 shall apply.

Full text of H- and EUH-statements: see section 16

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SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Call a physician immediately.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Call a poison center or a doctor if you feel unwell.
First-aid measures after skin contact	: Rinse skin with water/shower. Take off immediately all contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.
First-aid measures after eye contact	: Rinse eyes with water as a precaution.
First-aid measures after ingestion	: Do not induce vomiting. Call a physician immediately.

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

Symptoms/effects	: May cause drowsiness or dizziness.
Symptoms/effects after inhalation	: May cause respiratory irritation.
Symptoms/effects after skin contact	: May cause an allergic skin reaction. Repeated exposure may cause skin dryness or cracking.
Symptoms/effects after ingestion	: Risk of lung oedema.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Dry powder. Foam. Carbon dioxide.
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5.2. Special hazards arising from the substance or mixture

Fire hazard	: Flammable liquid and vapour.
Hazardous decomposition products in case of fire	: Toxic fumes may be released.

5.3. Advice for firefighters

Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	: Safety glasses. Protective clothing. Gloves.
Emergency procedures	: Ventilate spillage area. No open flames, no sparks, and no smoking. Avoid breathing vapours, spray, fume. Avoid contact with skin and eyes.

6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
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6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment	: Contain released product. Collect spillage.
Methods for cleaning up	: Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters.
Other information	: Dispose of materials or solid residues at an authorized site.

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6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Flammable vapours may accumulate in the container. Use explosion-proof equipment. Wear personal protective equipment. Use only outdoors or in a well-ventilated area. Avoid breathing vapours, fume, spray. Avoid contact with skin and eyes.
Hygiene measures	: Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Ground/bond container and receiving equipment.
Storage conditions	: Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.
Storage temperature	: < 25 °C
Storage area	: Store in a well-ventilated place.
Special rules on packaging	: Keep only in original container.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

n-butyl acetate (123-86-4)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	n-Butyl acetate
IOEL TWA	241 mg/m ³
IOEL TWA [ppm]	50 ppm
IOEL STEL	723 mg/m ³
IOEL STEL [ppm]	150 ppm
Regulatory reference	COMMISSION DIRECTIVE (EU) 2019/1831
Ireland - Occupational Exposure Limits	
Local name	Butyl acetate
OEL TWA [1]	710 mg/m ³
OEL TWA [2]	150 ppm
OEL STEL	950 mg/m ³
OEL STEL [ppm]	200 ppm
Regulatory reference	Chemical Agents Code of Practice 2020
United Kingdom - Occupational Exposure Limits	
Local name	Butyl acetate

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n-butyl acetate (123-86-4)	
WEL TWA (OEL TWA) [1]	724 mg/m ³
WEL TWA (OEL TWA) [2]	150 ppm
WEL STEL (OEL STEL)	966 mg/m ³
WEL STEL (OEL STEL) [ppm]	200 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
2-methoxy-1-methylethyl acetate (108-65-6)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	2-Methoxy-1-methylethylacetate
IOEL TWA	275 mg/m ³
IOEL TWA [ppm]	50 ppm
IOEL STEL	550 mg/m ³
IOEL STEL [ppm]	100 ppm
Remark	Skin
Regulatory reference	COMMISSION DIRECTIVE 2000/39/EC
Ireland - Occupational Exposure Limits	
Local name	2-Methoxy-1-methylethylacetate
OEL TWA [1]	275 mg/m ³
OEL TWA [2]	50 ppm
OEL STEL	550 mg/m ³
OEL STEL [ppm]	100 ppm
Remark	Sk (Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body), IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2020
United Kingdom - Occupational Exposure Limits	
Local name	1-Methoxypropyl acetate
WEL TWA (OEL TWA) [1]	274 mg/m ³
WEL TWA (OEL TWA) [2]	50 ppm
WEL STEL (OEL STEL)	548 mg/m ³
WEL STEL (OEL STEL) [ppm]	100 ppm
Remark	Sk (Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
hexamethylene-di-isocyanate (822-06-0)	
Ireland - Occupational Exposure Limits	
Local name	Hexamethylene diisocyanate (as -NCO)
OEL TWA [2]	0.005 ppm

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hexamethylene-di-isocyanate (822-06-0)	
Remark	Sens. (In the workplace respiratory or dermal exposures to sensitising agents may occur. Sensitizers may evoke respiratory or dermal reactions, e.g. asthma, rhinitis and allergic contact dermatitis. The notation does not distinguish between respiratory or dermal sensitisation. Chemical agents that are sensitizers present special problems in the workplace. Should an employee become sensitised, subsequent exposure may cause intense responses, even at low exposure concentrations well below the OELV. Exposure should be eliminated or significantly reduced through control measures such as engineering and process controls and use of personal protective equipment (PPE))
Regulatory reference	Chemical Agents Code of Practice 2020
United Kingdom - Occupational Exposure Limits	
WEL TWA (OEL TWA) [1]	0.02 mg/m ³
WEL STEL (OEL STEL)	0.07 mg/m ³

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

n-butyl acetate (123-86-4)	
DNEL/DMEL (Workers)	
Acute - systemic effects, dermal	11 mg/kg bw/day
Acute - systemic effects, inhalation	600 mg/m ³
Acute - local effects, inhalation	600 mg/m ³
Long-term - systemic effects, dermal	11 mg/kg bw/day
Long-term - systemic effects, inhalation	300 mg/m ³
Long-term - local effects, inhalation	300 mg/m ³
DNEL/DMEL (General population)	
Acute - systemic effects, dermal	6 mg/kg bw/day
Acute - systemic effects, inhalation	300 mg/m ³
Acute - systemic effects, oral	2 mg/kg bw/day
Acute - local effects, inhalation	300 mg/m ³
Long-term - systemic effects, oral	2 mg/kg bw/day
Long-term - systemic effects, inhalation	35.7 mg/m ³
Long-term - systemic effects, dermal	6 mg/kg bw/day
Long-term - local effects, inhalation	35.7 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	0.18 mg/l
PNEC aqua (marine water)	0.018 mg/l
PNEC aqua (intermittent, freshwater)	0.36 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0.981 mg/kg dwt
PNEC sediment (marine water)	0.0981 mg/kg dwt

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n-butyl acetate (123-86-4)	
PNEC (Soil)	
PNEC soil	0.0903 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	35.6 mg/l
2-methoxy-1-methylethyl acetate (108-65-6)	
DNEL/DMEL (Workers)	
Acute - local effects, inhalation	550 mg/m ³
Long-term - systemic effects, dermal	796 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	275 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	36 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	33 mg/m ³
Long-term - systemic effects, dermal	320 mg/kg bodyweight/day
Long-term - local effects, inhalation	33 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	0.635 mg/l
PNEC aqua (marine water)	0.0635 mg/l
PNEC aqua (intermittent, freshwater)	6.35 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	3.29 mg/kg dwt
PNEC sediment (marine water)	0.329 mg/kg dwt
PNEC (Soil)	
PNEC soil	0.29 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	100 mg/l
solvent naphtha (petroleum), light aromatic (64742-95-6)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	25 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	150 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	11 mg/kg bodyweight/day
Long-term - systemic effects, dermal	11 mg/kg bodyweight/day
hexamethylene-di-isocyanate (822-06-0)	
DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	0.07 mg/m ³
Acute - local effects, inhalation	0.07 mg/m ³
Long-term - systemic effects, inhalation	0.035 mg/m ³
Long-term - local effects, inhalation	0.035 mg/m ³

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hexamethylene-di-isocyanate (822-06-0)	
PNEC (Water)	
PNEC aqua (freshwater)	0.0774 mg/l
PNEC aqua (marine water)	0.00774 mg/l
PNEC aqua (intermittent, freshwater)	0.774 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0.01334 mg/kg dwt
PNEC sediment (marine water)	0.001344 mg/kg dwt
PNEC (Soil)	
PNEC soil	0.0026 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	8.42 mg/l
hexamethylene diisocyanate oligomers (28182-81-2)	
DNEL/DMEL (Workers)	
Acute - local effects, inhalation	0.5
Long-term - local effects, inhalation	1 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	0.127 mg/l
PNEC aqua (marine water)	0.0127 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	266701 mg/kg dwt
PNEC sediment (marine water)	26670 mg/kg dwt
PNEC (Soil)	
PNEC soil	53183 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	88 mg/l

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

8.2.2. Personal protection equipment

Personal protective equipment:

Gas mask. Gloves. Protective clothing. Safety glasses.

Personal protective equipment symbol(s):



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8.2.2.1. Eye and face protection

Eye protection:

Safety glasses

8.2.2.2. Skin protection

Skin and body protection:

Wear suitable protective clothing

Hand protection:

Protective gloves

Other skin protection

Materials for protective clothing:

Impermeable clothing

8.2.2.3. Respiratory protection

Respiratory protection:

Air-fed respiratory protective equipment should be worn when this product is sprayed

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Colourless.
Appearance	: Liquid.
Odour	: aromatic.
Odour threshold	: Not available
Melting point	: Not available
Freezing point	: Not available
Boiling point	: Not available
Flammability	: Not applicable
Explosive limits	: Not available
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Flash point	: 42 °C
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: Not available
Viscosity, kinematic	: $\approx 17 \text{ mm}^2/\text{s}$ (12s DIN4 @ 20°C)
Solubility	: insoluble in water. soluble in most organic solvents.
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: Not available
Vapour pressure at 50 °C	: Not available
Density	: 0.99 (0.98 – 1) g/cm ³
Relative density	: Not available
Relative vapour density at 20 °C	: Not available
Particle size	: Not applicable
Particle size distribution	: Not applicable
Particle shape	: Not applicable
Particle aspect ratio	: Not applicable
Particle aggregation state	: Not applicable
Particle agglomeration state	: Not applicable
Particle specific surface area	: Not applicable

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Particle dustiness : Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

VOC content : 627 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity

Flammable liquid and vapour.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

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

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

n-butyl acetate (123-86-4)	
LD50 oral rat	10760 – 12789 mg/kg bodyweight (Equivalent or similar to OECD 423, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 dermal rabbit	> 14112 mg/kg bodyweight (Equivalent or similar to OECD 402, Rabbit, Male / female, Experimental value, Dermal, 14 day(s))
LC50 Inhalation - Rat	23.4 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat)
LC50 Inhalation - Rat [ppm]	390 ppm/4h
LC50 Inhalation - Rat (Vapours)	> 21 mg/l/4h (4 h, OECD Test Guideline 403, rat, vapours)
2-methoxy-1-methylethyl acetate (108-65-6)	
LD50 oral rat	6190 mg/kg bodyweight (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LD50 dermal rabbit	> 5000 mg/kg bodyweight (Equivalent or similar to OECD 402, 24 h, Rabbit, Male / female, Experimental value, Dermal, 14 day(s))

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2-methoxy-1-methylethyl acetate (108-65-6)	
LC50 Inhalation - Rat [ppm]	1728 ppm/4h (4 h, OECD Guideline 403 (Acute Inhalation Toxicity), rat, male/female, Inhalation, vapours)
solvent naphtha (petroleum), light aromatic (64742-95-6)	
LD50 oral rat	> 5000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LD50 dermal rabbit	> 3160 mg/kg (OECD Test Guideline 402)
LC50 Inhalation - Rat (Vapours)	> 6.193 mg/l/4h (4 h, OECD Test Guideline 403, vapours)
hexamethylene-di-isocyanate (822-06-0)	
LD50 oral rat	746 mg/kg (Equivalent or similar to OECD 401, Rat, Male, Experimental value, Oral, 14 day(s))
LD50 dermal rat	> 7000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LC50 Inhalation - Rat	0.124 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), 95% CL: 111 - 140
hexamethylene diisocyanate oligomers (28182-81-2)	
LD50 oral rat	> 2500 mg/kg (OECD Test Guideline 423, rat, female)
LD50 dermal rat	> 2000 mg/kg (OECD Test Guideline 402, rat, male/female)
LC50 Inhalation - Rat (Dust/Mist)	0.39 mg/l/4h (OECD Test Guideline 403, rat, female, inhalation, dust/mist)
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitisation	: May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: May cause drowsiness or dizziness. May cause respiratory irritation.
n-butyl acetate (123-86-4)	
STOT-single exposure	May cause drowsiness or dizziness.
2-methoxypropyl acetate (70657-70-4)	
STOT-single exposure	May cause respiratory irritation.
solvent naphtha (petroleum), light aromatic (64742-95-6)	
STOT-single exposure	May cause drowsiness or dizziness. May cause respiratory irritation.
hexamethylene-di-isocyanate (822-06-0)	
STOT-single exposure	May cause respiratory irritation.
hexamethylene diisocyanate oligomers (28182-81-2)	
STOT-single exposure	May cause respiratory irritation.
STOT-repeated exposure	: Not classified
2-methoxy-1-methylethyl acetate (108-65-6)	
NOAEL (oral, rat, 90 days)	≥ 1000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
NOAEL (dermal, rat/rabbit, 90 days)	> 1000 mg/kg bodyweight Animal: rabbit, Guideline: OECD Guideline 410 (Repeated Dose Dermal Toxicity: 21/28-Day Study)
Aspiration hazard	: May be fatal if swallowed and enters airways.

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Viscosity, kinematic	≈ 17 mm²/s (12s DIN4 @ 20°C)
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11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: Toxic to aquatic life with long lasting effects.
Hazardous to the aquatic environment, short-term (acute)	: Not classified
Hazardous to the aquatic environment, long-term (chronic)	: Toxic to aquatic life with long lasting effects.

n-butyl acetate (123-86-4)

LC50 - Fish [1]	18 mg/l Test organisms (species): Pimephales promelas
LC50 - Fish [2]	62 mg/l (Leuciscus idus, static system)
EC50 - Crustacea [1]	44 mg/l Test organisms (species): Daphnia sp.
ErC50 algae	397 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Read-across, GLP)
NOEC (chronic)	23 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic crustacea	23 mg/l

2-methoxy-1-methylethyl acetate (108-65-6)

LC50 - Fish [1]	> 100 mg/l Test organisms (species): Oryzias latipes
EC50 - Crustacea [1]	> 500 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 1000 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
ErC50 algae	> 1000 mg/l (OECD 201: Alga, Growth Inhibition Test, 96 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Nominal concentration)
NOEC (chronic)	≥ 100 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic fish	47.5 mg/l Test organisms (species): Oryzias latipes Duration: '14 d'

hexamethylene-di-isocyanate (822-06-0)

EC50 72h - Algae [1]	> 77.4 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
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12.2. Persistence and degradability

n-butyl acetate (123-86-4)

Persistence and degradability	Readily biodegradable in water.
ThOD	2.21 g O ₂ /g substance
BOD (% of ThOD)	0.46

2-methoxy-1-methylethyl acetate (108-65-6)

Persistence and degradability	Readily biodegradable in the soil. Readily biodegradable in water.
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solvent naphtha (petroleum), light aromatic (64742-95-6)

Persistence and degradability	May cause long-term adverse effects in the environment.
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hexamethylene-di-isocyanate (822-06-0)

Persistence and degradability	Not readily biodegradable in water.
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12.3. Bioaccumulative potential

n-butyl acetate (123-86-4)

Partition coefficient n-octanol/water (Log Pow)	2.3 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

2-methoxy-1-methylethyl acetate (108-65-6)

Partition coefficient n-octanol/water (Log Pow)	1.2 (Experimental value, Equivalent or similar to OECD 117, 20 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

solvent naphtha (petroleum), light aromatic (64742-95-6)

Partition coefficient n-octanol/water (Log Pow)	2.1 – 6
Bioaccumulative potential	Not established.

hexamethylene-di-isocyanate (822-06-0)

BCF - Fish [1]	59.6 (BCFWIN, Pisces, QSAR)
Partition coefficient n-octanol/water (Log Pow)	3.2 (Calculated)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

n-butyl acetate (123-86-4)

Surface tension	61.3 mN/m (20 °C, 0.1 %, OECD 115: Surface Tension of Aqueous Solutions)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	1.268 – 1.844 (log Koc, SRC PCKOCWIN v2.0, Calculated value)
Ecology - soil	Highly mobile in soil.

2-methoxy-1-methylethyl acetate (108-65-6)

Surface tension	29.4 mN/m (20 °C, 100 vol %, EU Method A.5: Surface tension)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	0.602 – 1.079 (log Koc, SRC PCKOCWIN v2.0, Calculated value)
Ecology - soil	Highly mobile in soil.

hexamethylene-di-isocyanate (822-06-0)

Organic Carbon Normalized Adsorption Coefficient (Log Koc)	2.78 – 3.68 (log Koc, Calculated value)
Ecology - soil	Low potential for mobility in soil.

12.5. Results of PBT and vPvB assessment

Component

2-methoxy-1-methylethyl acetate (108-65-6)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
n-butyl acetate (123-86-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

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Component

hexamethylene-di-isocyanate (822-06-0)

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	: Disposal must be done according to official regulations.
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Additional information	: Flammable vapours may accumulate in the container.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

14.1. UN number or ID number

UN-No. (ADR)	: UN 1263
UN-No. (IMDG)	: UN 1263
UN-No. (IATA)	: UN 1263
UN-No. (ADN)	: UN 1263
UN-No. (RID)	: UN 1263

14.2. UN proper shipping name

Proper Shipping Name (ADR)	: PAINT RELATED MATERIAL
Proper Shipping Name (IMDG)	: PAINT RELATED MATERIAL (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) with not more than 20 per cent nitrocellulose by mass if the nitrogen content of the nitrocellulose is not more than 12.6 per cent by mass)
Proper Shipping Name (IATA)	: Paint (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) with not more than 20 per cent nitrocellulose by mass if the nitrogen content of the nitrocellulose is not more than 12.6 per cent by mass)
Proper Shipping Name (ADN)	: PAINT RELATED MATERIAL
Proper Shipping Name (RID)	: PAINT RELATED MATERIAL
Transport document description (ADR)	: UN 1263 PAINT RELATED MATERIAL, 3, III, (D/E), ENVIRONMENTALLY HAZARDOUS
Transport document description (IMDG)	: UN 1263 PAINT RELATED MATERIAL (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) with not more than 20 per cent nitrocellulose by mass if the nitrogen content of the nitrocellulose is not more than 12.6 per cent by mass), 3, III, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS
Transport document description (IATA)	: UN 1263 Paint (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) with not more than 20 per cent nitrocellulose by mass if the nitrogen content of the nitrocellulose is not more than 12.6 per cent by mass), 3, III, ENVIRONMENTALLY HAZARDOUS
Transport document description (ADN)	: UN 1263 PAINT RELATED MATERIAL, 3, III, ENVIRONMENTALLY HAZARDOUS
Transport document description (RID)	: UN 1263 PAINT RELATED MATERIAL, 3, III, ENVIRONMENTALLY HAZARDOUS

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR)	: 3
Danger labels (ADR)	: 3

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IMDG

Transport hazard class(es) (IMDG)

: 3

Danger labels (IMDG)

: 3



IATA

Transport hazard class(es) (IATA)

: 3

Danger labels (IATA)

: 3



ADN

Transport hazard class(es) (ADN)

: 3

Danger labels (ADN)

: 3



RID

Transport hazard class(es) (RID)

: 3

Danger labels (RID)

: 3



14.4. Packing group

Packing group (ADR)

: III

Packing group (IMDG)

: III

Packing group (IATA)

: III

Packing group (ADN)

: III

Packing group (RID)

: III

14.5. Environmental hazards

Dangerous for the environment

: Yes

Marine pollutant

: Yes

Other information

: No supplementary information available

14.6. Special precautions for user

Overland transport

Classification code (ADR)

: F1

Special provisions (ADR)

: 163, 367, 650

Limited quantities (ADR)

: 5I

Excepted quantities (ADR)

: E1

Packing instructions (ADR)

: P001, IBC03, LP01, R001

Special packing provisions (ADR)

: PP1

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Mixed packing provisions (ADR)	: MP19
Portable tank and bulk container instructions (ADR)	: T2
Portable tank and bulk container special provisions (ADR)	: TP1, TP29
Tank code (ADR)	: LGBF
Vehicle for tank carriage	: FL
Transport category (ADR)	: 3
Special provisions for carriage - Packages (ADR)	: V12
Special provisions for carriage - Operation (ADR)	: S2
Hazard identification number (Kemler No.)	: 30
Orange plates	:



Tunnel restriction code (ADR)	: D/E
EAC code	: •3YE

Transport by sea

Special provisions (IMDG)	: 163, 223, 367, 955
Limited quantities (IMDG)	: 5 L
Excepted quantities (IMDG)	: E1
Packing instructions (IMDG)	: P001, LP01
Special packing provisions (IMDG)	: PP1
IBC packing instructions (IMDG)	: IBC03
Tank instructions (IMDG)	: T2
Tank special provisions (IMDG)	: TP1, TP29
EmS-No. (Fire)	: F-E
EmS-No. (Spillage)	: S-E
Stowage category (IMDG)	: A
Properties and observations (IMDG)	: Miscibility with water depends upon the composition.

Air transport

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y344
PCA limited quantity max net quantity (IATA)	: 10L
PCA packing instructions (IATA)	: 355
PCA max net quantity (IATA)	: 60L
CAO packing instructions (IATA)	: 366
CAO max net quantity (IATA)	: 220L
Special provisions (IATA)	: A3, A72, A192
ERG code (IATA)	: 3L

Inland waterway transport

Classification code (ADN)	: F1
Special provisions (ADN)	: 163, 367, 650
Limited quantities (ADN)	: 5 L
Excepted quantities (ADN)	: E1
Equipment required (ADN)	: PP, EX, A
Ventilation (ADN)	: VE01
Number of blue cones/lights (ADN)	: 0

Rail transport

Classification code (RID)	: F1
Special provisions (RID)	: 163, 367, 650
Limited quantities (RID)	: 5L
Excepted quantities (RID)	: E1
Packing instructions (RID)	: P001, IBC03, LP01, R001
Special packing provisions (RID)	: PP1
Mixed packing provisions (RID)	: MP19
Portable tank and bulk container instructions (RID)	: T2
Portable tank and bulk container special provisions (RID)	: TP1, TP29

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Tank codes for RID tanks (RID) : LGBF
Transport category (RID) : 3
Special provisions for carriage – Packages (RID) : W12
Colis express (express parcels) (RID) : CE4
Hazard identification number (RID) : 30

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

EU restriction list (REACH Annex XVII)

Reference code	Applicable on	Entry title or description
3(a)	SYSTEM 20 SLOW HARDENER ; 2-methoxy-1-methylethyl acetate ; n-butyl acetate ; solvent naphtha (petroleum), light aromatic	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: 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
3(b)	SYSTEM 20 SLOW HARDENER ; hexamethylene-di-isocyanate ; n-butyl acetate ; solvent naphtha (petroleum), light aromatic ; hexamethylene diisocyanate oligomers	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: 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
3(c)	SYSTEM 20 SLOW HARDENER ; solvent naphtha (petroleum), light aromatic	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: Hazard class 4.1
40.	SYSTEM 20 SLOW HARDENER ; 2-methoxy-1-methylethyl acetate ; n-butyl acetate ; solvent naphtha (petroleum), light aromatic	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 Regulation (EC) No 1272/2008 or not.
74.	hexamethylene-di-isocyanate	Diisocyanates, $O = C=N-R-N = C=O$, with R an aliphatic or aromatic hydrocarbon unit of unspecified length

Contains no substance on the REACH candidate list

Contains no REACH Annex XIV substances

Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Contains no substance subject to Regulation (EU) 2019/1148 of the European Parliament and of the Council of 20 June 2019 on the marketing and use of explosives precursors.

VOC content : 627 g/l

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

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SECTION 16: Other information

Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BLV	Biological limit value
CAS-No.	Chemical Abstract Service number
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
EC-No.	European Community number
EN	European Standard
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
vPvB	Very Persistent and Very Bioaccumulative
WGK	Water Hazard Class

Full text of H- and EUH-statements:

Acute Tox. 3 (Inhalation)	Acute toxicity (inhal.), Category 3
Acute Tox. 4 (Inhalation:vapour)	Acute toxicity (inhalation:vapour) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic Hazard, Category 2
Asp. Tox. 1	Aspiration hazard, Category 1
EUH066	Repeated exposure may cause skin dryness or cracking.
EUH204	Contains isocyanates. May produce an allergic reaction.
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2

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Full text of H- and EUH-statements:	
Flam. Liq. 3	Flammable liquids, Category 3
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H411	Toxic to aquatic life with long lasting effects.
Resp. Sens. 1	Respiratory sensitisation, Category 1
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Skin Sens. 1	Skin sensitisation, Category 1
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis

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