

Safety data sheet

Page: 1/16

BASF 3D Printing Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 04.03.2020

Version: 1.0

Date previous version: not applicable

Previous version: none

Product: **Ultracur3D Hardener F**

(ID no. 991038/SDS_GEN_EU/EN)

Date of print 20.05.2020

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

1.1. Product identifier

Ultracur3D Hardener F

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

Not recommended use: spray application

1.3. Details of the supplier of the safety data sheet

Company:

BASF 3D Printing Solutions GmbH
Speyerer Str. 4
69115 Heidelberg, Germany

Telephone: +49 6221 67417 900

E-mail address: sales@basf-3dps.com

1.4. Emergency telephone number

International emergency number:

Telephone: +49 180 2273-112

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

For the classification of the mixture the following methods have been applied: extrapolation on the concentration levels of the hazardous substances, on basis of test results and after evaluation of experts. The methodologies used are mentioned at the respective test results.

BASF 3D Printing Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

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According to Regulation (EC) No 1272/2008 [CLP]

Acute Tox. 4 (Inhalation - vapour)

Skin Sens. 1

STOT SE 3 (irritating to respiratory system)

Aquatic Chronic 3

H332, H317, H335, H412

For the classifications not written out in full in this section the full text can be found in section 16.

2.2. Label elements

Globally Harmonized System, EU (GHS)

Pictogram:



Signal Word:

Warning

Hazard Statement:

H332	Harmful if inhaled.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

P280	Wear protective gloves.
P271	Use only outdoors or in a well-ventilated area.
P260	Do not breathe mist or vapour.

Precautionary Statements (Response):

P312	Call a POISON CENTER or doctor/physician if you feel unwell.
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Precautionary Statements (Storage):

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
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Precautionary Statements (Disposal):

P501	Dispose of contents and container to hazardous or special waste collection point.
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Labeling of special preparations (GHS):

BASF 3D Printing Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

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(ID no. 991038/SDS_GEN_EU/EN)

Date of print 20.05.2020

EUH204: Contains isocyanates. May produce an allergic reaction.

According to Regulation (EC) No 1272/2008 [CLP]

Hazard determining component(s) for labelling: hexamethylene-di-isocyanate, Hexane, 1,6-diisocyanato-, homopolymer, polyethylene glycol mono-Me ether-blocked

2.3. Other hazards

According to Regulation (EC) No 1272/2008 [CLP]

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria or the vPvB (very persistent/very bioaccumulative) criteria.

SECTION 3: Composition/Information on Ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Chemical nature

polyisocyanate

Hazardous ingredients (GHS)

according to Regulation (EC) No. 1272/2008

hexamethylene-di-isocyanate

Content (W/W): $\geq 0.1 \%$ - $< 0.2 \%$	Acute Tox. 4 (oral)
CAS Number: 822-06-0	Acute Tox. 1 (Inhalation - mist)
EC-Number: 212-485-8	Skin Corr./Irrit. 2
REACH registration number: 01-2119457571-37	Eye Dam./Irrit. 2
INDEX-Number: 615-011-00-1	Resp. Sens. 1
	Skin Sens. 1
	STOT SE 3 (irr. to respiratory syst.)
	H319, H315, H330, H302, H334, H317, H335

Specific concentration limit:

Skin Sens. 1: $\geq 0.5 \%$

Resp. Sens. 1: $\geq 0.5 \%$

BASF 3D Printing Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

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Date of print 20.05.2020

Hexane, 1,6-diisocyanato-, homopolymer, polyethylene glycol mono-Me ether-blocked

Content (W/W): $\geq 75\%$ - $\leq 100\%$ Acute Tox. 4 (Inhalation - vapour)

% Skin Sens. 1

CAS Number: 160994-68-3 STOT SE 3 (irr. to respiratory syst.)

Aquatic Chronic 3

H332, H317, H335, H412

For the classifications not written out in full in this section, including the hazard classes and the hazard statements, the full text is listed in section 16.

SECTION 4: First-Aid Measures

4.1. Description of first aid measures

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Remove affected person from danger area. Immediately remove contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

If inhaled:

Remove the affected individual into fresh air and keep the person calm. If symptoms persist, seek medical advice. If breathing is irregular or stopped, administer artificial respiration.

On skin contact:

If symptoms persist, seek medical advice. Remove contaminated clothing. Wash skin with soap and water, rinse abundantly. Do NOT use solvents or thinners.

On contact with eyes:

If symptoms persist, seek medical advice. Contact lenses should be removed. Hold eyelids open and flush with copious amounts of clean, fresh water or a special eyewash solution.

On ingestion:

Do not induce vomiting. Rinse mouth thoroughly with water, seek medical attention. If adverse health effects develop seek medical attention.

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

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

Hazards: irritation of respiratory tract

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

Treatment: Symptomatic treatment (decontamination, vital functions).

Antidote: No known specific antidote.

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SECTION 5: Fire-Fighting Measures

5.1. Extinguishing media

Suitable extinguishing media:

carbon dioxide, alcohol-resistant foam, dry powder, water spray

Unsuitable extinguishing media for safety reasons:

water jet

5.2. Special hazards arising from the substance or mixture

Fire will produce dense black smoke. Inhalation of dangerous decomposition products may cause serious damage to health.

5.3. Advice for fire-fighters

Special protective equipment:

Appropriate breathing apparatus may be required.

Further information:

Cool closed containers in the vicinity of the source of fire. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations. Product itself is non-combustible; fire extinguishing method of surrounding areas must be considered. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

SECTION 6: Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective clothing. Avoid breathing vapours. Ensure adequate ventilation. Advice on product handling can be found in sections 7 and 8 of this safety data sheet. Keep away from sources of ignition.

6.2. Environmental precautions

Do not allow to enter drains or waterways. If the product enters drains or sewers, the local water company should be contacted immediately; in the case of contamination of streams, rivers or lakes, the Environment Agency. Do not discharge into the subsoil/soil.

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. Place in a suitable container. The contaminated area should be cleaned up immediately with a suitable decontaminant. One possible (flammable) decontaminant comprises (by volume): ethanol or isopropyl alcohol (50 parts); water (45 parts); concentrated ammonia solution (5 parts). A non-flammable alternative is: sodium carbonate (5 parts); water (95 parts). Add the same decontaminant to the remnants and let stand for several days until no further reaction in non-sealed container. Once this stage is reached, close container and dispose according to the waste regulations (see section 13). Ensure adequate ventilation.

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Date of print 20.05.2020

6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

SECTION 7: Handling and Storage

7.1. Precautions for safe handling

Provide good ventilation of working area (local exhaust ventilation if necessary). Do not return residues to the storage containers. Smoking, eating and drinking are forbidden in application area. For personal protection see section 8. Comply with the health and safety at work laws. Avoid inhalation of vapour and spray mist. The workplace should be equipped with an emergency shower and eye-rinsing facility. Avoid contact with the skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice.

Protection against fire and explosion:

Avoid all sources of ignition: heat, sparks, open flame. The relevant fire protection measures should be noted.

7.2. Conditions for safe storage, including any incompatibilities

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

Suitable materials for containers: Carbon steel (Iron), tinned carbon steel (Tinplate)

Further information on storage conditions: Keep container tightly closed. Never use pressure to empty; container is not a pressure vessel. Close containers carefully once opened and store upright in order to prevent any leakage. No smoking. Prevent unauthorized access. Precautions should be taken to minimise exposure to atmospheric humidity or water: carbon dioxide will be formed which in closed containers can result in pressurisation. Detailed information can be gained from the relevant technical data sheets. Always keep in containers of same material as the original one. Observe label precautions. Store in a dry, well ventilated place. Protect from direct sunlight. Keep away from sources of ignition. Keep away from heat.

7.3. Specific end use(s)

Please refer to the technical leaflet for further information.

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Components with occupational exposure limits

822-06-0: hexamethylene-di-isocyanate

Components with PNEC

BASF 3D Printing Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

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Version: 1.0

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(ID no. 991038/SDS_GEN_EU/EN)

Date of print 20.05.2020

822-06-0: hexamethylene-di-isocyanate

freshwater: 0.0774 mg/l

marine water: 0.00774 mg/l

intermittent release: 0.774 mg/l

sediment (freshwater): 0.01334 mg/kg

sediment (marine water): 0.001334 mg/kg

soil: 0.0026 mg/kg

STP: 8.42 mg/l

Components with DNEL

822-06-0: hexamethylene-di-isocyanate

worker: Long-term exposure - local effects, Inhalation: 0.035 mg/m³

worker: Short-term exposure - local effects, Inhalation: 0.07 mg/m³

8.2. Exposure controls

Personal protective equipment

Respiratory protection:

half-mask with A2P2 class combination filter When workers are facing concentrations above the occupational exposure limits they must use appropriate certified respirators. In situations where dust may occur use appropriate certified respirators. Dry sanding, flame cutting and/or welding of the dry paint film will give rise to dust and/or hazardous fumes. Wet (sanding/ flatting) should be used wherever possible. If exposure cannot be avoided by the provision of local exhaust ventilation, suitable respiratory protective equipment should be used. Use A1P2 breathing-protection half mask in case of contact with aerosols.

Hand protection:

Further information on penetration time is available from the manufacturer of the glove.

Data are based on information from the glove manufacturer, the raw material manufacturer or according to specifics of the product components.

The protection glove should be tested for its specific suitability (e.g. mechanical strength, product compatibility, anti-static properties).

Follow manufacturer's advice on use, storage, maintenance and replacement of gloves.

The gloves should be replaced immediately in case of damage or signs of wear. It is recommended to use preventative skin protection (skin cream).

Wear protective gloves. Any chemical protection glove certified according to EN 374 is suitable: e.g.

The specifications of the Technical Rule for Hazardous Substances (TRGS) 401 must be observed (TRGS 401: Risks resulting from skin contact - identification, assessment, measures).

butyl rubber gloves - material thickness: 0,5 mm

Eye protection:

Eye protection not required., Required when there is a risk of eye contact.

Body protection:

disposable coveralls

General safety and hygiene measures

BASF 3D Printing Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 04.03.2020

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Do not breathe vapour/spray. Eye wash fountains and safety showers must be easily accessible. Avoid contact with the skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Respiratory protective equipment should be worn by spray booth operatives (see "Personal protection" below). Remove contaminated clothing immediately and dispose of safely. Hands and/or face should be washed before breaks and at the end of the shift. Keep separated from food stuffs and feed stocks.

Environmental exposure controls

For information regarding environmental exposure controls, see Section 6.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Form:	liquid
Colour:	yellow
Odour:	specific
Odour threshold:	not determined
pH value:	not applicable
Melting point:	24 °C
onset of boiling:	> 300 °C
Flash point:	226 °C
Evaporation rate:	not determined, Value can be approximated from Henry's Law Constant or vapor pressure.
Flammability:	hardly combustible
Lower explosion limit:	For liquids not relevant for classification and labelling.
Upper explosion limit:	For liquids not relevant for classification and labelling.
Ignition temperature:	> 200 °C
Vapour pressure:	18.00 hPa (20 °C) 30.00 hPa (50 °C)
Density:	1.160 g/cm ³ (20 °C)
Solubility in water:	immiscible
Partitioning coefficient n-octanol/water (log Kow):	not applicable for mixtures
Thermal decomposition:	not determined

BASF 3D Printing Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 04.03.2020

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Viscosity, kinematic: 691.3 mm²/s
(20 °C)

(40 °C)
not determined
Explosion hazard: not explosive
Fire promoting properties: not fire-propagating

9.2. Other information

Burning rate: The material doesn't meet the criteria (UN Test N.1 (ready specified in paragraph 33.2.1.4.4 of combustible solids))
UN manual of tests and criteria.
Self heating ability: It is not a substance capable of spontaneous heating.

Miscibility with water:
immiscible
Flow time: > 100 s (DIN EN ISO 2431; 6 mm)

SECTION 10: Stability and Reactivity

10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

No hazardous reactions when stored and handled according to instructions.

10.4. Conditions to avoid

Avoid direct sunlight.

10.5. Incompatible materials

Substances to avoid:

Keep away from oxidising agents, strongly alkaline and strongly acidic materials, amines, alcohols and water. Uncontrolled exothermic reactions occur with amines and alcohols. The product reacts with water resulting in evolution of carbon dioxide. In closed containers, pressure build up could result in distortion, blowing and in extreme cases bursting of the container.

10.6. Hazardous decomposition products

When exposed to high temperatures hazardous decomposition products such as smoke, carbon monoxide, carbon dioxide, oxides of nitrogen, hydrogen cyanide, monomeric isocyanates may be

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(ID no. 991038/SDS_GEN_EU/EN)

Date of print 20.05.2020

produced., When exposed to high temperatures hazardous decomposition products such as carbon monoxide, carbon dioxide, smoke, oxides of nitrogen may be produced., No hazardous decomposition products if stored and handled as prescribed/indicated.

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:

The mixture has been assessed following regulation (EC) No 1272/2008. See sections 2 and 3 for details.

Of moderate toxicity after short-term inhalation.

Irritation

Assessment of irritating effects:

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

Respiratory/Skin sensitization

Assessment of sensitization:

Sensitization after skin contact possible.

Germ cell mutagenicity

Assessment of mutagenicity:

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

Carcinogenicity

Assessment of carcinogenicity:

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

Reproductive toxicity

Assessment of reproduction toxicity:

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

Developmental toxicity

Assessment of teratogenicity:

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

Specific target organ toxicity (single exposure)

BASF 3D Printing Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 04.03.2020

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Product: **Ultracur3D Hardener F**

(ID no. 991038/SDS_GEN_EU/EN)

Date of print 20.05.2020

Assessment of STOT single:

Causes temporary irritation of the respiratory tract.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

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

Aspiration hazard

No aspiration hazard expected.

Other relevant toxicity information

Based on the properties of the isocyanate components and considering toxicological data on similar product, this product may cause acute irritation and/or sensitization of the respiratory system leading to an asthmatic condition, wheeziness and tightness of the chest. Sensitized persons may subsequently show asthmatic symptoms when exposed to atmospheric concentrations well below the occupational exposure limit. Repeated inhalation may lead to a permanent respiratory disability.

SECTION 12: Ecological Information

12.1. Toxicity

Assessment of aquatic toxicity:

Do not allow to enter drains or waterways. The mixture has been assessed following regulation (EC) No 1272/2008 and is classified for eco-toxicological properties accordingly. See sections 2 and 3 for details. Harmful to aquatic life with long lasting effects.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H₂O):

No data available concerning biodegradation and elimination. The polymer component of the product is poorly biodegradable.

12.3. Bioaccumulative potential

Bioaccumulation potential:

No data available.

12.4. Mobility in soil

Assessment transport between environmental compartments:

Adsorption in soil: No data available.

BASF 3D Printing Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.

Date / Revised: 04.03.2020

Version: 1.0

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Product: **Ultracur3D Hardener F**

(ID no. 991038/SDS_GEN_EU/EN)

Date of print 20.05.2020

12.5. Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria or the vPvB (very persistent/very bioaccumulative) criteria.

12.6. Other adverse effects

The product does not contain substances that are listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Observe national and local legal requirements.

Waste key:

08 01 11 waste paint and varnish containing organic solvents or other hazardous substances

Contaminated packaging:

Containers which are not properly emptied must be disposed pursuant to Directive 2008/98/EC

Contaminated packaging should be emptied as far as possible and disposed of in the same manner as the substance/product.

Residues in empty containers should be neutralised with decontaminant (see section 6).

SECTION 14: Transport Information

Land transport

ADR

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

RID

Not classified as a dangerous good under transport regulations

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Date / Revised: 04.03.2020

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(ID no. 991038/SDS_GEN_EU/EN)

Date of print 20.05.2020

UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

Inland waterway transport

ADN

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user:	None known

Transport in inland waterway vessel

Not evaluated

Sea transport

IMDG

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

Air transport

IATA/ICAO

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable

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Date / Revised: 04.03.2020

Version: 1.0

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(ID no. 991038/SDS_GEN_EU/EN)

Date of print 20.05.2020

Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

14.1. UN number

See corresponding entries for "UN number" for the respective regulations in the tables above.

14.2. UN proper shipping name

See corresponding entries for "UN proper shipping name" for the respective regulations in the tables above.

14.3. Transport hazard class(es)

See corresponding entries for "Transport hazard class(es)" for the respective regulations in the tables above.

14.4. Packing group

See corresponding entries for "Packing group" for the respective regulations in the tables above.

14.5. Environmental hazards

See corresponding entries for "Environmental hazards" for the respective regulations in the tables above.

14.6. Special precautions for user

See corresponding entries for "Special precautions for user" for the respective regulations in the tables above.

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Regulation:	Not evaluated
Shipment approved:	Not evaluated
Pollution name:	Not evaluated
Pollution category:	Not evaluated
Ship Type:	Not evaluated

SECTION 15: Regulatory Information

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

Prohibitions, Restrictions and Authorizations

Annex XVII of Regulation (EC) No 1907/2006: Number on List: 3

Directive 2012/18/EU - Control of Major Accident Hazards involving dangerous substances (EU):
Listed in above regulation: no

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15.2. Chemical Safety Assessment

Chemical Safety Assessment not required

SECTION 16: Other Information

For multi-pack systems observe material safety data sheets of all components. Restricted to professional users.

Full text of the classifications, including the hazard classes and the hazard statements, if mentioned in section 2 or 3:

Acute Tox.	Acute toxicity
Skin Sens.	Skin sensitization
STOT SE	Specific target organ toxicity — single exposure
Aquatic Chronic	Hazardous to the aquatic environment - chronic
Skin Corr./Irrit.	Skin corrosion/irritation
Eye Dam./Irrit.	Serious eye damage/eye irritation
Resp. Sens.	Respiratory sensitization
H332	Harmful if inhaled.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.
H319	Causes serious eye irritation.
H315	Causes skin irritation.
H330	Fatal if inhaled.
H302	Harmful if swallowed.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Abbreviations

ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road.
 ADN = The European Agreement concerning the International Carriage of Dangerous Goods by Inland waterways. ATE = Acute Toxicity Estimates. CAO = Cargo Aircraft Only. CAS = Chemical Abstract Service. CLP = Classification, Labelling and Packaging of substances and mixtures. DIN = German national organization for standardization. DNEL = Derived No Effect Level. EC50 = Effective concentration median for 50% of the population. EC = European Community. EN = European Standards. IARC = International Agency for Research on Cancer. IATA = International Air Transport Association. IBC-Code = Intermediate Bulk Container code. IMDG = International Maritime Dangerous Goods Code. ISO = International Organization for Standardization. STEL = Short-Term Exposure Limit. LC50 = Lethal concentration median for 50% of the population. LD50 = Lethal dose median for 50% of the population. TLV = Threshold Limit Value. MARPOL = The International Convention for the Prevention of Pollution from Ships. NEN = Dutch Norm. NOEC = No Observed Effect Concentration. OEL = Occupational Exposure Limit. OECD = Organization for Economic Cooperation and Development. PBT = Persistent, Bioaccumulative and Toxic. PNEC = Predicted No Effect Level. PPM = Parts per million. RID = The European Agreement concerning the International Carriage of Dangerous Goods by Rail. TWA = Time Weight Average. UN-number = UN number at transport. vPvB = very Persistent and very Bioaccumulative.

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Date / Revised: 04.03.2020

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(ID no. 991038/SDS_GEN_EU/EN)

Date of print 20.05.2020

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Vertical lines in the left hand margin indicate an amendment from the previous version.