

**Safety data sheet**  
**according to Regulation (EC) No 1907/2006, Article 31 and 2020/878/  
EU**

Printing date 18.04.2024

Version number 8

Revision: 05.09.2023

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

**1.1 Product identifier**

**Trade name:** Lötöl ST

**UFI:** U0E8-U03D-S00W-RSRY



**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** Soldering flux

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

**Manufacturer/Supplier:**

Felder GmbH

Im Lipperfeld 11

D-46047 Oberhausen

Tel.: +49 (0)208/ 85035-0

Fax.: +49 (0)208/ 26080

<http://www.felder.de>

e-mail: [info@felder.de](mailto:info@felder.de)

**Further information obtainable from:**

*lab*

(mo-thu. 8:00 a.m. - 4:00 p.m./ fr. 8:00 a.m. - 1:00 p.m.)

email: [mprobst@felder.de](mailto:mprobst@felder.de)

**1.4 Emergency telephone number:**

*24 hr. emergency information:*

*Poison emergency call Berlin*

"Giftnotruf Berlin"

Tel.: 0049-30-30686 790

**EuPCs:** PC-TEC-24

**SECTION 2: Hazards identification**

**2.1 Classification of the substance or mixture**

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



GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS09 environment

Aquatic Acute 1 H400 Very toxic to aquatic life.

Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

STOT SE 3 H335 May cause respiratory irritation.

**2.2 Label elements**

**Labelling according to Regulation (EC) No 1272/2008**

*The product is classified and labelled according to the CLP regulation.*

**Hazard pictograms**



GHS05 GHS07 GHS09

**Signal word** Danger

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**Hazard-determining components of labelling:**

zinc chloride  
 hydrogen chloride  
 ammonium chloride

**Hazard statements**

H302 Harmful if swallowed.  
 H314 Causes severe skin burns and eye damage.  
 H335 May cause respiratory irritation.  
 H410 Very toxic to aquatic life with long lasting effects.

**Precautionary statements**

P102 Keep out of reach of children.  
 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.  
 P403+P233 Store in a well-ventilated place. Keep container tightly closed.  
 P405 Store locked up.  
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**Labelling of packages where the contents do not exceed 125 ml****Hazard pictograms**

GHS05 GHS07 GHS09

**Signal word Danger****Hazard-determining components of labelling:**

zinc chloride  
 hydrogen chloride  
 ammonium chloride

**Hazard statements**

H302 Harmful if swallowed.  
 H314 Causes severe skin burns and eye damage.  
 H335 May cause respiratory irritation.

**Precautionary statements**

P102 Keep out of reach of children.  
 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.  
 P405 Store locked up.  
 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.

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<b>Dangerous components:</b>	
CAS: 7646-85-7 EINECS: 231-592-0 Index number: 030-003-00-2 Reg.nr.: 01-2119472431-44	<p><i>zinc chloride</i></p> <p>☒ Skin Corr. 1B, H314; ☒ Aquatic Acute 1, H400; Aquatic Chronic 1, H410; ☠ Acute Tox. 4, H302 Specific concentration limit: STOT SE 3; H335: C ≥ 5 %</p>
CAS: 7647-01-0 EINECS: 231-595-7 Index number: 017-002-00-2 Reg.nr.: HCl Gas : 01-2119484862-27	<p><i>hydrogen chloride</i></p> <p>☒ Met. Corr. 1, H290; Skin Corr. 1B, H314; Eye Dam. 1, H318; ! Acute Tox. 4, H302; STOT SE 3, H335 Specific concentration limits: Skin Corr. 1B; H314: C ≥ 25 % Skin Irrit. 2; H315: 10 % ≤ C &lt; 25 % Eye Irrit. 2; H319: 10 % ≤ C &lt; 25 % STOT SE 3; H335: C ≥ 10 %</p>
CAS: 12125-02-9 EINECS: 235-186-4 Index number: 017-014-00-8 Reg.nr.: 01-2119487950-27	<p><i>ammonium chloride</i></p> <p>! Acute Tox. 4, H302; Eye Irrit. 2, H319</p>

**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:

Take affected persons out of danger area and lay down.

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

#### After inhalation:

Seek medical treatment in case of complaints.

In case of unconsciousness place patient stably in side position for transportation.

#### After skin contact:

Immediately wash with water and soap and rinse thoroughly.

Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.

#### After eye contact:

Protect unharmed eye.

Rinse opened eye for several minutes under running water. Then consult a doctor.

#### After swallowing:

Rinse out mouth and then drink plenty of water.

Call for a doctor immediately.

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

No further relevant information available.

**Hazards** Danger of gastric perforation.

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

No further relevant information available.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing agents: CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray.

### 5.2 Special hazards arising from the substance or mixture

In case of fire, the following can be released:

Hydrogen chloride (HCl)

### 5.3 Advice for firefighters

#### Protective equipment:

Do not inhale explosion gases or combustion gases.

Wear self-contained respiratory protective device.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Use respiratory protective device against the effects of fumes/dust/aerosol.

Ensure adequate ventilation

Wear protective equipment. Keep unprotected persons away.

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**6.2 Environmental precautions:**

*Inform respective authorities in case of seepage into water course or sewage system.  
 Do not allow to enter sewers/ surface or ground water.*

**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 contaminated material as waste according to section 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 disposal information.*

**SECTION 7: Handling and storage****7.1 Precautions for safe handling**

*Ensure that suitable extractors are available on processing machines*

*Ensure good ventilation/exhaustion at the workplace.*

*Prevent formation of aerosols.*

**Information about fire - and explosion protection:** *No special measures required.*

**7.2 Conditions for safe storage, including any incompatibilities****Storage:**

**Requirements to be met by storerooms and receptacles:** *No special requirements.*

**Information about storage in one common storage facility:**

*Store away from foodstuffs.*

*Store away from metals.*

**Further information about storage conditions:**

*Protect from frost.*

*Keep container tightly sealed.*

**Storage class:** 8 B

**7.3 Specific end use(s)** *No further relevant information available.*

**SECTION 8: Exposure controls/personal protection****8.1 Control parameters****Ingredients with limit values that require monitoring at the workplace:****7647-01-0 hydrogen chloride**

IOELV (EU)	Short-term value: 15 mg/m <sup>3</sup> , 10 ppm Long-term value: 8 mg/m <sup>3</sup> , 5 ppm
AGW (Germany)	Long-term value: 3 mg/m <sup>3</sup> , 2 ppm 2(l);DFG, EU, Y
WEL (Great Britain)	Short-term value: 8 mg/m <sup>3</sup> , 5 ppm Long-term value: 2 mg/m <sup>3</sup> , 1 ppm (gas and aerosol mists)
OEL (Ireland)	Short-term value: 15 mg/m <sup>3</sup> , 10 ppm Long-term value: 8 mg/m <sup>3</sup> , 5 ppm IOELV

**12125-02-9 ammonium chloride**

WEL (Great Britain)	Short-term value: 20 mg/m <sup>3</sup> Long-term value: 10 mg/m <sup>3</sup>
OEL (Ireland)	Short-term value: 20 mg/m <sup>3</sup> Long-term value: 10 mg/m <sup>3</sup>

**7646-85-7 zinc chloride**

MAK (Germany)	Long-term value: 0.1A * 2E** mg/m <sup>3</sup> *alveolengängig; **einatembar
WEL (Great Britain)	Short-term value: 2 mg/m <sup>3</sup> Long-term value: 1 mg/m <sup>3</sup>
OEL (Ireland)	Short-term value: 2 mg/m <sup>3</sup> Long-term value: 1 mg/m <sup>3</sup>

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**Regulatory information**

IOELV (EU): (EU) 2019/1831

AGW (Germany): TRGS 900

WEL (Great Britain): EH40/2020

OEL (Ireland): 2024 CoP for the Safety, Health and Welfare at Work

**recommended monitoring procedures in accordance with 2020/878/EU no. 8.1.2:**

7647-01-0 hydrogen chloride: BIA 6640(D), MTA/MA-019/A90(ESP), OSHA ID-174SG(E), MétroPol Fiche 009 Anions minéraux(F)

7646-85-7 zinc chloride: NIOSH 7300, 7301, 7303(E) "Zinc", OSHA, ID-121(E)

12125-02-9 ammonium chloride: OSHA, ID-188 (E) "ammonia"

**Additional information:** The lists valid during the making were used as basis.**8.2 Exposure controls****Appropriate engineering controls***Ensure adequate ventilation.**Remove the fumes by means of suitable suction devices.***Individual protection measures, such as personal protective equipment****General protective and hygienic measures:***Do not eat, drink, smoke or sniff while working.**Keep away from foodstuffs, beverages and feed.**Immediately remove all soiled and contaminated clothing**Wash hands before breaks and at the end of work.**Avoid contact with the eyes and skin.***Respiratory protection:***Use suitable respiratory protective device in case of insufficient ventilation.**Filter B**Filter P2***Hand protection****Protective gloves***Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation***Material of gloves***Nitrile rubber, NBR**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 cannot be calculated in advance and has therefore to be checked prior to the application.**Recommended thickness of the material: > 0.4 mm***Penetration time of glove material***The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.**The determined penetration times according to EN 16523-1:2015 are not performed under practical conditions.**Therefore a maximum wearing time, which corresponds to 50% of the penetration time, is recommended.**Value for the permeation: Level < 6***Eye/face protection****Tightly sealed goggles****Body protection: Protective work clothing****SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****General Information****Colour:***Dark yellow***Odour:***Characteristic***Odour threshold:***Not determined.***Boiling point or initial boiling point and boiling range** *100 °C***Flammability***Not applicable.***Lower and upper explosion limit***Not determined.***Lower:***Not determined.***Upper:***Not applicable.***Flash point:***Not applicable.*

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Decomposition temperature:	<i>Not determined.</i>
pH (100 g/l) at 20 °C	1
Viscosity:	
Kinematic viscosity	<i>Not determined.</i>
Dynamic:	<i>Not determined.</i>
Solubility	
water:	<i>Fully miscible.</i>
Partition coefficient n-octanol/water (log value)	<i>Not determined.</i>
Vapour pressure at 20 °C:	23 hPa
Density and/or relative density	
Density at 20 °C:	2.28 g/cm <sup>3</sup>
Relative density	<i>Not determined.</i>
Vapour density	<i>Not determined.</i>

**9.2 Other information****Appearance:**Form: *Fluid***Important information on protection of health and environment, and on safety.****Ignition temperature:***Product is not selfigniting.***Explosive properties:***Product does not present an explosion hazard.***Solvent content:****Organic solvents:**

0.0 %

**Water:**

26.3 %

**VOC (EC)**

0.00 %

**Change in condition****Evaporation rate***Not determined.***Information with regard to physical hazard classes**

<b>Explosives</b>	<i>Void</i>
<b>Flammable gases</b>	<i>Void</i>
<b>Aerosols</b>	<i>Void</i>
<b>Oxidising gases</b>	<i>Void</i>
<b>Gases under pressure</b>	<i>Void</i>
<b>Flammable liquids</b>	<i>Void</i>
<b>Flammable solids</b>	<i>Void</i>
<b>Self-reactive substances and mixtures</b>	<i>Void</i>
<b>Pyrophoric liquids</b>	<i>Void</i>
<b>Pyrophoric solids</b>	<i>Void</i>
<b>Self-heating substances and mixtures</b>	<i>Void</i>
<b>Substances and mixtures, which emit flammable gases in contact with water</b>	<i>Void</i>
<b>Oxidising liquids</b>	<i>Void</i>
<b>Oxidising solids</b>	<i>Void</i>
<b>Organic peroxides</b>	<i>Void</i>
<b>Corrosive to metals</b>	<i>Void</i>
<b>Desensitised explosives</b>	<i>Void</i>

**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***Reacts with certain metals.**Reacts with metals forming hydrogen.***10.4 Conditions to avoid** *No further relevant information available.***10.5 Incompatible materials:** *No further relevant information available.***10.6 Hazardous decomposition products:** *Corrosive gases/vapours*

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## SECTION 11: Toxicological information

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

#### Acute toxicity

*Harmful if swallowed.*

#### LD/LC50 values relevant for classification:

##### ATE (Acute Toxicity Estimates)

Oral	LD50	1,487-1,677 mg/kg
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#### Skin corrosion/irritation

*Causes severe skin burns and eye damage.*

#### Serious eye damage/irritation

*Causes serious eye damage.*

**Respiratory or skin sensitisation** *Based on available data, the classification criteria are not met.*

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

#### STOT-single exposure

*May cause respiratory irritation.*

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

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

### 11.2 Information on other hazards

#### Endocrine disrupting properties

*None of the ingredients is listed.*

## SECTION 12: Ecological information

### 12.1 Toxicity

**Aquatic toxicity:** *No further relevant information available.*

**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:** *Very toxic for fish*

#### Additional ecological information:

##### General notes:

*Very toxic for aquatic organisms*

*Must not reach sewage water or drainage ditch undiluted or unneutralised.*

*Also poisonous for fish and plankton in water bodies.*

*Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water*

*Do not allow product to reach ground water, water course or sewage system, even in small quantities.*

*Danger to drinking water if even extremely small quantities leak into the ground.*

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Recommendation

*Must not be disposed together with household garbage. Do not allow product to reach sewage system.*

#### European waste catalogue

06 03 13\*: solid salts and solutions containing heavy metals

HP 6: Acute Toxicity

HP 8: Corrosive

HP 14: Ecotoxic

*cleaned packaging:*

15 01 02: plastic packaging

*overpack:*

15 01 01: paper and cardboard packaging

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**Uncleaned packaging:** 15 01 10\*: packaging containing residues of or contaminated by hazardous substances**Recommendation:**

Non contaminated packagings may be recycled.

Disposal must be made according to official regulations.

**Recommended cleansing agents:** Water, if necessary together with cleansing agents.

## SECTION 14: Transport information

**14.1 UN number or ID number**

ADR, IMDG, IATA

UN3264

**14.2 UN proper shipping name**

ADR

3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.  
(HYDROCHLORIC ACID, ZINC CHLORIDE),

ENVIRONMENTALLY HAZARDOUS

IMDG

CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.  
(HYDROCHLORIC ACID, ZINC CHLORIDE), MARINE  
POLLUTANT

IATA

CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.  
(HYDROCHLORIC ACID, ZINC CHLORIDE)**14.3 Transport hazard class(es)**

ADR, IMDG



Class

8 Corrosive substances.

Label

8

IATA



Class

8 Corrosive substances.

Label

8

**14.4 Packing group**

ADR, IMDG, IATA

III

**14.5 Environmental hazards:****Marine pollutant:**

Product contains environmentally hazardous substances: zinc chloride

Yes

Symbol (fish and tree)

Symbol (fish and tree)

Warning: Corrosive substances.

**Special marking (ADR):**

80

**14.6 Special precautions for user**

F-A, S-B

**Hazard identification number (Kemler code):**

(SGG1) Acids

**EMS Number:**

A

**Segregation groups**

SW2 Clear of living quarters.

**Stowage Category****Stowage Code**

Not applicable.

**14.7 Maritime transport in bulk according to IMO instruments****Transport/Additional information:****ADR****Limited quantities (LQ)**

5L

**Excepted quantities (EQ)**

Code: E1

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 1000 ml

**Transport category**

3

**Tunnel restriction code**

E

**IMDG****Limited quantities (LQ)**

5L

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**Excepted quantities (EQ)***Code: E1**Maximum net quantity per inner packaging: 30 ml**Maximum net quantity per outer packaging: 1000 ml***UN "Model Regulation":**

UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.  
 (HYDROCHLORIC ACID, ZINC CHLORIDE), 8, III,  
 ENVIRONMENTALLY HAZARDOUS

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****Directive 2012/18/EU***Named dangerous substances - ANNEX I None of the ingredients is listed.**Seveso category E1 Hazardous to the Aquatic Environment**Qualifying quantity (tonnes) for the application of lower-tier requirements 100 t**Qualifying quantity (tonnes) for the application of upper-tier requirements 200 t**REGULATION (EU) 2019/1021 on persistent organic pollutants (POP) None of the ingredients are included.**REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3, 65***DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II***None of the ingredients is listed.***REGULATION (EU) 2019/1148****Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))***None of the ingredients is listed.***Annex II - REPORTABLE EXPLOSIVES PRECURSORS***None of the ingredients is listed.***Regulation (EC) No 273/2004 on drug precursors***None of the ingredients is listed.***Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors***None of the ingredients is listed.***National regulations:****Information about limitation of use:** Employment restrictions concerning juveniles must be observed.**Waterhazard class:** Water hazard class 3 (Self-assessment): extremely hazardous for water.**15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.**SECTION 16: Other information**

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

**Reasons for changes:**

14.08.2015: Adaption to Regulation 453/2010/EC, 830/2015/EU, 18/2012/EU

06.12.2017: Chapter 2, 11, 12, 13

19.06.2018: Chapter 3

14.01.2020: Chapter 1 UFI

21.01.2021: Chapter 3, 11, 15, 16

25.05.2021: Chapter 15

05.09.2023: Chapter 1, 8, 11, 14, 15

**Information referred to in Annex I, point 1.3.4.2 of Regulation 1272/2008/EC:****Relevant phrases**

H290 May be corrosive to metals.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

H400 Very toxic to aquatic life.

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**H410 Very toxic to aquatic life with long lasting effects.****Contact:** Dr. M. Probst**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)

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organisation

ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)

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)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

ATE: Acute toxicity estimate values

Met. Corr. 1: Corrosive to metals – Category 1

Acute Tox. 4: Acute toxicity – Category 4

Skin Corr. 1B: Skin corrosion/irritation – Category 1B

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

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