We create chemistry

Safety data sheet

BASF safety data sheet. This is a translation of the country-specific safety data sheet into a language other than that required by law. This document does not replace the safety data sheet provided according to Regulation (EC) No 1907/2006.
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Product: **Caprolactam extract**

(ID no. 30043509/SDS_GEN_PL/EN)
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Caprolactam extract

Chemical name: Caprolactam solution
CAS Number: 105-60-2

REACH registration number: 01-2119457029-36-0000, 01-2119457029-36-0001, 01-2119457029-36-0031

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

Relevant identified uses: Chemical
Recommended use: for the production of homopolymerisates and copolymerisates, initial product for chemical syntheses

For the detailed identified uses of the product see appendix of the safety data sheet.

1.3. Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY

Contact address:
BASF Polska Sp. z o.o.
Al. Jerozolimskie 142b
02-305 Warszawa
POLAND

Telephone: +48 22 5709-999 (8:00 - 17:00)
E-mail address: product-safety-poland@basf.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

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

Acute Tox. 4 (Inhalation - dust)
Acute Tox. 4 (oral)
Skin Corr./Irrit. 2
Eye Dam./Irrit. 2
STOT SE 3

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

2.2. Label elements

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

Pictogram:

Signal Word:

Warning

Hazard Statement:

H319	Causes serious eye irritation.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H302	Harmful if swallowed.
H335	May cause respiratory irritation.

Precautionary Statements (Prevention):

P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves.
P280	Wear eye and face protection.
P260	Do not breathe dust.
P260	Do not breathe dust/gas/mist/vapours.
P264	Wash contaminated body parts thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.

Precautionary Statements (Response):

P312	Call a POISON CENTER or physician if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P303 + P352	IF ON SKIN (or hair): Wash with plenty of soap and water.
P301 + P330	IF SWALLOWED: rinse mouth.
P332 + P313	If skin irritation occurs: Get medical attention.
P337 + P311	If eye irritation persists: Call a POISON CENTER or physician.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Precautionary Statements (Storage):

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Precautionary Statements (Disposal):

P501	Dispose of contents and container to hazardous or special waste collection point.

2.3. Other hazards

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

No specific dangers known, if the regulations/notes for storage and handling are considered.
The product does not contain a substance above legal limits fulfilling the PBT (persistent/bioaccumulative/toxic) criteria or the vPvB (very persistent/very bioaccumulative) criteria.

SECTION 3: Composition/Information on Ingredients

3.1. Substances

Chemical nature

Preparation based on:
ε-caprolactam

Content (W/W): 60 % - 95 %	Acute Tox. 4 (Inhalation - dust)
CAS Number: 105-60-2	Acute Tox. 4 (oral)
EC-Number: 203-313-2	Skin Corr./Irrit. 2
INDEX-Number: 613-069-00-2	Eye Dam./Irrit. 2
	STOT SE 3 (irr. to respiratory syst.)
	H319, H315, H335, H302 + H332

Water

Content (W/W): 5 % - 40 %
CAS Number: 7732-18-5
EC-Number: 231-791-2

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.

3.2. Mixtures

Not applicable

SECTION 4: First-Aid Measures

4.1. Description of first aid measures

Immediately remove contaminated clothing. Avoid contact with the skin, eyes and clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:
Wash thoroughly with soap and water

On contact with eyes:
Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:
Immediately rinse mouth and then drink 200-300 ml of water, 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.

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

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing media

Suitable extinguishing media:
foam, carbon dioxide, water spray

5.2. Special hazards arising from the substance or mixture

Endangering substances: hydrogen cyanide, nitrogen oxides
Advice: The substances/groups of substances mentioned can be released in case of fire.

5.3. Advice for fire-fighters

Further information:

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

Ensure adequate ventilation. Avoid contact with skin and eyes. Use breathing apparatus if exposed to vapours/dust/aerosol. Information regarding personal protective measures, see section 8.

6.2. Environmental precautions

Do not empty into drains. Retain and dispose of contaminated wash water.

6.3. Methods and material for containment and cleaning up

For large amounts: Pump off product.
For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr). Rinse away with water.

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

Ensure thorough ventilation of stores and work areas. Avoid contact with skin and eyes. Wear suitable protective clothing and eye/face protection. Handle in accordance with good industrial hygiene and safety practice.

Protection against fire and explosion:
No special precautions necessary.

7.2. Conditions for safe storage, including any incompatibilities

Segregate from acids and bases. Segregate from oxidants.

Suitable materials for containers: Stainless steel 1.4301 (V2), Stainless steel 1.4401, Carbon steel (Iron)

7.3. Specific end use(s)

See exposure scenario(s) in the attachment to this safety data sheet.

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Components with occupational exposure limits

105-60-2: ε-caprolactam
TWA value 10 mg/m3 (OEL (EU)), Vapor and dust
indicative
STEL value 40 mg/m3 (OEL (EU)), Vapor and dust
indicative
NDSCh value 15 mg/m3 (MAC (PL)), Inhalable fraction and vapor
TWA value 5 mg/m3 (MAC (PL)), Inhalable fraction and vapor

Components with PNEC

105-60-2: ε-caprolactam
marine water: 0,2 mg/l
intermittent release: 1 mg/l
sediment (freshwater): 18,7 mg/kg
sediment (marine water): 1,87 mg/kg
soil: 2,55 mg/kg
STP: 1737 mg/l
freshwater: 2 mg/l

Components with DNEL

105-60-2: ε-caprolactam
worker: Short-term exposure - local effects, Inhalation: 5 mg/m3

8.2. Exposure controls

Personal protective equipment

Respiratory protection:
Respiratory protection in case of vapour/aerosol release. Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A)

Hand protection:
Chemical resistant protective gloves (EN ISO 374-1)
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1):
butyl rubber (butyl) - 0.7 mm coating thickness
nitrile rubber (NBR) - 0.4 mm coating thickness
Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:
Tightly fitting safety goggles (splash goggles) (e.g. EN 166)

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Take off immediately all contaminated clothing. At the end of the shift the skin should be cleaned and skin-care agents applied.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

State of matter:	liquid	
Form:	solution	
Colour:	slightly yellow	
Odour:	faint specific odour	
Odour threshold:		
	No data available.	
solidification temperature:	14,5 °C	(other)
	(80 %(m))	
	41,4 °C	
	(90 %(m))	
Information on: Water		
Boiling point:	*100 °C*	

Sublimation point:		
	No applicable information available.	
Flammability:	not highly flammable	
Lower explosion limit:		
	not applicable	
Upper explosion limit:		
	not applicable	
Flash point:		
	not applicable	
Auto-ignition temperature:		
	not applicable	
Thermal decomposition:	No decomposition if correctly stored and handled.	
pH value:	8	(pH Meter)
Viscosity, kinematic:		
	No data available.	
Viscosity, dynamic:		
	No data available.	
Solubility in water:	miscible	
Information on: ε-caprolactam		
Partitioning coefficient n-octanol/water (log Kow):	*0,12*	*(OECD Guideline 107)*
	(25 °C)	

Information on: caprolactam
Vapour pressure: *0,0013 hPa*
(20 °C)
Literature data.
0,089 hPa
(60 °C)
Literature data.

Relative density:
No data available.
Density: 1 g/cm3 (OECD Guideline 109)
(20 °C)
Relative vapour density (air):
No data available.

No data available.

Particle characteristics

Particle size distribution: The substance / product is marketed or used in a non solid or granular form. -

9.2. Other information

Information with regard to physical hazard classes

Explosives

Explosion hazard: Based on the chemical structure there is no indication of explosive properties.

Oxidizing properties

Fire promoting properties: Based on its structural properties the product is not classified as oxidizing.

Pyrophoric properties

Self-ignition temperature: Test type: Spontaneous self-ignition at room-temperature.

Based on its structural properties the product is not classified as self-igniting.

Self-heating substances and mixtures

Self heating ability: It is not a substance capable of spontaneous heating.

Corrosion to metals

No corrosive effect on metal.

Other safety characteristics

pKA:	
	The substance does not dissociate.
Surface tension:	
	Based on chemical structure, surface activity is not to be expected.
Molar mass:	113,16 g/mol
Evaporation rate:	
	Value can be approximated from Henry's Law Constant or vapor pressure.

SECTION 10: Stability and Reactivity

10.1. Reactivity

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

Corrosion to metals: No corrosive effect on metal.

10.2. Chemical stability

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

10.3. Possibility of hazardous reactions

Reacts with oxidizing agents. Polymerization coupled with heat formation.

10.4. Conditions to avoid

Temperature: > 100 °C
Avoid all sources of ignition: heat, sparks, open flame. Avoid formation of polymers in valves and pipes.

10.5. Incompatible materials

Substances to avoid:
oxidizing agents

10.6. Hazardous decomposition products

Thermal decomposition products:
No hazardous decomposition products if stored and handled as prescribed/indicated., Incomplete combustion results in formation of toxic gases, containing mainly carbon monoxide and carbon dioxide.

SECTION 11: Toxicological Information

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

Acute toxicity

Information on: ε-caprolactam
Assessment of acute toxicity:
Of moderate toxicity after short-term inhalation. Of moderate toxicity after single ingestion. Virtually nontoxic after a single skin contact.

Information on: ε-caprolactam

Experimental/calculated data:
LD50 rat (oral): 1.475 mg/kg (Directive 84/449/EEC, B.1)

Information on: ε-caprolactam
Experimental/calculated data:
LC50 rat (by inhalation): approx. 8,16 mg/l 4 h (BASF-Test)
An aerosol with respirable particles was tested.

Information on: ε-caprolactam
Experimental/calculated data:
LD50 rat (dermal): > 2.000 mg/kg (Directive 92/69/EEC, B.3)

Irritation

Information on: ε-caprolactam
Assessment of irritating effects:
Eye contact causes irritation. Skin contact causes irritation.

Respiratory/Skin sensitization

Information on: ε-caprolactam
Assessment of sensitization:
Skin sensitizing effects were not observed in animal studies.

Information on: ε-caprolactam
Experimental/calculated data:
modified Buehler test guinea pig: Non-sensitizing. (OECD Guideline 406)

Germ cell mutagenicity

Information on: ε-caprolactam
Assessment of mutagenicity:
Most of the results from the available studies show no evidence of a mutagenic effect.

Carcinogenicity

Information on: ε-caprolactam
Assessment of carcinogenicity:
In long-term animal studies in which the substance was given in high concentrations by feed, a carcinogenic effect was not observed.

Reproductive toxicity

Information on: ε-caprolactam
Assessment of reproduction toxicity:
The results of animal studies gave no indication of a fertility impairing effect.

Developmental toxicity

Information on: ε-caprolactam
Assessment of teratogenicity:
The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

Experiences in humans

Information on: caprolactam
Experimental/calculated data:
local skin irritation, irritation of the mucous membranes:
The symptoms/diagnosis/findings mentioned can occur in higher concentrations.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Causes temporary irritation of the respiratory tract.

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

Information on: ε-caprolactam
Assessment of repeated dose toxicity:
After repeated exposure the prominent effect is local irritation. The substance may cause damage to the upper respiratory tract after repeated inhalation, as shown in animal studies.

Aspiration hazard

No aspiration hazard expected.

Interactive effects

No data available.

11.2. Information on other hazards

Endocrine disrupting properties

The substance is not identified to have endocrine disrupting properties according to Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 nor is included in the Candidate List of substances of very high concern according to EU REACh Article 59 for having endocrine disrupting properties.

Other information

Other relevant toxicity information

Information on: caprolactam
Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

SECTION 12: Ecological Information

12.1. Toxicity

Information on:ε-caprolactam
Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Information on:ε-caprolactam
Toxicity to fish:
LC0 (96 h) 100 mg/l, Oryzias latipes (OECD Guideline 203, semistatic)

LC50 (96 h) 500 - 1.000 mg/l, Salmo gairdneri, syn. O. mykiss (OECD 203; ISO 7346; 84/449/EEC, C.1, static)

LC50 (96 h) 707,1 mg/l, Salmo gairdneri, syn. O. mykiss (OECD 203; ISO 7346; 84/449/EEC, C.1, static)

Information on:ε-caprolactam
Aquatic invertebrates:
EC50 (48 h) > 1.000 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

EC50 (48 h) > 500 mg/l, Daphnia magna (DIN 38412 Part 11, static)

EC50 (48 h) > 500 mg/l, Daphnia magna (DIN 38412 Part 11, static)

Information on:ε-caprolactam
Aquatic plants:
No observed effect concentration (72 h) 1.000 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)

EC50 (72 h) > 1.000 mg/l (growth rate), Selenastrum capricornutum (OECD Guideline 201, static)

EC50 (72 h) 427,5 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9, static)

EC50 (72 h) > 1.000 mg/l (biomass), Selenastrum capricornutum (OECD Guideline 201, static)

Information on:ε-caprolactam
Microorganisms/Effect on activated sludge:
EC50 (17 h) 4.240 mg/l, Pseudomonas putida (other, aquatic)

Information on:ε-caprolactam
Chronic toxicity to fish:
Study scientifically not justified.

Information on:ε-caprolactam
Chronic toxicity to aquatic invertebrates:
No observed effect concentration (21 d) 100 mg/l, Daphnia magna (OECD Guideline 211, semistatic)

Information on:ε-caprolactam
Assessment of terrestrial toxicity:
No data available.
Study scientifically not justified.

12.2. Persistence and degradability

Information on:ε-caprolactam
Assessment biodegradation and elimination (H2O):
Readily biodegradable (according to OECD criteria).

Information on:ε-caprolactam
Elimination information:
82 % BOD of the ThOD (14 d) (OECD 301C; ISO 9408; 92/69/EEC, C.4-F) (aerobic, activated sludge) Readily biodegradable (according to OECD criteria).

Information on:ε-caprolactam
Assessment of stability in water:
In contact with water the substance will hydrolyse slowly.

12.3. Bioaccumulative potential

Information on:ε-caprolactam
Bioaccumulation potential:
Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

12.4. Mobility in soil

Information on:ε-caprolactam
Assessment transport between environmental compartments:
Volatility: The substance will not evaporate into the atmosphere from the water surface.
Adsorption in soil: Adsorption to solid soil phase is not expected.

12.5. Results of PBT and vPvB assessment

The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative).

12.6. Endocrine disrupting properties

The substance is not identified to have endocrine disrupting properties according to Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 nor is included in the Candidate List of substances of very high concern according to EU REACh Article 59 for having endocrine disrupting properties.

12.7. Other adverse effects

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

12.8. Additional information

Sum parameter
Information on:caprolactam
Chemical oxygen demand (COD): 1.960 mg/g

Information on:caprolactam
Biochemical oxygen demand (BOD): 1.110 mg/g

Other ecotoxicological advice:
Do not release untreated into natural waters.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Incinerate in suitable incineration plant, observing local authority regulations.

Regulation of the minister of climate from January, 2nd, 2020 on classification of wastes (Law gazette no. 2020, item 10)(Poland)
Regulation regarding wastes from December, 14th, 2012 (consolidated text law gazette no. 2020 pos. 797 with amendments) and law from August, 13th, 2013 regarding packaging and packaging wastes (consolidated text law gazette no. 2020 pos. 1114 with amendments) (Poland)

Contaminated packaging:
Uncleaned empties should be disposed of in the same manner as the contents.

SECTION 14: Transport Information

Land transport

ADR

	Not classified as a dangerous good under transport regulations
UN number or ID 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
UN number or ID 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 or ID 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 classified as a dangerous good under transport regulations
UN number or ID number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable

Sea transport

IMDG

	Not classified as a dangerous good under transport regulations
UN number or ID 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 or ID 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

14.1. UN number or ID number
See corresponding entries for “UN number or ID 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. Maritime transport in bulk according to IMO instruments

Regulation:	IBC-Code
Product name:	epsilon-Caprolactam (molten or aqueous solutions)
Pollution category:	Z
Ship Type:	3

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, 75

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

Regulation of February, 25th, 2011 regarding chemical substances and mixtures (law gazette 2020, pos. 2289), and amendments.
Any handling of the substance must correspond to the requirements of the regulation of the Minister for work and social politics from 26. September 1997 on general occupational safety and safety at work regulations (consolidated tex law gazette no. 169, pos. 1650, of 2003)and amendments. (Poland)
Ordinance of the secretary for labour and welfare from Juni 12, 2018 about the maximal allowed limits of concentration and luminosity of hazardous factors at the working place (law gazette no.2018 pos.1286 and amendments)
Law from June, 19th, 1997 regarding prohibition of use of products, that contain asbestos (consolidated text law gazette no. 2020, pos. 1680)(Poland)
Montreal protocol from September, 16th, 1987 on substances that deplete the ozone layer (law gazette no. 98, pos. 490, from 1992 with amendments) and law from Mai, 15th, 2015 regarding substances that deplete the ozone layer and some fluorinated greenhouse gases (consolidated text law gazette no. 2019 pos.2158)(Poland).

15.2. Chemical Safety Assessment

Chemical Safety Assessment performed

SECTION 16: Other Information

Acute Tox.	Acute toxicity
Skin Corr./Irrit.	Skin corrosion/irritation
Eye Dam./Irrit.	Serious eye damage/eye irritation
STOT SE	Specific target organ toxicity — single exposure
H319	Causes serious eye irritation.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H302	Harmful if swallowed.
H335	May cause respiratory irritation.

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.

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.