

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

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

· **1.1 Product identifier**

· **Trade name** **BRAWO-I - Komponente B**

· **1.2 Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available.

· **Application of the substance / the mixture**
Epoxy sealing
Hardening agent/ Curing agent

· **1.3 Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:** BRAWO SYSTEMS GmbH
Blechhammerweg 13-17
67659 Kaiserslautern
Deutschland/Germany

Tel: +49(0)631-205 61 100

· **Informing department:** Technische Abteilung
msds@brawoliner.de

· **1.4 Emergency telephone number:** +49 (0) 61 31 - 19 240 (Giftnotruf Mainz)

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**

· **Classification according to Regulation (EC) No 1272/2008**

Acute Tox. 4	H302	Harmful if swallowed.
Acute Tox. 4	H312	Harmful in contact with skin.
Skin Corr. 1A	H314	Causes severe skin burns and eye damage.
Eye Dam. 1	H318	Causes serious eye damage.
Skin Sens. 1	H317	May cause an allergic skin reaction.
Repr. 2	H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
STOT RE 2	H373	May cause damage to organs through prolonged or repeated exposure.
Aquatic Chronic 3	H412	Harmful to aquatic life with long lasting effects.

· **2.2 Label elements**

· **Labelling according to Regulation (EC) No 1272/2008** The product is classified and labelled according to the GB CLP regulation.

· **Hazard pictograms**



GHS05 GHS07 GHS08

· **Signal word** Danger

(Contd. on page 2)

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name BRAWO-I - Komponente B

(Contd. of page 1)

- **Hazard-determining components of labelling:** *Isophorone diamine
2-piperazin-1-ylethylamine
polymer amine terminated
Polyoxypropylene triamine*
- **Hazard statements**
 - H302 Harmful if swallowed.*
 - H312 Harmful in contact with skin.*
 - H314 Causes severe skin burns and eye damage.*
 - H317 May cause an allergic skin reaction.*
 - H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.*
 - H373 May cause damage to organs through prolonged or repeated exposure.*
 - H412 Harmful to aquatic life with long lasting effects.*
- **Precautionary statements**
 - P101 If medical advice is needed, have product container or label at hand.*
 - P102 Keep out of reach of children.*
 - P103 Read carefully and follow all instructions.*
 - P260 Do not breathe dusts or mists.*
 - P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].*
 - P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
 - P310 Immediately call a POISON CENTER/doctor.*
 - P321 Specific treatment (see on this label).*
 - P362+P364 Take off contaminated clothing and wash it before reuse.*
 - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.*
- **2.3 Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** *Not applicable.*
- **vPvB:** *Not applicable.*

SECTION 3: Composition/information on ingredients

- **3.2 Mixtures**
- **Description:** *Mixture consisting of the following components.*

(Contd. on page 3)

GB

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name BRAWO-I - Komponente B

(Contd. of page 2)

· Dangerous components:

EC number: 949-140-2	polymer amine terminated Eye Dam. 1, H318; Skin Irrit. 2, H315; Skin Sens. 1B, H317	30-60%
CAS: 2855-13-2 EINECS: 220-666-8 Reg.nr.: 01-2119514687-32	Isophorone diamine Skin Corr. 1B, H314; Eye Dam. 1, H318; Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Sens. 1, H317; Aquatic Chronic 3, H412 Specific concentration limit: Skin Sens. 1A; H317: C ≥ 0.001 %	≥25-≤30%
CAS: 39423-51-3	Polyoxypropylene triamine Eye Dam. 1, H318; Aquatic Chronic 2, H411; Acute Tox. 4, H302; Acute Tox. 4, H312	≥10-<25%
CAS: 140-31-8 EINECS: 205-411-0	2-piperazin-1-ylethylamine Repr. 2, H361fd; STOT RE 1, H372; Skin Corr. 1B, H314; Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Sens. 1, H317; Aquatic Chronic 3, H412	≥5-<10%
CAS: 15520-10-2 EINECS: 239-556-6	2-methylpentane-1,5-diamine Skin Corr. 1A, H314; Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332; STOT SE 3, H335	≥5-<10%
CAS: 100-51-6	Benzyl alcohol Acute Tox. 4, H302; Acute Tox. 4, H332; Eye Irrit. 2, H319	<5%
CAS: 69-72-7 EINECS: 200-712-3	salicylic acid Repr. 2, H361d; Eye Dam. 1, H318; Acute Tox. 4, H302	≥1-<3%

· Additional information

For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

· 4.1 Description of first aid measures

· General information

Immediately remove any clothing contaminated with the product. Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

· After inhalation

Supply fresh air and call for doctor for safety reasons. In case of unconsciousness bring patient into stable side position for transport.

· After skin contact

Instantly wash with water and soap and rinse thoroughly.

· After eye contact

Call a doctor immediately.

· After swallowing

Instantly call for doctor.

Drink copious amounts of water and provide fresh air. Instantly call for doctor.

GB

(Contd. on page 4)

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name **BRAWO-I - Komponente B**

(Contd. of page 3)

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents** Use fire fighting measures that suit the environment.
- **5.2 Special hazards arising from the substance or mixture** No further relevant information available.
- **5.3 Advice for firefighters**
- **Protective equipment:** No special measures required.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures** Wear protective equipment. Keep unprotected persons away.
- **6.2 Environmental precautions:** Inform respective authorities in case product reaches water or sewage system.
- **6.3 Methods and material for containment and cleaning up:** Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralising agent.
Dispose of contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **6.4 Reference to other sections** See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling** Store in cool, dry place in tightly closed containers.
Open and handle container with care.
- **Information about protection against explosions and fires:** No special measures required.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and containers:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep container tightly sealed.
- **Storage class** 8A

GB

(Contd. on page 5)

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name BRAWO-I - Komponente B

(Contd. of page 4)

SECTION 8: Exposure controls/personal protection

- **8.1 Control parameters**
- **Components with critical values that require monitoring at the workplace:** *The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.*

· **DNELs**

CAS: 2855-13-2 Isophorone diamine

Oral	DNEL	0.526 mg/kg bw/Tag (ArL)
Inhalative	DNEL	20.1 mg/m ³ (ArL)

CAS: 39423-51-3 Polyoxypropylene triamine

Inhalative	DNEL	14 mg/m ³ (ArL)
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CAS: 140-31-8 2-piperazin-1-ylethylamine

Dermal	DNEL	3.33 mg/kg bw/day (ArL)
Inhalative	DNEL	10.6 mg/m ³ (ArL)

CAS: 15520-10-2 2-methylpentane-1,5-diamine

Dermal	DNEL	1.5 mg/kg bw/day (ArL)
Inhalative	DNEL	0.25 mg/m ³ (ArL)
		0.5 mg/m ³ (Ark)

CAS: 100-51-6 Benzyl alcohol

Oral	DNEL	4 mg/kg bw/Tag (ArL)
		20 mg/kg bw/Tag (Ark)
Dermal	DNEL	8 mg/kg bw/day (ArL)
		40 mg/kg bw/day (Ark)
Inhalative	DNEL	22 mg/m ³ (ArL)
		110 mg/m ³ (Ark)

· **PNECs**

CAS: 2855-13-2 Isophorone diamine

PNEC	0.006 mg/l (Mew)
	0.06 mg/l (Freshwater)
PNEC	0.578 mg/kg dwt (Sediment)
	5.784 mg/kg dwt (Fresh water sediment)

CAS: 39423-51-3 Polyoxypropylene triamine

PNEC	10 mg/l (Sewage Treatment Plant)
	0.00044 mg/l (Mew)
	0.0044 mg/l (Freshwater)
PNEC	0.002 mg/kg dwt (Bod)
	0.002 mg/kg dwt (Sediment)
	0.02 mg/kg dwt (Fresh water sediment)

(Contd. on page 6)

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name BRAWO-I - Komponente B

(Contd. of page 5)

CAS: 140-31-8 2-piperazin-1-ylethylamine

PNEC	250 mg/l (Kla)
	0.0058 mg/l (Mew)
	0.058 mg/l (Freshwater)
PNEC	1 mg/kg dwt (Bod)
	21.5 mg/kg dwt (Sediment)
	215 mg/kg dwt (Fresh water sediment)

CAS: 15520-10-2 2-methylpentane-1,5-diamine

PNEC	0.042 mg/l (Mew)
	0.42 mg/l (Freshwater)

CAS: 100-51-6 Benzyl alcohol

PNEC	0.527 mg/l (Marine water sediment)
	0.1 mg/l (Mew)
	1 mg/l (Fresh water sediment)
PNEC	0.456 mg/kg dwt (Bod)
	5.27 mg/kg dwt (Fresh water sediment)

· **Additional information:** The lists that were valid during the compilation were used as basis.

· **8.2 Exposure controls**

· **Appropriate engineering controls**

No further data; see section 7.

· **Individual protection measures, such as personal protective equipment**

· **General protective and hygienic measures**

Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Avoid contact with the eyes and skin.

· **Breathing equipment:**

If workplace limit values cannot be complied with by ventilation measures or if rooms cannot be technically ventilated, respiratory protection must be worn: Use combination filter A1-P2 (brown/white) in rooms that cannot be ventilated. If oxygen deficiency is expected, use self-contained breathing apparatus. Observe wearing time limits according to §9 (3) GefStoffV in conjunction with BGR 190.

· **Hand protection**

Protective gloves.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

After use of gloves apply skin-cleaning agents and skin cosmetics.
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact breakthrough time must be obtained from the protective glove manufacturer and must be observed.

(Contd. on page 7)

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name **BRAWO-I - Komponente B**

(Contd. of page 6)

- **Eye/face protection** Not required.
- **Body protection:** Protective work clothing.

SECTION 9: Physical and chemical properties

· 9.1 Information on basic physical and chemical properties

· General Information

- **Colour:** Yellowish
- **Smell:** Amine-like
- **Melting point/freezing point:** Not determined
- **Boiling point or initial boiling point and boiling range** 247 °C (CAS: 2855-13-2 3-aminomethyl-3,5,5-trimethylcyclohexylamine)
- **Flash point:** ≥61 °C
- **pH at 20 °C** 12
- **Viscosity:**
- **Kinematic viscosity** Not determined.
- **dynamic at 20 °C:** 900 mPas
- **Solubility**
- **Water:** Not miscible or difficult to mix
- **Steam pressure:** Not determined.
- **Density and/or relative density**
- **Density at 20 °C** 1 g/cm³

· 9.2 Other information

- **Appearance:**
- **Form:** Fluid
- **Important information on protection of health and environment, and on safety.**
- **Self-inflammability:** Product is not selfigniting.
- **Explosive properties:** Product is not explosive.

· Information with regard to physical hazard classes

- **Explosives** Void
- **Flammable gases** Void
- **Aerosols** Void
- **Oxidising gases** Void
- **Gases under pressure** Void
- **Flammable liquids** Void
- **Flammable solids** Void
- **Self-reactive substances and mixtures** Void
- **Pyrophoric liquids** Void
- **Pyrophoric solids** Void
- **Self-heating substances and mixtures** Void
- **Substances and mixtures, which emit flammable gases in contact with water** Void
- **Oxidising liquids** Void
- **Oxidising solids** Void

(Contd. on page 8)

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name BRAWO-I - Komponente B

(Contd. of page 7)

· Organic peroxides	Void
· Corrosive to metals	Void
· Desensitised explosives	Void

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:** No dangerous decomposition products known

SECTION 11: Toxicological information

- **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
- **Acute toxicity** Harmful if swallowed.
Harmful in contact with skin.

· **LD/LC50 values that are relevant for classification:**

CAS: 2855-13-2 Isophorone diamine

Oral	LD50	1030 mg/kg (ATE) 1030 mg/kg (rat)
Dermal	NOAEL	250 mg/kg (rat)
	LD50	1840 mg/kg (rabbit) >2000 mg/kg (rat)

CAS: 39423-51-3 Polyoxypropylene triamine

Oral	LD50	550 mg/kg (rat)
Dermal	LD50	>1000 mg/kg (rat)

CAS: 140-31-8 2-piperazin-1-ylethylamine

Oral	LD50	2000-5000 mg/kg (rat) 500 mg/kg (rabbit)
Dermal	LD50	200-1000 mg/kg (rabbit)

CAS: 15520-10-2 2-methylpentane-1,5-diamine

Oral	LD50	1170 mg/kg (rat)
Dermal	LD50	1870 mg/kg (rabbit)
Inhalative	LC50/4 h	19.6 mg/l (rat)

CAS: 100-51-6 Benzyl alcohol

Oral	LD50	1230 mg/kg (rat)
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(Contd. on page 9)

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name BRAWO-I - Komponente B

(Contd. of page 8)

	NOAEL 2nd year study	200 mg/kg (mouse) 200 mg/kg (rat)
Dermal	LD50	2000 mg/kg (rabbit)
Inhalative	LC50/4 h	>4178 mg/l (rat)
CAS: 69-72-7 salicylic acid		
Oral	LD50	891 mg/kg (rat)
Dermal	LD50	>2000 mg/kg (rat)

- **Skin corrosion/irritation** Causes severe skin burns and eye damage.
- **Serious eye damage/irritation** Causes serious eye damage.
- **Respiratory or skin sensitisation** May cause an allergic skin reaction.
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Suspected of damaging fertility. Suspected of damaging the unborn child.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure** May cause damage to organs through prolonged or repeated exposure.
- **Aspiration hazard** Based on available data, the classification criteria are not met.
- **11.2 Information on other hazards**

· **Endocrine disrupting properties**

CAS: 69-72-7 salicylic acid

List II; III

SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**

CAS: 2855-13-2 Isophorone diamine

LC50/96h	110 mg/l (Leucidus idus)
EC50	1120 mg/l (Pseudomonas putida)
EC50/48h	23 mg/l (Daphnia magna)
NOEC	1.5 mg/l (Desmodesmus subspicatus) 3 mg/l (Daphnia magna)
ErC50/72h	>50 mg/l (Desmodesmus subspicatus)

CAS: 39423-51-3 Polyoxypropylene triamine

LC50/96h	>100 mg/l (Oncorhynchus mykiss)
EC50/48h	13 mg/l (Daphnia magna)
ErC50/72h	4.4 mg/l (algae)

CAS: 140-31-8 2-piperazin-1-ylethylamine

EC50/72h	>1000 mg/l (algae)
LC50/96h	2190 mg/l (fish)

(Contd. on page 10)

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name BRAWO-I - Komponente B

(Contd. of page 9)

CAS: 15520-10-2 2-methylpentane-1,5-diamine

EC50/72h	>100 mg/l (algae)
EC50	1825 mg/l (fish)
EC50/48h	19.8 mg/l (Daphnia magna)

CAS: 100-51-6 Benzyl alcohol

IC50/72h	700 mg/l (algae)
LC50/96h	460 mg/l (Pimephales promelas)
	10 mg/l (Lepomis macrochirus)

- **12.2 Persistence and degradability** *No further relevant information available.*
- **12.3 Bioaccumulative potential** *No further relevant information available.*
- **12.4 Mobility in soil** *No further relevant information available.*
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** *Not applicable.*
- **vPvB:** *Not applicable.*
- **12.6 Endocrine disrupting properties** *For information on endocrine disrupting properties see section 11.*
- **12.7 Other adverse effects**
- **Remark:** *Toxic for fish*
- **Additional ecological information:**
- **General notes:** *Toxic for aquatic organisms
Must not reach sewage water or drainage ditch undiluted or unneutralised.
Also poisonous for fish and plankton in water bodies.
Do not allow product to reach ground water, water bodies or sewage system.
Danger to drinking water if even small quantities leak into soil.*

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation** *Must not be disposed of together with household garbage. Do not allow product to reach sewage system.*
- **Waste disposal key number:** *55352
Bez.: aliphatische Amine
Entsorgungshinweise:
Sonderabfallverbrennung*
- **Uncleaned packagings:**
- **Recommendation:** *Dispose of packaging according to regulations on the disposal of packagings.
Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.*

GB

(Contd. on page 11)

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name **BRAWO-I - Komponente B**

(Contd. of page 10)

SECTION 14: Transport information

<ul style="list-style-type: none"> · 14.1 UN number or ID number · ADR, IMDG, IATA 	<p style="margin: 0;">UN1760</p>
<ul style="list-style-type: none"> · 14.2 UN proper shipping name · ADR, IMDG, IATA 	<p style="margin: 0;">CORROSIVE LIQUID, N.O.S. (N-AMINOETHYLPIPERAZINE, ISOPHORONEDIAMINE)</p>
<ul style="list-style-type: none"> · 14.3 Transport hazard class(es) · ADR · Class · Label 	<p style="margin: 0;">8 (C9) Corrosive substances. 8</p>
<ul style="list-style-type: none"> · IMDG, IATA · Class · Label 	<p style="margin: 0;">8 Corrosive substances. 8</p>
<ul style="list-style-type: none"> · 14.4 Packing group · ADR, IMDG, IATA 	<p style="margin: 0;">II</p>
<ul style="list-style-type: none"> · 14.5 Environmental hazards: · Marine pollutant: 	<p style="margin: 0;">No</p>
<ul style="list-style-type: none"> · 14.6 Special precautions for user · Kehler Number: · EMS Number: · Stowage Category · Stowage Code 	<p style="margin: 0;">Warning: Corrosive substances. 80 F-A, S-B B SW2 Clear of living quarters.</p>
<ul style="list-style-type: none"> · 14.7 Maritime transport in bulk according to IMO instruments 	<p style="margin: 0;">Not applicable.</p>
<ul style="list-style-type: none"> · Transport/Additional information: · ADR · Limited quantities (LQ) · Excepted quantities (EQ) · Transport category · Tunnel restriction code 	<p style="margin: 0;">1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml 2 E</p>
<ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) 	<p style="margin: 0;">1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml</p>

(Contd. on page 12)

Safety data sheet according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name BRAWO-I - Komponente B

(Contd. of page 11)

· UN "Model Regulation":	<i>UN 1760 CORROSIVE LIQUID, N.O.S. (N-AMINOETHYLPIPERAZINE, ISOPHORONEDIAMINE), 8, II</i>
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SECTION 15: Regulatory information

· 15.1 Safety, health and environmental regulations/ legislation specific for the substance or mixture *No further relevant information available.*

· Poisons Act

· Regulated explosives precursors	<i>None of the ingredients is listed.</i>
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· Regulated poisons	<i>None of the ingredients is listed.</i>
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· Reportable explosives precursors	<i>None of the ingredients is listed.</i>
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· Reportable poisons	<i>None of the ingredients is listed.</i>
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· 15.2 Chemical safety assessment: *A Chemical Safety Assessment has not been carried out.*

SECTION 16: Other information

· Relevant phrases

- H302 Harmful if swallowed.*
- H312 Harmful 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.*
- H332 Harmful if inhaled.*
- H335 May cause respiratory irritation.*
- H361d Suspected of damaging the unborn child.*
- H361fd Suspected of damaging fertility. 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.*
- H412 Harmful to aquatic life with long lasting effects.*

· Department issuing data specification sheet: *Environment protection department.*

· Abbreviations and acronyms: *RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)*

(Contd. on page 13)

Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 11.05.2024

Version number 46 (replaces version 45)

Revision: 04.05.2024

Trade name BRAWO-I - Komponente B

(Contd. of page 12)

ICAO: International Civil Aviation Organisation
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (UK REACH)
PNEC: Predicted No-Effect Concentration (UK REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Skin Sens. 1: Skin sensitisation – Category 1
Skin Sens. 1B: Skin sensitisation – Category 1B
Repr. 2: Reproductive toxicity – Category 2
Repr. 2: Reproductive toxicity – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

*** Data compared to the previous version altered.**