

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

Printing date 11.05.2024

Version number 27 (replaces version 26)

Revision: 08.05.2024



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

- **1.1 Product identifier**
- **Trade name** **BRAWO SRR - Komponente A**
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
- **Sector of Use** SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
- **Application of the substance / the mixture** Epoxy 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**
Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.
Skin Sens. 1 H317 May cause an allergic skin reaction.
Aquatic Chronic 2 H411 Toxic 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**

GHS07 GHS09
- **Signal word** Warning
- **Hazard-determining components of labelling:** epoxide derivatives
Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)] dioxirane and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl) oxirane and 2,2'-[methylenebis(2,1-phenyleneoxymethylene)] dioxirane
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)

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· Hazard statements

maleic anhydride
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H411 Toxic to aquatic life with long lasting effects.

· Precautionary statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P273 Avoid release to the environment.
P280 Wear protective gloves / eye protection / face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.

· Additional information:

EUH401 To avoid risks to human health and the environment, comply with the instructions for use.
EUH205 Contains epoxy constituents. May produce an allergic reaction.

· 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.

· Dangerous components:

CAS: 1675-54-3 EINECS: 216-823-5	epoxide derivates Aquatic Chronic 2, H411; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317, EUH205	60-80%
CAS: 9003-36-5 EC number: 701-263-0	Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl}oxirane and 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane Aquatic Chronic 2, H411; Skin Irrit. 2, H315; Skin Sens. 1, H317	≥10-<25%
CAS: 933999-84-9	Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2) Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317; Aquatic Chronic 3, H412	≥2.5-<10%

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CAS: 68609-97-2 EINECS: 271-846-8	Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives Skin Irrit. 2, H315; Skin Sens. 1, H317, EUH205	≥0.1-<0.5%
CAS: 108-31-6 EINECS: 203-571-6	maleic anhydride Resp. Sens. 1, H334; STOT RE 1, H372; Skin Corr. 1B, H314; Eye Dam. 1, H318; Acute Tox. 4, H302; Skin Sens. 1A, H317, EUH071 Specific concentration limit: Skin Sens. 1A; H317: C ≥ 0.001 %	<0.001%

· **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** Remove contaminated clothing immediately. Consult a doctor if symptoms occur. Move affected person to fresh air.
- **After inhalation** Supply fresh air; seek medical advice if symptoms occur.
If unconscious, place in recovery position and seek medical advice.
- **After skin contact** In case of contact with skin, wash carefully with plenty of soap and water. Consult a doctor in case of skin reactions.
- **After eye contact** Rinse opened eye for several minutes under running water.
Call a doctor immediately
- **After swallowing** Rinse mouth with water. Never give anything by mouth to an unconscious person. DO NOT induce vomiting. If symptoms persist, consult a doctor.

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

Advice for the doctor: Elementary aid, decontamination, symptomatic treatment.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents** CO₂, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
- **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** Not required.

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- **6.2 Environmental precautions:** *Inform respective authorities in case product reaches water or sewage system.
Dilute with much water.*
- **6.3 Methods and material for containment and cleaning up:** *Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
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** *Open and handle containers with care.
Ventilation measures are required in rooms without sufficient air exchange (e.g. closed rooms), because the occupational exposure limit values (see chapter 8) could be exceeded. This must be avoided.
Wear suitable personal protective equipment (see section 8). Avoid contact with eyes, skin and clothing. Change contaminated or damaged gloves and contaminated clothing immediately and wash skin immediately. Mix slowly, partially covering the mixing container. Pour carefully and slowly when repotting. Observe the BGBau technical data sheet and practical guide for handling epoxy resins.*
- **Information about protection against explosions and fires:** *Ensure sufficient air exchange and/or extraction in the working areas. Take precautionary measures to avoid electrostatic discharges.*
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and containers:** *No special requirements.*
- **Further information about storage conditions:** *Keep container tightly closed in a well-ventilated place.*
- **Storage class** *10*

SECTION 8: Exposure controls/personal protection

- **8.1 Control parameters**

- **Components with critical values that require monitoring at the workplace:**

CAS: 108-31-6 maleic anhydride

WEL	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³
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· **DNELs**

CAS: 68609-97-2 Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives

Oral	DNEL	1 mg/kg bw/Tag (ArL)
Dermal	DNEL	1.7 mg/kg bw/day (ArL)
Inhalative	DNEL	0.98 mg/m ³ (ArL)

· **PNECs**

CAS: 68609-97-2 Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives

PNEC	0.00072 mg/l (Mew)
	0.0072 mg/l (Freshwater)
PNEC	80.12 mg/kg dwt (Bod)
	6.677 mg/kg dwt (Sediment)
	66.77 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 food, drink and animal feed.
Remove soiled, soaked clothing immediately.
Wash hands before breaks and at the end of work.
Avoid contact with 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**

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

· **Material of gloves**

You can find help with choosing gloves on the website <https://www.bgbau.de/fileadmin/Gisbau/Projekte.pdf>
For example, we recommend the Sol-vex 37-900 protective gloves from Ansell GmbH. The breakthrough time of the protective gloves can be found under point 8 "Penetration time of the glove material". The selection of a suitable glove depends not only on the material, but also on other quality features and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of glove materials cannot be calculated in advance and must therefore be checked before use.

Nitrile rubber

Recommended material thickness: ≥ 0.4 mm

· **Penetration time of glove material**

The breakthrough times of the Sol-vex 37-900 protective gloves are around 8 hours.

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The following applies to all other gloves:
The exact breakthrough time must be obtained from the protective glove manufacturer and adhered to.

Nitrile rubber

Material thickness: ≥ 0.40 mm

Penetration time: ≥ 480 min

Butyl rubber:

Material thickness: ≥ 0.5 mm

Penetration time: ≥ 480 min

· **Eye/face protection**

Tight-fitting safety goggles.

Safety goggles.

· **Body protection:**

Protective clothing

Suitable protective clothing should be worn when working with epoxy resins. In addition to normal work clothing (long trousers, long-sleeved shirt or T-shirt), disposable overalls, aprons, overshoes, sleeve protectors etc. may be necessary depending on the activity. Uncovered areas of skin should be avoided as far as possible, even in hot weather. If the work involves kneeling, the lower leg area should be protected by protective trousers.

SECTION 9: Physical and chemical properties

· 9.1 Information on basic physical and chemical properties

· General Information

· **Physical state**

Fluid

· **Colour:**

Green

· **Smell:**

Characteristic

· **Odour threshold:**

Not determined.

· **Melting point/freezing point:**

Not determined

· **Boiling point or initial boiling point and boiling range**

>320 °C (CAS: 1675-54-3 epoxide derivates)

· **Flammability**

Not applicable.

· **Lower and upper explosion limit**

· **Lower:**

Not determined.

· **Upper:**

Not determined.

· **Flash point:**

>93 °C

· **Auto-ignition temperature:**

455 °C (CAS: 1675-54-3 epoxide derivates)

· **Decomposition temperature:**

Not determined.

· **pH**

Mixture is non-soluble (in water).

Not determined.

· **Viscosity:**

· **Kinematic viscosity**

Not determined.

· **dynamic:**

Not determined.

· **Solubility**

· **Water:**

Fully miscible

· **Partition coefficient n-octanol/water (log value)**

Not determined.

· **Steam pressure at 20 °C:**

0 hPa (CAS: 1675-54-3 epoxide derivates)

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- **Density and/or relative density**
- **Density at 20 °C** 1.14 g/cm³
- **Relative density** Not determined.
- **Vapour density** Not determined.

- **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.
- **Change in condition**
- **Evaporation rate** Not determined.

- **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
- **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** stable
- **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.

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

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

CAS: 1675-54-3 epoxide derivates

Dermal	LD50	23000 mg/kg (rabbit)
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CAS: 9003-36-5 Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl}oxirane and 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane

Oral	LD50	>2000 mg/kg (rat)
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Dermal	LD50	>2000 mg/kg (rabbit)
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CAS: 68609-97-2 Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives

Oral	LD50	17100 mg/kg (rat)
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CAS: 108-31-6 maleic anhydride

Oral	LD50	1090 mg/kg (rat)
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Dermal	LD50	2620 mg/kg (rat)
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- **Skin corrosion/irritation** Causes skin irritation.
- **Serious eye damage/irritation** Causes serious eye irritation.
- **Respiratory or skin sensitisation** May cause an allergic skin reaction.
- **11.2 Information on other hazards**

- **Endocrine disrupting properties**

CAS: 128-37-0	2,6-Di-tert-butyl-p-cresol	List II
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SECTION 12: Ecological information

- **12.1 Toxicity**

- **Aquatic toxicity:**

CAS: 1675-54-3 epoxide derivates

IC50	>42.6 mg/l (Bak)
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LC50/96h	2 mg/l (Oncorhynchus mykiss)
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EC50/48h	1.8 mg/l (Daphnia magna)
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ErC50/72h	11 mg/l (Selenastrum capricornutum)
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CAS: 9003-36-5 Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl}oxirane and 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane

LC50/96h	>100 mg/l (Daphnia magna)
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EC50/96h	>100 mg/l (Leucidus idus)
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CAS: 68609-97-2 Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives

EbC50/72h 843 mg/l (*Pseudokirchneriella subcapitata*)

LC50/96h >5000 mg/l (*Oncorhynchus mykiss*)

1800 mg/l (*Lepomis macrochirus*)

EC50 >100 mg/l (BEL)

NOEC 500 mg/l (*Pseudokirchneriella subcapitata*)

- **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
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.
- **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.
- **Recommended cleaning agent:** Water, if necessary with cleaning agent.

SECTION 14: Transport information

- **14.1 UN number or ID number**
- **ADR, IMDG, IATA** UN3082

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<ul style="list-style-type: none"> · 14.2 UN proper shipping name · ADR, IATA · IMDG 	<p><i>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (epoxide derivates)</i></p> <p><i>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (epoxide derivates), MARINE POLLUTANT</i></p>
<ul style="list-style-type: none"> · 14.3 Transport hazard class(es) · ADR · Class · Label 	<p><i>9 (M6) Miscellaneous dangerous substances and articles.</i></p> <p><i>9</i></p>
<ul style="list-style-type: none"> · IMDG, IATA · Class · Label 	<p><i>9 Miscellaneous dangerous substances and articles.</i></p> <p><i>9</i></p>
<ul style="list-style-type: none"> · 14.4 Packing group · ADR, IMDG, IATA 	<p><i>III</i></p>
<ul style="list-style-type: none"> · 14.5 Environmental hazards: · Marine pollutant: · Special marking (ADR): · Special marking (IATA): 	<p><i>Yes</i></p> <p><i>Symbol (fish and tree)</i></p> <p><i>Symbol (fish and tree)</i></p> <p><i>Symbol (fish and tree)</i></p>
<ul style="list-style-type: none"> · 14.6 Special precautions for user · Kemler Number: · EMS Number: · Stowage Category 	<p><i>Warning: Miscellaneous dangerous substances and articles.</i></p> <p><i>90</i></p> <p><i>F-A, S-F</i></p> <p><i>A</i></p>
<ul style="list-style-type: none"> · 14.7 Maritime transport in bulk according to IMO instruments 	<p><i>Not applicable.</i></p>
<ul style="list-style-type: none"> · Transport/Additional information: · ADR · Limited quantities (LQ) · Excepted quantities (EQ) · Transport category · Tunnel restriction code 	<p><i>5L</i></p> <p><i>Code: E1</i></p> <p><i>Maximum net quantity per inner packaging: 30 ml</i></p> <p><i>Maximum net quantity per outer packaging: 1000 ml</i></p> <p><i>3</i></p> <p><i>(-)</i></p>
<ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) 	<p><i>5L</i></p>

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<ul style="list-style-type: none"> · Excepted quantities (EQ) 	<p>Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml</p>
<ul style="list-style-type: none"> · UN "Model Regulation": 	<p>UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (EPOXIDE DERIVATES), 9, III</p>

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Poisons Act**

· **Regulated explosives precursors**

None of the ingredients is listed.

· **Regulated poisons**

None of the ingredients is listed.

· **Reportable explosives precursors**

None of the ingredients is listed.

· **Reportable poisons**

None of the ingredients is listed.

· **Directive 2012/18/EU**

· **Named dangerous substances - ANNEX I**

None of the ingredients is listed.

· **Seveso category**

E2 Hazardous to the Aquatic Environment

· **Qualifying quantity (tonnes) for the application of lower-tier requirements**

200 t

· **Qualifying quantity (tonnes) for the application of upper-tier requirements**

500 t

· **15.2 Chemical safety assessment:**

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

<ul style="list-style-type: none"> · Relevant phrases 	<p>H302 Harmful if swallowed. 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.</p>
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H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

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.

EUH071 Corrosive to the respiratory tract.

EUH205 Contains epoxy constituents. May produce an allergic reaction.

· **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)

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. 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

Resp. Sens. 1: Respiratory sensitisation – Category 1

Skin Sens. 1: Skin sensitisation – Category 1

Skin Sens. 1A: Skin sensitisation – Category 1A

STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

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.