

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

1.1. Product identifier

printodent GR-13.4 model stone

UFI D2GW-Y47P-YT37-UH5E

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

Relevant identified uses: 3D printing
Uses advised against: Private households (= general public). Observe instructions for use.

1.3. Details of the supplier of the safety data sheet

Manufacturer

pro3dure medical GmbH

Am Burgberg 13
D 58642 Iserlohn

Telephone +49 (0)2374 920050-10
Telefax:

Supplier

pro3dure medical GmbH

Am Burgberg 13
D 58642 Iserlohn

Telephone +49 (0)2374 920050-10
Telefax:

Information contact

pro3dure medical GmbH

Information telephone +49 (0)2374 920050-10
Information telefax
E-mail (competent person) info@pro3dure.com
Website www.pro3dure.com

1.4. Emergency telephone number

pro3dure medical GmbH
This number is serviced during office hours.

Telephone +49 (0)2374 920050-10

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008:
Skin Sens. 1A, H317; Repr. 2, H361; STOT RE 1, H372; Aquatic Chronic 2, H411

2.2. Label elements

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

Hazard pictograms



GHS07, GHS08, GHS09
Danger

Signal word:

Hazard statements:

- H317 May cause an allergic skin reaction.
H361d Suspected of damaging the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements:

- P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P233 Keep container tightly closed.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+312.2 IF SWALLOWED: Call a doctor if you feel unwell.
P301+330+331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P302+352.1 IF ON SKIN: Wash with plenty of soap and water.
P304+312.2 IF INHALED: Call a doctor if you feel unwell.
P304+340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+313 IF exposed or concerned: Get medical advice/attention.
P314 Get medical advice/attention if you feel unwell.
P333+313 If skin irritation or rash occurs: Get medical advice/attention.
P362+364 Take off contaminated clothing and wash it before reuse.
P363 Wash contaminated clothing before reuse.
P391 Collect spillage.
P405 Store locked up.
P410+403 Protect from sunlight. Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with local and national regulations.

Special labelling of particular preparations:

H372 Causes damage to organs (Lung) through prolonged or repeated exposure (Inhalation, Dust). EUH
204 Contains isocyanates. May produce an allergic reaction. Hazard components for labelling : 2-
phenoxyethyl methacrylate

2.3. Other hazards

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.
No endocrine-disrupting properties known (see section 12)
CA Proposition 65 : Substance(s) not listed.

Depending on handling and use (e.g. grinding), the formation of airborne respirable crystalline silica may be possible.

SECTION 3: Composition / information on ingredients

3.1. Substances

not applicable

3.2. Mixtures

Mixture with, among others, the following ingredients and other non-hazardous admixtures

Composition/information on ingredients

Substance:	CAS-No.:	REACH-no.:	Concentration:	Classification: EC 1272/2008 (CLP):	M, ATE, Note
Silanedione	14464-46-1		30-50	STOT RE 1, H372	
2-phenoxyethyl methacrylate	10595-06-9	01-2120752383-55-XXXX	20-40	Skin Sens. 1A, H317; Repr. 2, H361d; Aquatic Chronic 2, H411	M = 0 ATE (dermal) = >2000 mg/kg ATE (oral) = >5000 mg/kg ATE (inhalativ) = -
Silamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, hydrolysis products with silica	68909-20-6	01-2119379499-16-0000	<3	STOT RE 2, H373	M = 1 ATE (dermal) = >5000 mg/kg ATE (oral) = >5000 mg/kg ATE (inhalativ) = >5,01 mg/l
Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate	84434-11-7	01-2119987994-10-XXXX	<3	Skin Sens. 1, H317; Aquatic Chronic 2, H411	M = 0 ATE (dermal) = >2000 mg/kg ATE (oral) = >5000 mg/kg ATE (inhalativ) = >2700 mg/L
1,1,1-Tris(hydroxymethyl)propane ethoxylate (1 EO/OH) triacrylate	28961-43-5	01-2119489900-30-XXXX	<0,5	Eye Irrit. 2, H319; Skin Sens. 1B, H317; Aquatic Chronic 3, H412	M = 1 ATE (dermal) = >13200 mg/kg bw ATE (oral) = >2000 mg/kg bw ATE (inhalativ) = -

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

SECTION 4: First aid measures

4.1. Description of first aid measures

General information: In case of accident or unwellness, seek medical advice immediately Remove contaminated, saturated clothing immediately. Medical attention is required if symptoms clearly result from contact with the product on skin, eyes, or from inhalation of vapors. Depending on handling and use (e.g. grinding), the formation of airborne respirable crystalline silica may be possible.

In case of inhalation: Provide fresh air. Seek medical attention if problems persist.

Following skin contact: After contact with skin, wash immediately with plenty of water and soap. In case of skin irritation, consult a physician.

After eye contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention if problems persist.

After ingestion: Rinse mouth immediately and drink plenty of water. No administration in cases of unconsciousness or cramps. Do NOT induce vomiting. Call a physician immediately.

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

Possible harmful effect(s) on human beings and possible symptom(s): May cause an allergic skin reaction.

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

First Aid, decontamination, treatment of symptoms. May cause sensitisation especially in sensitive humans. May cause sensitisation especially in sensitive humans. Provide fresh air.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Foam. ABC-powder. BC-powder. Carbon dioxide (CO₂). Nitrogen.

Unsuitable extinguishing media Water spray jet. Full water jet. Excess water. Strong water jet.

5.2. Special hazards arising from the substance or mixture

In case of fire may be liberated: Carbon dioxide (CO₂). Carbon monoxide. Nitrogen oxides (NO_x).

5.3. Advice for firefighters

General information

Move undamaged containers from immediate hazard area if it can be done safely. Use water spray jet to protect personnel and to cool endangered containers. Do not allow water used to extinguish fire to enter drains or waterways. Co-ordinate fire-fighting measures to the fire surroundings.

Special protective equipment for fire-fighters:

In case of fire: Wear self-contained breathing apparatus. Wear chemical resistant suit.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Provide adequate ventilation. Remove all sources of ignition. Remove persons to safety. Wear personal protection equipment. Special danger of slipping by leaking/spilling product. See protective measures under point 7 and 8.

6.2. Environmental precautions

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

6.3. Methods and material for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Use only antistatically equipped (spark-free) tools. Treat the recovered material as prescribed in the section on waste disposal.

6.4. Reference to other sections

Safe handling: see section 7 Personal protection equipment: see section 8 Disposal: see section 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advices on safe handling

Keep container tightly closed. When using do not eat, drink, smoke, sniff. Use only in well-ventilated areas. All work processes must always be designed so that the following is as low as possible: Inhalation Avoid contact with skin, eyes and clothes. Dust must be exhausted directly at the point of origin.

Precautions against fire and explosion:

Always close containers tightly after the removal of product. Use only in well-ventilated areas.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed and in a well-ventilated place. Protect against: UV-radiation/sunlight . Only use the material in places where open light, fire and other flammable sources can be kept away.

Hints on joint storage

Do not store together with: Oxidizing agent . Organic peroxides . Keep away from food, drink and animal feedingstuffs.

7.3. Specific end use(s)

Observe instructions for use.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

occupational exposure limit value

Substance:	CAS-No.:		Source:	Occupational exposure limit value:[ppm]	Occupational exposure limit value:[mg/m³]	Limitation of exposure peaks:	Remark:
Silanedione	14464-46-1	EN	2004/37/EC		0,1		Respirable dust

Substance with a common (EC) occupational exposure limit value.

Substance:	CAS-No.:		Source:	Occupational exposure limit value:[ppm]	Occupational exposure limit value:[mg/m³]	Limitation of exposure peaks:	Remark:

DNEL-/PNEC-values

DNEL value

Substance:	CAS-No.:	DNEL/DMEL
2-phenoxyethyl methacrylate	10595-06-9	worker inhalative long-term, systemic 12 mg/m³ worker inhalative long-term, local 84 mg/m³ worker dermal long-term, systemic 3,5 mg/kg bw/day
Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate	84434-11-7	worker inhalative long-term, systemic 4,93 mg/m³ worker dermal long-term, systemic 1,4 mg/kg bw/day population inhalative long-term, systemic 0,87 mg/m³ population dermal long-term, systemic 0,5 mg/kg bw/day population oral long-term, systemic 0,5 mg/kg bw/day
1,1,1-Tris(hydroxymethyl)propane ethoxylate (1 EO/OH) triacrylate	28961-43-5	worker inhalative 37 mg/m³ worker dermal 10,5 mg/kg bw/day

PNEC Value

Substance:	CAS-No.:	PNEC
2-phenoxyethyl methacrylate	10595-06-9	aquatic, freshwater 142 µg/l aquatic, marine water 1,42 µg/l sewage treatment plant 177 mg/l sediment, freshwater 655 µg/kg dw aquatic, marine water 67 µg/l soil 125 µg/kg dw
Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate	84434-11-7	aquatic, freshwater 1,01 µg/l aquatic, marine water 0,101 µg/l sediment, freshwater 240 µg/kg dw sediment, marine water 24 µg/kg dw soil 47,5 µg/kg dw intermittent release, freshwater 10,1 µg/l intermittent release, marine water 1,01 µg/l
1,1,1-Tris(hydroxymethyl)propane ethoxylate (1 EO/OH) triacrylate	28961-43-5	sediment, freshwater 0,008 mg/kg dw soil 0,006 mg/kg dw sediment, marine water 0,001 mg/kg dw sewage treatment plant 10 mg/l secondary poisoning 5600 µg/kg food

Additional information

Depending on handling and use (e.g. grinding), the formation of airborne respirable crystalline silica may be possible.

8.2. Exposure controls

Occupational exposure controls:

Provide adequate ventilation as well as local exhaust at critical locations. Technical measures and the application of suitable work processes have priority over personal protection equipment. Dust must be exhausted directly at the point of origin.

General protection and hygiene measures:

When using do not eat, drink, smoke, sniff. Wash hands before breaks and after work. Apply skin care products after work. Wash contaminated clothing prior to re-use. Wear suitable protective clothing, gloves and eye/face protection. Do not breathe dust.

Personal protection equipment

Only wear fitting, comfortable and clean protective clothing. Further remarks: Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. Wear breathing apparatus if exposed to vapours/dusts/aerosols. Suitable respiratory protection apparatus: Particle filter device (DIN EN 143), Combination filter device (DIN EN 141).

Hand protection

Tested protective gloves are to be worn: DIN-/EN-Norms: EN ISO 374 Suitable material: Butyl caoutchouc (butyl rubber), NBR (Nitrile rubber). Thickness of the glove material, Breakthrough times and swelling properties of the material must be taken into consideration.

Eye/face protection

Wear eye/face protection.

Body protection:

Personal protection equipment. lab coat. Only wear fitting, comfortable and clean protective clothing. Barrier creams are not substitutes for body protection.

Environmental exposure controls

refer to chapter 7. No further action is necessary.

Consumer exposure controls

refer to chapter 7. No further action is necessary.

Exposure Scenario:

Skin contact Inhalation

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state:	Liquid
Colour:	According to the product specification
Odour:	characteristic
Odour threshold:	not determined

Safety relevant basis data

	parameter	Value	unit	Remark
Melting point/freezing point:				not determined
Initial boiling point and boiling range:		≥ 149	°C	Lowest value (based on the components)
Flammability:				not determined
lower flammability or explosive limits:				not determined
Upper flammability or explosive limits:				not determined
Flash point:		> 100	°C	Lowest value (based on the components)
Ignition temperature:				not determined
Decomposition temperature:				not determined
pH:		5~8		(based on the components)
Kinematic viscosity:		3336	mPa*s	@23°C
Water solubility (g/L):				
Partition coefficient: n-octanol/water:		3.137		(based on the components)
Vapour pressure:				not determined
Density:		1,1	g/cm ³	
Relative density:				not determined

Particle properties:

not applicable

9.2. Other information

none

SECTION 10: Stability and reactivity

10.1. Reactivity

Can polymerise exothermically if heated, exposed to air, sunlight or by addition of free radical initiators.

10.2. Chemical stability

The substance is chemically stable under recommended conditions of storage, use and temperature.

10.3. Possibility of hazardous reactions

Polymerization.

10.4. Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. UV-radiation/sunlight. Do not expose to temperatures exceeding 60 °C/140 °F.

10.5. Incompatible materials

Polymerization with heat evolution may occur in the presence of radical forming substances (e.g. peroxides), reducing substances, and/or heavy metal ions. Can polymerise exothermically if heated, exposed to air, sunlight or by addition of free radical initiators.

10.6. Hazardous decomposition products

In case of fire may be liberated: Carbon dioxide (CO₂). Carbon monoxide. Nitrogen oxides (Nox).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

There are no data available on the preparation/mixture itself. Information comes from reference works, the literature or safety data sheets of the components. Data apply to the component with the highest toxicological risk.

M-factor: -

Acute toxicity (oral): > mg/kg mg/kg

Acute toxicity (dermal): > 2000 mg/kg

Acute toxicity (inhalative): -

Acute toxicity

Substance:	CAS-No.:	Toxicological information
Silamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, hydrolysis products with silica	68909-20-6	ATE Inhalation (dust/mist) > 5,01 mg/l NOAEL (rat) ≥ 1000 mg/kg bw/Tag
1,1,1-Tris(hydroxymethyl)propane ethoxylate (1 EO/OH) triacrylate	28961-43-5	NOAEL (rat) 375 mg/kg bw/Tag NOAEL Repr.-Tox. (Rat) 750 mg/kg bw/Tag NOAEL STOT-RE oral (rat, 28 days) 100 mg/kg/d
Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate	84434-11-7	LD50 oral (rat) > 5000 mg/kg LD50 dermal (rat) > 2000 mg/kg NOAEL (rat) 100 mg/kg bw/Tag LC50 inhalation (Rat) ≥ 2700 mg/l/7 h NOAEL Repr.-Tox. (Rat) 300 mg/kg bw/Tag
2-phenoxyethyl methacrylate	10595-06-9	LD50 oral (rat) > 5000 mg/kg LD50 dermal (rat) > 2000 mg/kg NOAEL (rat) 300 mg/kg bw/Tag NOAEL STOT-RE (rat) 350 mg/kg/d NOAEL Repr.-Tox. (Rat) 300 mg/kg bw/Tag

Skin corrosion/irritation:

Frequently or prolonged contact with skin may cause dermal irritation. May cause an allergic skin reaction. May cause an allergic skin reaction.

Serious eye damage/irritation:

In case of eye contact Irritating to eyes. Irritating to eyes.

Respiratory or skin sensitisation:

May cause sensitization by skin contact. May cause sensitisation especially in sensitive humans. (based on the components)

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)

Carcinogenicity:

There are no data available on the preparation/mixture itself. Based on available data, the classification criteria are not met. (based on the components)

Germ cell mutagenicity:

There are no data available on the preparation/mixture itself. Based on available data, the classification criteria are not met. (based on the components)

Reproductive toxicity:

There are no data available on the preparation/mixture itself. Based on data of the components : CAS No. 10595-06-9 NOAEL: 200-300 mg/kg bw/day

STOT-single exposure:

There are no data available on the preparation/mixture itself. Based on available data, the classification criteria are not met. (based on the components)

STOT-repeated exposure:

There are no data available on the preparation/mixture itself. Based on data of the components : CAS No. 14464-46-1: Inhalation, lung. Causes damage to organs through prolonged or repeated exposure. In the case of the formation of dust.

Aspiration hazard:

No data available

SECTION 12: Ecological information

12.1. Toxicity

There are no data available on the mixture itself.

Ecotoxicity

Substance:	CAS-No.:	Ecotoxicity
Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, hydrolysis products with silica	68909-20-6	LC50 (Brachydanio rerio (zebrafish)) > 10000 mg/l LC50 (Daphnia, 24h) > 1000 mg/L EC50 Algae (Desmodesmus subspicatus) 72 h > 173 mg/l EC50 (microorganisms, 3h) > 2,5 g/L
1,1,1-Tris(hydroxymethyl)propane ethoxylate (1 EO/OH) triacrylate	28961-43-5	EC50 (Daphnia, 48 h) 2,2 mg/L
Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate	84434-11-7	LC50 (fish, 96 h) 1,89 mg/L EC50 (aquatic invertebrates, 48h) 2,26 mg/l EC50 (algae, 72 h) 1,01 mg/L EC50 (microorganisms, 3h) > 1 g/L NOEC (fish, 96h) 1,29 mg/L
2-phenoxyethyl methacrylate	10595-06-9	LC50 (Daphnia, 48h) 1,21 mg/L EC50 Algae (Desmodesmus subspicatus) 72 h 4,44 mg/l LC50 (fish, 96 h) 10 mg/L EC50 (microorganisms, 3h) 177 mg/L

12.2. Persistence and degradability

There are no data available on the mixture itself. Based on data of the components : CAS No. 10595-06-9 Degradation rate (%): 22,3 OECD 301D OECD 301D

12.3. Bioaccumulative potential

There are no data available on the mixture itself. Based on data of the components : CAS-No.: 10595-06-9
: Log KOW: 3.137

12.4. Mobility in soil

There are no data available on the mixture itself. Based on data of the components : CAS-No.: 10595-06-9:
log Koc: 432 @20 °C

12.5. Results of PBT and vPvB assessment

There are no data available on the mixture itself. The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII. (based on the components)

12.6 Endocrine disruptive effect

The substance/mixture contains no components $\geq 0.1\%$ classified as endocrine disruptors under REACH Art. 57(f), or Reg. (EU) 2017/2100 or 2018/605.

12.7. Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Appropriate disposal/Product:

Dispose of waste according to applicable legislation. Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.

Appropriate disposal / Package

Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.

List of proposed waste codes / waste designations according to EWC / AVV

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

SECTION 14: Transport information

14.1. UN number

UN No.: 3082

14.2. UN proper shipping name

Land transport (ADR/RID)

UMW ELTGEFÄHRDENDER STOFF, FLÜSSIG, N.A.G.
Methacrylsäure-2-phenoxyethylester

Sea transport (IMDG), Air transport (ICAO-TI / IATA-DGR)

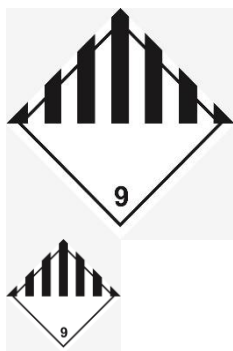
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
2-phenoxyethyl methacrylate

14.3. Transport hazard class(es)

Hazard label(s) / Label: 9

Classification code: / Classification
Code:

M6



14.4. Packing group

Packing group/ Packing Group: III

14.5. Environmental hazards

ADR/RID / IMDG / ICAO-TI / IATA-DGR:
Marine pollutant:

Yes	No
<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

14.6. Special precautions for user

Land transport (ADR/RID)

transport category:	3	tunnel restriction code:	-
Special provisions:	274, 335, 375, 601, 650	Limited quantity (LQ):	5 L

Sea transport (IMDG)

EmS-No: F-A, S-F

Special provisions:	274, 335, 375, 969	Limited quantity (LQ):	5 L
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14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Remark No transport as bulk according to IBC Code.

SECTION 15: Regulatory information

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

EU legislation

Information on Regulation (EC) No 166/2006 establishing a European Pollutant Release and Transfer Register:

Substance / mixture / product / ingredients not listed

Regulation (EC) No. 1005/2009 on substances that lead to the depletion of the ozone layer:

not applicable , Substance / mixture / product / ingredients not listed

Regulation (EC) No. 648/2004 (Detergents regulation)

Substance / mixture / product / ingredients not listed

Regulation (EC) No 850/2004 [POP-Regulation]:

REGULATION (EU) 2019/102: Substance / mixture / product / ingredients not listed

Regulation (EU) No 649/2012 on the export and import of dangerous chemicals:

Substance / mixture / product / ingredients not listed

Use restriction according to REACH annex XVII, no.::

Use restriction according to REACH annex XVII, no.: 3, 75, 78 not applicable

National regulations

Observe in addition any national regulations!

Restrictions of occupation

Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Other regulations, restrictions and prohibition regulations

Use restriction according to REACH annex XVII, no.: 75, 78 not relevant ; CA Proposition 65 :
Substance(s) not listed. ; RoHS Directive 2011/65/EU : not relevant

15.2. Chemical Safety Assessment

For this preparation a chemical safety assessment has been carried out. -

For this substance a chemical safety assessment has not been carried out.

SECTION 16: Other information

Relevant H- and EUH-phrases (Number and full text):

Hazard statements

H317	May cause an allergic skin reaction.
H361d	Suspected of damaging the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

Training advice

Observe instructions for use.

Recommended restrictions of use:

Reserved for industrial and professional use. According to directive 94/33/EC, juveniles are only allowed to handle this product as long as all effects of dangerous substances are prevented. Do not use for private purposes (household). refer to chapter 1.

Further remarks:

The information provided in this Safety Data Sheet is based on our current knowledge at the time of publication. It is intended to offer guidance for the safe handling of the product mentioned herein during storage, processing, transport, and disposal. These details are not transferable to other products. If the product is blended, mixed, or processed with other materials, or subjected to any treatment, the information in this Safety Data Sheet may not apply to the resulting new material, unless explicitly stated otherwise.

Documentation of changes:

-

Key literature references and sources for data

Data arise from reference works and literature.

Abbreviations and acronyms

AC: Article category
ACGIH: American Conference of Governmental Industrial Hygienists
ADN: European agreement concerning the international carriage of dangerous goods by inland waterways (Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures)
ADR: European agreement concerning the international carriage of dangerous goods by road (Accord européen relatif au transport international des marchandises dangereuses par route)
AGW: Occupational exposure limit
AOX: Adsorbable organically bound halogens
Bw/KG: Body weight
CAS: Chemical Abstracts Service
CMR: Substances classified as carcinogenic, mutagenic or toxic for reproduction
CSR: Chemical safety report
DIN: German Institute for Standardization (Deutsches Institut für Normung)
DNEL: Derived no-effect level
DPD: Dangerous Preparations Directive (Richtlinie 1999/45/EC)
DSD: Dangerous Substances Directive (Richtlinie 67/548/EWG)
DU: Downstream user
EC50: Effective concentration 50%
ECHA: European Chemicals Agency
EN: European standard
EWC/EWL: European Waste Catalogue
GHS: Globally harmonized system of classification and labelling of chemicals
IATA: International Air Transport Association
IBC: Intermediate bulk container
ICAO: International Civil Aviation Organization
IMDG Code: International Maritime Dangerous Goods Code
IMO: International Maritime Organization
ISO: International Organization for Standardization
LC50: Lethal concentration 50%
LD50: Lethal dose 50%
LEV: Local exhaust ventilation
LOAEL: Lowest observed adverse effect level
LOEL: Lowest observed effect level
MAK: Maximum workplace concentration (Maximale Arbeitsplatzkonzentration – DFG)
n.a.: Not applicable
n.b.: Not determined
NOAEC: No observed adverse effect concentration
NOAEL: No observed adverse effect level
NOEC: No observed effect concentration
OEL: Occupational exposure limit
PBT: Persistent, bioaccumulative and toxic
PNEC: Predicted no-effect concentration
POP: Persistent organic pollutant
PPE/PSA: Personal protective equipment
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
RID: Regulations concerning the international carriage of dangerous goods by rail (Règlement international concernant le transport des marchandises dangereuses par chemin de fer)
STEL: Short-term exposure limit
SVHC: Substance of very high concern
TLV: Threshold limit value
UN: United Nations
VOC: Volatile organic compounds
vPvB: Very persistent and very bioaccumulative
dw: Dry weight