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

1.1. Product identifier

Hesse HYDRO Hardener HDR 5081

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

Use of the substance/preparation

Surface treatment of wood and other materials

Identified Uses

	REACHSET 1003
SU3	Industrial uses: Uses of substances as such or in preparations at industrial sites
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC5	Industrial use resulting in inclusion into or onto a matrix
PROCh01	Other processing without aerosol formation

1.3. Details of the supplier of the safety data sheet

Manufacturer

Hesse GmbH & Co. KG
Warendorfer Strasse 21
59075 Hamm (Germany)

Telephone no.	+49 (0) 2381 963-00
Fax no.	+49 (0) 2381 963-849
E-mail address	ps@hesse-lignal.de

1.4. Emergency telephone number

Germany: +49 (0) 2381 788-612

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (Regulation (EC) No. 1272/2008)

Classification (Regulation (EC) No. 1272/2008)

Flam. Liq. 3	H226
Acute Tox. 4	H332
Skin Irrit. 2	H315
Eye Dam. 1	H318
Skin Sens. 1	H317
STOT SE 3	H335
STOT SE 3	H336

The product is classified and labelled in accordance with Regulation (EC) No 1272/2008
For explanation of abbreviations see section 16.

2.2. Label elements

Labelling according to regulation (EC) No 1272/2008

Hazard pictograms

Signal word

Danger

Hazard statements

H226	Flammable liquid and vapour.
H332	Harmful if inhaled.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.

Precautionary statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/ attention.

Hazardous component(s) to be indicated on label (Regulation (EC) No. 1272/2008)

contains Hexamethylene-di-isocyanate; 3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate; n,n-dimethylcyclohexylamine; 1,6-hexamethylene diisocyanate homopolymer

Supplemental information

EUH204 Contains isocyanates. May produce an allergic reaction.

Labelling according to annex XVII to regulation (EU) No 1907/2006

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

2.3. Other hazards

The product contains no PBT substances. The product contains no vPvB substances. This product does not contain a substance that has endocrine disrupting properties with respect to human. The product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms.

SECTION 3: Composition/information on ingredients

Hazardous ingredients

1,6-hexamethylene diisocyanate homopolymer

CAS No.	28182-81-2			
EINECS no.	500-060-2			
Registration no.	01-2119485796-17			
Concentration	>= 25	< 40	%	
Classification (Regulation (EC) No. 1272/2008)				
	Acute Tox. 4	H332	Route of exposure: Inhalation exposure	

	Skin Sens. 1	H317			
	STOT SE 3	H335			Respiratory tract
ATE	Inhalation exposure, Dust/Mist	2,81		mg/l	

2-methoxy-1-methylethyl acetate

CAS No.	108-65-6				
EINECS no.	203-603-9				
Registration no.	01-2119475791-29				
Concentration	>=	25	<	50	%
Classification (Regulation (EC) No. 1272/2008)					
	Flam. Liq. 3	H226			
	STOT SE 3	H336			

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate, oligomers

CAS No.	53880-05-0				
Registration no.	01-2119488734-24				
Concentration	>=	20	<	25	%
Classification (Regulation (EC) No. 1272/2008)					
	Skin Sens. 1	H317			
	STOT SE 3	H335			Respiratory tract

n-butyl acetate

CAS No.	123-86-4				
EINECS no.	204-658-1				
Registration no.	01-2119485493-29				
Concentration	>=	10	<	20	%
Classification (Regulation (EC) No. 1272/2008)					
	Flam. Liq. 3	H226			
	STOT SE 3	H336			Nervous system
		EUH066			

polyethyleneglycol tridecyl ether phosphate

CAS No.	9046-01-9				
Concentration	>=	3	<	10	%
Classification (Regulation (EC) No. 1272/2008)					
	Eye Dam. 1	H318			
	Skin Irrit. 2	H315			
	Aquatic Chronic 3	H412			

n,n-dimethylcyclohexylamine

CAS No.	98-94-2				
EINECS no.	202-715-5				
Registration no.	01-2119533030-60				
Concentration	>=	1	<	2	%
Classification (Regulation (EC) No. 1272/2008)					
	Flam. Liq. 3	H226			
	Met. Corr. 1	H290			
	Acute Tox. 3	H301			Route of exposure: Oral exposure
	Acute Tox. 3	H311			Route of exposure: Dermal exposure
	Acute Tox. 3	H331			Route of exposure: Inhalation exposure
	Skin Corr. 1B	H314			

Eye Dam. 1	H318	
Aquatic Chronic 2	H411	

ATE	Oral exposure	272	mg/kg
ATE	Dermal exposure	380	mg/kg
ATE	Inhalation exposure, Dust/Mist	0,7	mg/l

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

CAS No.	4098-71-9				
EINECS no.	223-861-6				
Registration no.	01-2119485493-29				
Concentration	>=	0,1	<	0,4	%

Classification (Regulation (EC) No. 1272/2008)

Acute Tox. 1	H330	Route of exposure: Inhalation exposure
Eye Irrit. 2	H319	
STOT SE 3	H335	Respiratory tract
Skin Irrit. 2	H315	
Resp. Sens. 1	H334	
Skin Sens. 1	H317	
Aquatic Chronic 2	H411	

ATE	Inhalation exposure, Dust/Mist	0,031	mg/l

Hexamethylene-di-isocyanate

CAS No.	822-06-0				
EINECS no.	212-485-8				
Registration no.	01-2119457571-37				
Concentration	>=	0,1	<	0,2	%

Classification (Regulation (EC) No. 1272/2008)

Acute Tox. 4	H302	Route of exposure: Oral exposure
Acute Tox. 1	H330	Route of exposure: Inhalation exposure
Eye Irrit. 2	H319	
STOT SE 3	H335	
Skin Irrit. 2	H315	
Resp. Sens. 1	H334	
Skin Sens. 1	H317	

Concentration limits (Regulation (EC) No. 1272/2008)

Resp. Sens. 1	H334	>= 0,5 %
Skin Sens. 1	H317	>= 0,5 %

ATE	Inhalation exposure, Dust/Mist	0,015	mg/l

Note

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

In all cases of doubt, or when symptoms persist, seek medical attention. If unconscious place in recovery position and seek medical advice. First aider: Pay attention to self-protection! Remove affected person from danger area, lay him down.

After inhalation

In case of accident by inhalation: remove casualty to fresh air and keep at rest. Keep warm, calm and covered up. In all cases of doubt, or when symptoms persist, seek medical attention.

After skin contact

Wash off immediately with soap and water. Do NOT use solvents or thinners. Consult a doctor if skin irritation persists.

After eye contact

Remove contact lenses, irrigate copiously with clean, fresh water, holding the eyelids apart for at least 10 minutes and seek immediate medical advice. Take medical treatment.

After ingestion

Do not induce vomiting. Take medical treatment.

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

Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Based on the properties of the isocyanate components and considering toxicological data on similar mixtures, this mixture may cause acute irritation and/or sensitisation of the respiratory system leading to an asthmatic condition, wheeziness and a tightness of the chest.

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

Hints for the physician / treatment

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Recommended: alcohol resistant foam, CO2, powders, water spray/mist

Non suitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Vapours can form an explosive mixture with air.

5.3. Advice for firefighters

Other information

Standard procedure for chemical fires.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources if safe to do so. Ensure adequate ventilation. Do not inhale vapours. Do not inhale gases. Do not inhale mist.

6.2. Environmental precautions

Do not allow to enter drains or waterways. Do not allow to enter soil, waterways or waste water canal. In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

6.3. Methods and material for containment and cleaning up

Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13).

Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations. Do NOT use solvents or thinners. Send in suitable containers for recovery or disposal.

6.4. Reference to other sections

Refer to protective measures listed in Sections 7 and 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. Keep container tightly closed and dry in a cool, well-ventilated place. Use only with adequate ventilation/personal protection. Ensure adequate ventilation. Provide for sufficient ventilation. This can be achieved by local exhaust or general exhaust air collection. Wear a suitable respirator if the ventilation is not sufficient to keep the solvent vapour concentration below the occupational limit values. Persons with a history of asthma, allergies, chronic or recurrent respiratory disease should not be exposed to any process in which this mixture is used. Avoid contact with skin and eyes. Avoid inhalation of vapour and spray mist. Do no eat, drink or smoke when using this product. Use personal protective clothing. For personal protection see Section 8.

Advice on protection against fire and explosion

Vapours can form an explosive mixture with air. Vapours are heavier than air and may spread along floors. In addition, the product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Mixture may charge electrostatically: always use earthing leads when transferring from one container to another. Take measures to prevent the build up of electrostatic charge. Wear shoes with conductive soles. No sparking tools should be used. Fight fire with normal precautions from a reasonable distance.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Provide solvent-resistant and impermeable floor. Keep only in the original container in a cool, well ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Hints on storage assembly

Keep away from oxidising agents, strongly alkaline and strongly acid materials, amines, alcohols and water.

Storage classes

Storage class according to TRGS 510	3	Flammable liquid

Further information on storage conditions

Protect from frost. Protect from heat and direct sunlight. Keep away from sources of ignition - No smoking. Store in accordance with the particular national regulations.

7.3. Specific end use(s)

See exposure scenario, if available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limit values

2-methoxy-1-methylethyl acetate

List	Directive 2017/164 EG

Value	275	mg/m³	50	ppm(V)
Short term exposure limit	550	mg/m³	100	ppm(V)
Status: 12/2009				

2-methoxy-1-methylethyl acetate

List	EH40			
Value	274	mg/m³	50	ppm(V)
Short term exposure limit	548	mg/m³	100	ppm(V)
Skin resorption / sensibilisation: Sk; Status: 01/2020				

n-butyl acetate

List	EH40			
Value	724	mg/m³	150	ppm(V)
Short term exposure limit	966	mg/m³	200	ppm(V)
Status: 01/2020				

n-butyl acetate

List	Directive 2017/164 EG			
Value	241	mg/m³	50	ppm(V)
Short term exposure limit	723	mg/m³	150	ppm(V)
Status: 10/2019				

Other information

-

Derived No/Minimal Effect Levels (DNEL/DMEL)

2-methoxy-1-methylethyl acetate

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Long-term	
Route of exposure	inhalative	
Mode of action	Systemic effects	
Concentration	275	mg/m³

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Long-term	
Route of exposure	Dermal exposure	
Mode of action	Systemic effects	
Concentration	153,5	mg/kg/d

Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Long-term	
Route of exposure	Oral exposure	
Mode of action	Systemic effects	
Concentration	1,67	mg/kg/d

Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Long-term	
Route of exposure	inhalative	
Mode of action	Systemic effects	
Concentration	33	mg/m³

Type of value	Derived No Effect Level (DNEL)

Reference group	Consumer	
Duration of exposure	Long-term	
Route of exposure	Dermal exposure	
Mode of action	Systemic effects	
Concentration	54,8	mg/kg

Type of value	Derived No Effect Level (DNEL)	
Reference group	Worker	
Duration of exposure	Acute	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	550	mg/m³

Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Long term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	33	mg/m³

Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Acute	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	33	mg/m³

n-butyl acetate

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Long-term	
Route of exposure	Dermal exposure	
Mode of action	Systemic effects	
Concentration	11	mg/kg/d

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Short-term	
Route of exposure	inhalative	
Mode of action	Systemic effects	
Concentration	600	mg/m³

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Short-term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	600	mg/m³

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Long-term	
Route of exposure	inhalative	

Mode of action	Local effects	
Concentration	300	mg/m³
Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Long-term	
Route of exposure	inhalative	
Mode of action	Systemic effects	
Concentration	300	mg/m³
Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Long-term	
Route of exposure	Dermal exposure	
Mode of action	Systemic effects	
Concentration	6	mg/kg/d
Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Long-term	
Route of exposure	Oral exposure	
Mode of action	Systemic effects	
Concentration	2	mg/kg/d
Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Short-term	
Route of exposure	inhalative	
Mode of action	Systemic effects	
Concentration	300	mg/m³
Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Short-term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	300	mg/m³
Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Long-term	
Route of exposure	inhalative	
Mode of action	Systemic effects	
Concentration	35,7	mg/m³
Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Long-term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	35,7	mg/m³
Type of value	Derived No Effect Level (DNEL)	

Reference group	Consumer	
Duration of exposure	Short term	
Route of exposure	oral	
Mode of action	Specific effects	
Concentration	2	mg/kg/d

Type of value	Derived No Effect Level (DNEL)	
Reference group	Consumer	
Duration of exposure	Short term	
Route of exposure	Dermal exposure	
Mode of action	Specific effects	
Concentration	6	mg/kg/d

Type of value	Derived No Effect Level (DNEL)	
Reference group	Worker	
Duration of exposure	Short term	
Route of exposure	Dermal exposure	
Mode of action	Specific effects	
Concentration	11	mg/kg/d

1,6-hexamethylene diisocyanate homopolymer

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Short-term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	1	mg/m³

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Long-term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	0,5	mg/m³

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate, oligomers

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (industrial)	
Duration of exposure	Short-term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	0,58	mg/m³

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (industrial)	
Duration of exposure	Long-term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	0,29	mg/m³

Hexamethylene-di-isocyanate

Type of value	Derived No Effect Level (DNEL)

Reference group	Workers (professional)	
Duration of exposure	Short-term	
Route of exposure	inhalative	
Mode of action	Systemic effects	
Concentration	0,07	mg/m³

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Long-term	
Route of exposure	inhalative	
Mode of action	Systemic effects	
Concentration	0,035	mg/m³

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (professional)	
Duration of exposure	Long-term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	0,035	mg/m³

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (industrial)	
Duration of exposure	Short-term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	0,0453	mg/m³

Type of value	Derived No Effect Level (DNEL)	
Reference group	Workers (industrial)	
Duration of exposure	Long-term	
Route of exposure	inhalative	
Mode of action	Local effects	
Concentration	0,0453	mg/m³

Predicted No Effect Concentration (PNEC)

2-methoxy-1-methylethyl acetate

Type of value	PNEC	
Type	Freshwater	
Concentration	0,635	mg/l

Type of value	PNEC	
Type	Saltwater	
Concentration	0,0635	mg/l

Type of value	PNEC	
Conditions	sporadic release	
Concentration	6,35	mg/l

Type of value	PNEC	
Type	Fresh water sediment	
Concentration	3,29	mg/kg

Type of value	PNEC	
Type	saltwater sediment	
Concentration	0,329	mg/kg
Type of value	PNEC	
Type	Soil	
Concentration	0,29	mg/kg
Type of value	PNEC	
Type	Sewage treatment plant (STP)	
Concentration	100	mg/l

n-butyl acetate

Type of value	PNEC	
Type	Freshwater	
Concentration	0,18	mg/l
Type of value	PNEC	
Type	Saltwater	
Concentration	0,018	mg/l
Type of value	PNEC	
Type	Sewage treatment plant (STP)	
Concentration	35,6	mg/l
Type of value	PNEC	
Type	Water	
Conditions	sporadic release	
Concentration	0,36	mg/l
Type of value	PNEC	
Type	Fresh water sediment	
Concentration	0,981	mg/kg
Type of value	PNEC	
Type	saltwater sediment	
Concentration	0,0981	mg/l
Type of value	PNEC	
Type	Soil	
Concentration	0,0903	mg/kg

1,6-hexamethylene diisocyanate homopolymer

Type of value	PNEC	
Type	Freshwater	
Concentration	0,127	mg/l
Type of value	PNEC	
Type	marine water	
Concentration	0,0127	mg/l
Type of value	PNEC	

Type	Fresh water sediment		
Concentration		266,7	g/kg
Type of value	PNEC		
Type	saltwater sediment		
Concentration		4,455	g/kg
Type of value	PNEC		
Type	Soil		
Concentration		53,2	g/kg
Type of value	PNEC		
Type	Sewage treatment plant (STP)		
Concentration		38,28	mg/l

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate, oligomers

Type of value	PNEC		
Type	Freshwater		
Concentration		0,0015	mg/l
Type of value	PNEC		
Type	marine water		
Concentration		0,00015	mg/l
Type of value	PNEC		
Type	Sewage treatment plant (STP)		
Concentration		100	mg/l

Hexamethylene-di-isocyanate

Type of value	PNEC		
Type	Freshwater		
Concentration	>	0,0774	mg/l
Type of value	PNEC		
Type	Saltwater		
Concentration	>	0,00774	mg/l
Type of value	PNEC		
Type	Fresh water sediment		
Concentration	>	0,01334	mg/kg
Type of value	PNEC		
Type	saltwater sediment		
Concentration	>	0,001334	mg/l
Type of value	PNEC		
Type	Soil		
Concentration	>	0,0026	mg/kg
Type of value	PNEC		
Type	Sewage treatment plant (STP)		
Concentration		8,42	mg/l

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

Type of value	PNEC	
Type	Freshwater	
Concentration	0,06	mg/l
Type of value	PNEC	
Type	marine water	
Concentration	0,006	mg/l
Type of value	PNEC	
Type	Fresh water sediment	
Concentration	218,92	mg/kg
Type of value	PNEC	
Type	saltwater sediment	
Concentration	21,89	mg/kg
Type of value	PNEC	
Type	Soil	
Concentration	44,01	mg/kg
Type of value	PNEC	
Type	Sewage treatment plant (STP)	
Concentration	10,6	mg/l

8.2. Exposure controls

Exposure controls

Users are advised to consider national Occupational Exposure Limits or other equivalent values. Provide for sufficient ventilation. This can be achieved by local exhaust or general exhaust air collection. Wear a suitable respirator if the ventilation is not sufficient to keep the solvent vapour concentration below the occupational limit values.

Respiratory protection

Avoid inhalation of vapour and spray mist. Use breathing apparatus if exposed to vapours/dust/aerosol.
Recommended Filter type: Respiratory protection mask with combination filter A/P2

Hand protection

Protective gloves complying with EN 374.
Multilayer gloves made from

Appropriate Material	Fluorinated rubber / butyl-rubber		
Material thickness	>=	0,7	mm
Breakthrough time	>=	30	min

This recommendation is valid only for the product named in this safety data sheet supplied by us, and only for the indicated intended use purposes.
For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.
The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed.
The breakthrough time must be greater than the end use time of the product.
Gloves should be replaced regularly and if there is any sign of damage to the glove material.
The performance or effectiveness of the glove may be reduced by physical/ chemical damage and poor maintenance.

Eye protection

Safety glasses with side-shields conforming to EN166

Body protection

Wear suitable protective clothing. Remove contaminated clothing and wash it before reuse. Wash hands before breaks and after work.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	liquid				
Colour	colourless				
Odour	characteristic				
Melting point					
Remarks	not determined				
Freezing point					
Remarks	not determined				
Boiling point or initial boiling point and boiling range					
Value		124	to	161	°C
Flammability					
not determined					
Upper and lower explosive limits					
Remarks	not determined				
Flash point					
Value		39			°C
Ignition temperature					
Remarks	not determined				
Decomposition temperature					
Remarks	not determined				
pH value					
Remarks	Not applicable				
Viscosity					
Remarks	not determined				
Solubility(ies)					
Remarks	not determined				
Partition coefficient n-octanol/water (log value)					
Remarks	not determined				
Vapour pressure					
Remarks	not determined				
Density and/or relative density					
Value	appr.	1,049			kg/l
Temperature		20	°C		
Relative vapour density					
Remarks	not determined				

Particle characteristics

Remarks	not determined

9.2. Other information

Odour threshold

Remarks	not determined

Evaporation rate

Remarks	not determined

Solubility in water

Remarks	not determined

Efflux time

Value	45	to	55	s
Temperature	20	°C		
Method	DIN 53211 4 mm			

Explosive properties

evaluation	not determined

Oxidising properties

Remarks	not determined

Non-volatile content

Value	58,5	%
Method	calculated value	

Other information

This information is not available.

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under recommended storage and handling conditions (see section 7).

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

To avoid thermal decomposition, do not overheat.

10.4. Conditions to avoid

Isolate from sources of heat, sparks and open flame.

10.5. Incompatible materials

Keep away from oxidising agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions. Uncontrolled exothermic reactions occur with amines and alcohols. The product reacts slowly with water resulting in evolution of carbon dioxide. Gaseous decomposition products cause pressure to build up in tightly sealed vessels. Precautions should be taken to minimise exposure to atmospheric humidity or water: CO2 will be formed which in closed containers can result in pressurisation.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide, nitrous oxides (NOx), dense black smoke, hydrocyanic acid, Stable under recommended storage and handling conditions (see section 7).

SECTION 11: Toxicological information

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

Acute oral toxicity

ATE	>	10.000	mg/kg
Method	calculated value (Regulation (EC) No. 1272/2008)		

Acute oral toxicity (Components)

n,n-dimethylcyclohexylamine

Species	rat		
LD50		272	mg/kg

Hexamethylene-di-isocyanate

Species	rat		
LD50		746	mg/kg
Method	OECD 401		

Acute dermal toxicity

ATE	>	10.000	mg/kg
Method	calculated value (Regulation (EC) No. 1272/2008)		

Acute dermal toxicity (Components)

n,n-dimethylcyclohexylamine

Species	rat		
LD50		380	mg/kg

Acute inhalational toxicity

ATE		3,1771	mg/l
Administration/Form	Dust/Mist		
Method	calculated value (Regulation (EC) No. 1272/2008)		
Remarks	The classification criteria are met.		

Acute inhalative toxicity (Components)

1,6-hexamethylene diisocyanate homopolymer

Species	rat		
LC50		2,81	mg/l
Duration of exposure		4	h
Administration/Form	Dust/Mist		
Remarks	Mist		

n,n-dimethylcyclohexylamine

Species	rat		
LC50		0,7	mg/l
Duration of exposure		4	h
Administration/Form	Dust/Mist		

Hexamethylene-di-isocyanate

Species	rat		
LC50		0,015	mg/l
Duration of exposure		4	h
Administration/Form	Dust/Mist		

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

Species	rat		
LC50		0,031	mg/l
Duration of exposure		4	h

Administration/Form	Dust/Mist
Remarks	Mist

Skin corrosion/irritation

evaluation	irritant
Method	Calculation method (Regulation (EC) No. 1272/2008)
Remarks	The classification criteria are met.

Skin corrosion/irritation (Components)

Hexamethylene-di-isocyanate

Species	rabbit
evaluation	Severe skin irritation

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

Species	rabbit
evaluation	Severe skin irritation

polyethyleneglycol tridecyl ether phosphate

evaluation	Irritating to skin.

n,n-dimethylcyclohexylamine

Species	rabbit	
Observation Period	8	d
evaluation	Causes burns.	

Serious eye damage/irritation

evaluation	corrosive
Method	Calculation method (Regulation (EC) No. 1272/2008)
Remarks	The classification criteria are met.

Serious eye damage/irritation (Components)

Hexamethylene-di-isocyanate

Species	rabbit

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

evaluation	Irritating to eyes.

polyethyleneglycol tridecyl ether phosphate

n,n-dimethylcyclohexylamine

Species	rabbit	
Duration of exposure	8	d
Observation Period	8	d

Sensitization

evaluation	May cause sensitization by skin contact.
Method	Calculation method (Regulation (EC) No. 1272/2008)
Remarks	The classification criteria are met.

Sensitization (Components)

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate, oligomers

Species	mouse
evaluation	May cause sensitization by skin contact.

Hexamethylene-di-isocyanate

Species	guinea pig
evaluation	May cause sensitization by skin contact.
Method	OECD Test Guideline 406

Hexamethylene-di-isocyanate

Route of exposure	inhalative

Species	guinea pig
evaluation	May cause sensitization by inhalation.

1,6-hexamethylene diisocyanate homopolymer

evaluation	May cause sensitization by skin contact.

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

Species	guinea pig
evaluation	May cause sensitization by skin contact.
Method	OECD Test Guideline 406

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

evaluation	May cause sensitization by inhalation.

Mutagenicity

Method	Calculation method (Regulation (EC) No. 1272/2008)
Remarks	Based on available data, the classification criteria are not met.

Reproductive toxicity

Method	Calculation method (Regulation (EC) No. 1272/2008)
Remarks	Based on available data, the classification criteria are not met.

Carcinogenicity

Method	Calculation method (Regulation (EC) No. 1272/2008)
Remarks	Based on available data, the classification criteria are not met.

Specific Target Organ Toxicity (STOT)

Single exposure

Method	Calculation method (Regulation (EC) No. 1272/2008)
Remarks	The classification criteria are met.
evaluation	May cause respiratory irritation.
evaluation	May cause drowsiness or dizziness.

Repeated exposure

Remarks	Based on available data, the classification criteria are not met.

Specific Target Organ Toxicity (STOT) (Components)

2-methoxy-1-methylethyl acetate

Specific target organ toxicity - repeated exposure

evaluation	May cause drowsiness or dizziness. Organs: Nervous system

n-butyl acetate

Specific target organ toxicity - repeated exposure

	Organs: Nervous system
Remarks	Possible narcotic effects (drowsiness, dizziness).

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate, oligomers

Remarks	May cause respiratory irritation.

Hexamethylene-di-isocyanate

Specific target organ toxicity - single exposure

evaluation	May cause respiratory irritation. Organs: Respiratory tract

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

Specific target organ toxicity - repeated exposure

evaluation	May cause respiratory irritation.

1,6-hexamethylene diisocyanate homopolymer

evaluation	May cause respiratory irritation. Organs: Respiratory tract

Aspiration hazard

Based on available data, the classification criteria are not met.

11.2 Information on other hazards

Endocrine disrupting properties with respect to humans

The product does not contain a substance that has endocrine disrupting properties with respect to humans.

Other information

No toxicological data are available.

SECTION 12: Ecological information

12.1. Toxicity

General information

For this subsection there is no ecotoxicological data available on the product as such.

Fish toxicity (Components)

1,6-hexamethylene diisocyanate homopolymer

Species	Danio rerio (zebra fish)		
LC50	35,2		mg/l
Duration of exposure	96	h	
Method	OECD 203		

Daphnia toxicity (Components)

1,6-hexamethylene diisocyanate homopolymer

Species	Daphnia magna (Water flea)		
EC50	> 100		mg/l
Duration of exposure	48	h	

polyethyleneglycol tridecyl ether phosphate

Species	Daphnia magna (Water flea)			
EC50	1	to	10	mg/l
Duration of exposure	48	h		

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

Species	Daphnia magna (Water flea)		
EC50	35		mg/l
Duration of exposure	48	h	

Algae toxicity (Components)

1,6-hexamethylene diisocyanate homopolymer

Species	Desmodesmus subspicatus		
ErC50	72		mg/l
Duration of exposure	72	h	
Method	OECD 201		

n,n-dimethylcyclohexylamine

Species	Scenedesmus subspicatus		
NOEC	0,062		mg/l
Duration of exposure	72	h	
Method	OECD 201		

Bacteria toxicity (Components)

1,6-hexamethylene diisocyanate homopolymer

Species	activated sludge		
EC50	>	10000	mg/l

12.2. Persistence and degradability

General information

For this subsection there is no ecotoxicological data available on the product as such.

Biodegradability (Components)

n,n-dimethylcyclohexylamine

Value	appr.	100		%
Duration of test		28	d	
evaluation	Readily biodegradable.			

1,6-hexamethylene diisocyanate homopolymer

Value		0,0	%
evaluation	Not readily biodegradable.		

3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate

Value		0,0		%
Duration of test		28	d	
evaluation	Not readily biodegradable.			

12.3. Bioaccumulative potential

General information

For this subsection there is no ecotoxicological data available on the product as such.

Partition coefficient n-octanol/water (log value)

Remarks not determined

12.4. Mobility in soil

General information

For this subsection there is no ecotoxicological data available on the product as such.

Mobility in soil

no data available

12.5. Results of PBT and vPvB assessment

General information

For this subsection there is no ecotoxicological data available on the product as such.

Results of PBT and vPvB assessment

The product contains no PBT substances
The product contains no vPvB substances.

12.6 Endocrine disrupting properties

Endocrine disrupting properties with respect to the envrionment

The product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms.

12.7. Other adverse effects

General information

For this subsection there is no ecotoxicological data available on the product as such.

General information / ecology

For this subsection there is no ecotoxicological data available on the product as such.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal recommendations for the product

EWC waste code	080111 - waste paint and varnish containing organic solvents or other dangerous substances
EWC waste code	200127 - paint, inks, adhesives and resins containing dangerous substances

Where possible recycling is preferred to disposal or incineration.
Do not allow to enter drains or waterways.

modified product

EWC waste code	080115 - aqueous sludges containing paint or varnish containing organic solvents or other dangerous substances
EWC waste code	080113 - sludges from paint or varnish containing organic solvents or other dangerous substances

Dried residues

EWC waste code	080112 - waste lacquers and waste paint except those falling under 080111

Disposal recommendations for packaging

EWC waste code	150110 - packaging containing residues of or contaminated by dangerous substances

Completely emptied packagings can be given for recycling.

SECTION 14: Transport information

	Land transport ADR/RID	Marine transport IMDG/GGVSee	Air transport ICAO/IATA
Tunnel restriction code	D/E		
14.1. UN number	1263	1263	1263
14.2. UN proper shipping name	PAINT	PAINT	PAINT
14.3. Transport hazard class(es)	3	3	3
Label			
14.4. Packing group	III	III	III
Limited Quantity	5 l		
Transport category	3		
14.5. Environmental hazards	-		

SECTION 15: Regulatory information

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

Major-accident categories acc. 2012/18/EU

Category	P5c	FLAMMABLE LIQUID	5.000.000	kg	50.000.000	kg

VOC

VOC (EU)	41,5	%	435	g/l

Restriction according to annex XVII to regulation (EU) No 1907/2006

74. Diisocyanates. 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: 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).

Other information

All components are contained in the TSCA inventory or exempted.
All components are contained in the PICCS inventory.

15.2. Chemical safety assessment

For this substance / mixture a chemical safety assessment was not carried out.

SECTION 16: Other information

Training advice according to annex XVII to regulation (EU) No 1907/2006

74. Diisocyanates. 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.

Hazard statements listed in Chapter 3

EUH066	Repeated exposure may cause skin dryness or cracking.
H226	Flammable liquid and vapour.
H290	May be corrosive to metals.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
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.
H412	Harmful to aquatic life with long lasting effects.

CLP categories listed in Chapter 3

Acute Tox. 1	Acute toxicity, Category 1
Acute Tox. 3	Acute toxicity, Category 3
Acute Tox. 4	Acute toxicity, Category 4
Aquatic Chronic 2	Hazardous to the aquatic environment, chronic, Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment, chronic, Category 3
Eye Dam. 1	Serious eye damage, Category 1
Eye Irrit. 2	Eye irritation, Category 2
Flam. Liq. 3	Flammable liquid, Category 3
Met. Corr. 1	Substance or mixture corrosive to metals, Category 1
Resp. Sens. 1	Respiratory sensitization, Category 1
Skin Corr. 1B	Skin corrosion, Category 1B
Skin Irrit. 2	Skin irritation, Category 2
Skin Sens. 1	Skin sensitization, Category 1
STOT SE 3	Specific target organ toxicity - single exposure, Category 3

Abbreviations

RID - Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning theInternational Transport of Dangerous Goods by Rail)
IMDG - International Maritime Code for Dangerous Goods
IATA - International Air Transport Association
IATA-DGR - Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO-TI - Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS - Globally Harmonized System of Classification and Labelling of Chemicals
EINECS - European Inventory of Existing Commercial Chemical Substances
CAS - Chemical Abstracts Service (division of the American Chemical Society)
GefStoffV - Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)

LOAEL - Lowest Observed Adverse Effect Level
LOEL - Lowest Observed Effect Level
NOAEL - No Observed Adverse Effect Level
NOEC - No Observed Effect Concentration
NOEL - No Observed Effect Level
OECD - Organisation for Econpmic Cooperation and Development
VOC - Volatile Organic Compounds
Changes since the last version are highlighted in the margin (***). This version replaces all previous versions.
This safety datasheet only contains information relating to safety and does not replace any product information or product specification.
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.
The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
The information contained herein is based on the present state of our knowledge and does therefore not guarantee certain properties.

Annex to the extended Safety Data Sheet (eSDS)

Short title of the exposure scenario

ES002 - Industrial applications: rolling, dipping, pouring and other processing without aerosol formation (inside)

Use of the substance/preparation

Surface treatment of wood and other materials

Use

SU3	Industrial uses: Uses of substances as such or in preparations at industrial sites
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC5	Industrial use resulting in inclusion into or onto a matrix
PROCh01	Other processing without aerosol formation
PROCh02	roller coating industrial
PROC13	Treatment of articles by dipping and pouring

Contributing exposure scenario controlling environmental exposure

Use

ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC5	Industrial use resulting in inclusion into or onto a matrix

Physical form liquid

Maximum amount used per time or activity

Emission days per site: <= 300

Other relevant operational conditions

Use: Room temperature
Drying and through-curing takes place at ambient temperature or at higher temperatures.
Where possible recycling is preferred to disposal or incineration.
Do not allow to enter soil, waterways or waste water canal.
Dispose of rinse water in accordance with local and national regulations.

Waste water

Do not discharge into the drains/surface waters/groundwater.

Exhaust air

Keep container closed. Avoid release to the environment.

Soil

Floors should be impervious, resistant to liquids and easy to clean.

Disposal recommendations for the product

EWC waste code	080111 - waste paint and varnish containing organic solvents or other dangerous substances 200127 - paint, inks, adhesives and resins containing dangerous substances

Where possible recycling is preferred to disposal or incineration.
Do not allow to enter drains or waterways.

modified product

EWC waste code	080115 - aqueous sludges containing paint or varnish containing organic solvents or other dangerous substances 080113 - sludges from paint or varnish containing organic solvents or other dangerous substances

Dried residues

EWC waste code	080112 - waste lacquers and waste paint except those falling under 080111

Disposal recommendations for packaging

EWC waste code	150110 - packaging containing residues of or contaminated by dangerous substances

Completely emptied packagings can be given for recycling.

Contributing exposure scenario controlling worker exposure

Use

SU3	Industrial uses: Uses of substances as such or in preparations at industrial sites
PROCh01	Other processing without aerosol formation
PROCh02	roller coating industrial
PROC13	Treatment of articles by dipping and pouring

Physical form

liquid

Maximum amount used per time or activity

Duration of exposure	<=	8	h/d
Frequency of exposure	<=	220	d/a

Other relevant operational conditions

Use: Room temperature
Drying and through-curing takes place at ambient temperature or at higher temperatures.
Read attached instructions before use.

Product substance and product safety related measures

Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Provide for sufficient ventilation. This can be achieved by local exhaust or general exhaust air collection. Wear a suitable respirator if the ventilation is not sufficient to keep the solvent vapour concentration below the occupational limit values.

Respiratory protection

Avoid inhalation of vapour and spray mist. Use breathing apparatus if exposed to vapours/dust/aerosol.
Recommended Filter type: Respiratory protection mask with combination filter A/P2

Hand protection

Protective gloves complying with EN 374.
Multilayer gloves made from

Appropriate Material		Fluorinated rubber / butyl-rubber
Material thickness	>=	0,7
Breakthrough time	>=	30

This recommendation is valid only for the product named in this safety data sheet supplied by us, and only for the indicated intended use purposes.
For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.
The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed.
The breakthrough time must be greater than the end use time of the product.
Gloves should be replaced regularly and if there is any sign of damage to the glove material.
The performance or effectiveness of the glove may be reduced by physical/ chemical damage and poor maintenance.

Eye protection

Safety glasses with side-shields conforming to EN166

Body protection

Wear suitable protective clothing. Remove contaminated clothing and wash it before reuse. Wash hands before breaks and after work.

Exposure estimation and reference to its source

Workers (industrial)

SU	SU3
PROC	PROC7
Assessment method	inhalation, long-term - local and systemic
Exposure assessment	27,54 mg/m³
Exposure assessment (method)	ECETOC TRA
Risk characterisation ratio (RCR)	0,1
Lead substance	2-methoxy-1-methylethyl acetate

Workers (industrial)

SU	SU3
PROC	PROC7
Assessment method	dermal, long-term - local and systemic
Exposure assessment	2,14 mg/kg/d
Exposure assessment (method)	ECETOC TRA
Risk characterisation ratio (RCR)	0,01
Lead substance	2-methoxy-1-methylethyl acetate

Workers (industrial)

SU	SU3
PROC	PROC10
Assessment method	inhalation, long-term - local and systemic
Exposure assessment	55,08 mg/m³
Exposure assessment (method)	ECETOC TRA
Risk characterisation ratio (RCR)	0,2
Lead substance	2-methoxy-1-methylethyl acetate

Workers (industrial)

SU	SU3
PROC	PROC10
Assessment method	dermal, long-term - local and systemic
Exposure assessment	27,43 mg/kg/d
Exposure assessment (method)	ECETOC TRA
Risk characterisation ratio (RCR)	0,18
Lead substance	2-methoxy-1-methylethyl acetate

Workers (industrial)

SU	SU3
PROC	PROC13
Assessment method	inhalation, long-term - local and systemic
Exposure assessment	55,08 mg/m³
Exposure assessment (method)	ECETOC TRA
Risk characterisation ratio (RCR)	0,2
Lead substance	2-methoxy-1-methylethyl acetate

Workers (industrial)

SU	SU3
PROC	PROC13
Assessment method	dermal, long-term - local and systemic
Exposure assessment	13,71 mg/kg/d
Exposure assessment (method)	ECETOC TRA
Risk characterisation ratio (RCR)	0,09
Lead substance	2-methoxy-1-methylethyl acetate

Information on estimated exposure and downstream-user guidance

Guidance for Downstream Users

The downstream user can evaluate whether he operates within the conditions set in the exposure scenario on the basis of the information supplied. This evaluation can be conducted by an expert or using the risk assessment tools recommended by ECHA.