Safety data sheet
according to 1907/2006/EC, Article 31 and 453/2010/EC

Printing date 11.03.2020 *Version number 4* *Revision: 11.03.2020*

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

1.1 Product identifier
Trade name: Lötwasser ZD pro/Rheinzink
Solder liquid ZD pro/Rheinzink
UFI: *WCV8-C0CP-X00J-7T2R*

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
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

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


GHS02 flame

Flam. Liq. 3 *H226* *Flammable liquid and vapour.*


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

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


GHS02 GHS05 GHS07 GHS09

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Trade name: Lötwasser ZD pro/Rheinzink
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Signal word *Danger*

Hazard-determining components of labelling:
zinc chloride
hydrobromic acid 48 %
Hazard statements
H226 Flammable liquid and vapour.
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
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

GHS02 GHS05 GHS07 GHS09

Signal word *Danger*

Hazard-determining components of labelling:
zinc chloride
hydrobromic acid 48 %
Hazard statements
H314 Causes severe skin burns and eye damage.
Precautionary statements
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 Chemical characterisation: Mixtures
Description: *Mixture: consisting of the following components.*

Dangerous components:		
CAS: 7646-85-7 *EINECS: 231-592-0* *Reg.nr.: 01-2119472431-44*	*zinc chloride* *Skin Corr. 1B, H314; Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Acute Tox. 4, H302*	*<50%*
CAS: 112-34-5 *EINECS: 203-961-6* *Reg.nr.: 01-2119475104-44*	*2-(2-butoxyethoxy)ethanol* *Eye Irrit. 2, H319*	*<50%*
EINECS: 233-113-0 *Reg.nr.: HBr gas: 01-2119479072-39*	*hydrobromic acid 48 %* *Skin Corr. 1B, H314; STOT SE 3, H335*	*<25%*
CAS: 78-93-3 *EINECS: 201-159-0* *Reg.nr.: 01-2119457290-43*	*butanone* *Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336*	*<15%*

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CAS: 12125-02-9 *EINECS: 235-186-4* *Reg.nr.: 01-2119487950-27*	*ammonium chloride* *Acute Tox. 4, H302; Eye Irrit. 2, H319*	*<5%*

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:
Do not leave affected persons unattended.
Involve doctor immediately.
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 unconsciousness place patient stably in side position for transportation.
After skin contact:
Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.
Immediately wash with water and soap and rinse thoroughly.
After eye contact:
Protect unharmed eye.
Seek medical treatment.
Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing:
Call for a doctor immediately.
Drink plenty of water and provide fresh air. 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: *CO2, powder or water spray. Fight larger fire with 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:
Wear self-contained respiratory protective device.
Do not inhale explosion gases or combustion gases.

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 of seepage into water course or sewage system.
Dilute with plenty of water.
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 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 disposal information.

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SECTION 7: Handling and storage

7.1 Precautions for safe handling
Extractors are required on all machines used for thermal processing or splinter removal processes.
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:
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

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:
Open receptacle only under localised extractor facilities.
Store under lock and key and with access restricted to technical experts or their assistants only.
Store under lock and key and out of the reach of children.
Keep container tightly sealed.
Storage class: *3*
7.3 Specific end use(s) *No further relevant information available.*

SECTION 8: Exposure controls/personal protection

Additional information about design of technical facilities: *No further data; see item 7.*

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:	
112-34-5 2-(2-butoxyethoxy)ethanol	
IOELV (EU)	*Short-term value: 101.2 mg/m³, 15 ppm* *Long-term value: 67.5 mg/m³, 10 ppm*
AGW (Germany)	*Long-term value: 67 mg/m³, 10 ppm* *1.5(I);EU, DFG, Y, 11*
78-93-3 butanone	
IOELV (EU)	*Short-term value: 900 mg/m³, 300 ppm* *Long-term value: 600 mg/m³, 200 ppm*
AGW (Germany)	*Long-term value: 600 mg/m³, 200 ppm* *1(I);DFG, EU, H, Y*
7646-85-7 zinc chloride	
MAK (Germany)	*Long-term value: 0.1A* 2E** mg/m³* **alveolengängig; **einatembar*

Regulatory information
IOELV (EU): (EU) 2017/164
AGW (Germany): TRGS 900
recommended monitoring procedures in accordance with 453/2010/EU no. 8.1.2:
112-34-5 2-(2-butoxyethoxy)ethanol: BIA 6450(D),
78-93-3 butanone: MétroPol Fiche 020 Cétones(F), MTA/MA-031/A96(ESP), BIA 7705(D)
7646-85-7 zinc chloride: NIOSH 7300, 7301, 7303(E) "Zinc", OSHA, ID-121(E)

Ingredients with biological limit values:	
78-93-3 butanone	
BGW (Germany)	*2 mg/l* *Untersuchungsmaterial: Urin* *Probennahmezeitpunkt: Expositionsende bzw. Schichtende* *Parameter: 2-Butanon*

Regulatory information *BGW (Germany): TRGS 903*
Additional information: *The lists valid during the making were used as basis.*

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8.2 Exposure controls
Appropriate engineering controls:
Ensure adequate ventilation.
Remove the fumes by means of suitable suction devices.
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: *Suitable respiratory protective device recommended.*
Protection of hands:

Protective gloves

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Material of gloves
Butyl rubber, BR
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: ≥ 0.7 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 ≤ 5
Not suitable are gloves made of the following materials:
Nitrile rubber, NBR
Natural rubber, NR
Fluorocarbon rubber (Viton)
Chloroprene rubber, CR
Eye protection:

Tightly sealed goggles

Body protection: *Solvent resistant protective clothing*

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
Appearance:

Form:	*Fluid*
Colour:	*Brown*
Odour:	*Characteristic*
Odour threshold:	*Not determined.*
pH-value at 20 °C:	*< 1*
Change in condition	
Initial boiling point and boiling range:	*79 °C*
Flash point:	*45 °C*
Flammability (solid, gas):	*Not applicable.*
Ignition temperature:	*225 °C*
Decomposition temperature:	*Not determined.*
Auto-ignition temperature:	*Product is not selfigniting.*
Explosive properties:	*Product is not explosive. However, formation of explosive air/vapour mixtures are possible.*
Explosion limits:	
Lower:	*0.9 Vol %*
Upper:	*11.5 Vol %*

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Vapour pressure at 20 °C:	*105 hPa*
Density at 20 °C:	*1.28 g/cm³*
Relative density	*Not determined.*
Vapour density	*Not determined.*
Evaporation rate	*Not determined.*
Solubility in / Miscibility with water:	*Fully miscible.*
Partition coefficient: n-octanol/water:	*Not determined.*
Viscosity:	
Dynamic:	*Not determined.*
Kinematic:	*Not determined.*
Solvent content:	
Organic solvents:	*41.7 %*
Water:	*9.1 %*
VOC (EC)	*41.8 %*
	41.75 %
9.2 Other information	*No further relevant information available.*

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 and stored according to specifications.
10.3 Possibility of hazardous reactions
Develops corrosive gases/fumes.
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
Flammable gases/vapours
Hydrogen bromide

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity *Based on available data, the classification criteria are not met.*

LD/LC50 values relevant for classification:		
ATE (Acute Toxicity Estimates)		
Oral	*LD50*	*3,579-4,040 mg/kg (rat)*

7646-85-7 zinc chloride		
Oral	*LD50*	*1,100-1,260 mg/kg (rat)*

Primary irritant effect:
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.*
CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)
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.*

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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.*
Ecotoxical effects:
Remark: *Very toxic for fish*
Additional ecological information:
General notes:
The product contains heavy metals. Avoid transfer into the environment. Specific preliminary treatments are necessary
Must not reach sewage water or drainage ditch undiluted or unneutralised.
Also poisonous for fish and plankton in water bodies.
Very toxic for aquatic organisms
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.
12.5 Results of PBT and vPvB assessment
PBT: *Not applicable.*
vPvB: *Not applicable.*
12.6 Other adverse effects *No further relevant information available.*

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 3: Flammable
HP 6: Acute Toxicity
HP 8: Corrosive
HP 14: Ecotoxic

cleaned sales packaging:
15 01 02: plastic packaging
overpack;
15 01 01: paper and cardboard packaging
Uncleaned packaging: *15 01 10*: packaging containing residues of or contaminated by hazardous substances*
Recommendation: *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
ADR, IMDG, IATA *UN2920*
14.2 UN proper shipping name
ADR *2920 CORROSIVE LIQUID, FLAMMABLE, N.O.S. (HYDROBROMIC ACID, ETHYL METHYL KETONE (METHYL ETHYL KETONE)), ENVIRONMENTALLY HAZARDOUS*
IMDG *CORROSIVE LIQUID, FLAMMABLE, N.O.S. (HYDROBROMIC ACID, ETHYL METHYL KETONE (METHYL ETHYL KETONE)), MARINE POLLUTANT*
IATA *CORROSIVE LIQUID, FLAMMABLE, N.O.S. (HYDROBROMIC ACID, ETHYL METHYL KETONE (METHYL ETHYL KETONE))*

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14.3 Transport hazard class(es)

ADR

Class	*8 Corrosive substances.*
Label	*8+3*

IMDG

Class	*8 Corrosive substances.*
Label	*8/3*

IATA

Class	*8 Corrosive substances.*
Label	*8 (3)*
14.4 Packing group	
ADR, IMDG, IATA	*II*
14.5 Environmental hazards:	*Product contains environmentally hazardous substances: zinc chloride*
Marine pollutant:	*Yes*
	Symbol (fish and tree)
Special marking (ADR):	*Symbol (fish and tree)*
14.6 Special precautions for user	*Warning: Corrosive substances.*
Hazard identification number (Kemler code):	*83*
EMS Number:	*F-E,S-C*
Segregation groups	*Acids*
Stowage Category	*E*
Stowage Code	*SW1 Protected from sources of heat.*
	SW2 Clear of living quarters.
14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	*Not applicable.*

Transport/Additional information:

ADR	
Limited quantities (LQ)	*1L*
Excepted quantities (EQ)	*Code: E2*
	Maximum net quantity per inner packaging: 30 ml
	Maximum net quantity per outer packaging: 500 ml
Transport category	*2*
Tunnel restriction code	*D/E*

IMDG	
Limited quantities (LQ)	*1L*
Excepted quantities (EQ)	*Code: E2*
	Maximum net quantity per inner packaging: 30 ml
	Maximum net quantity per outer packaging: 500 ml
UN "Model Regulation":	*UN 2920 CORROSIVE LIQUID, FLAMMABLE, N.O.S. (HYDROBROMIC ACID, ETHYL METHYL KETONE (METHYL ETHYL KETONE)), 8 (3), II, 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.*

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Seveso category
E1 Hazardous to the Aquatic Environment
P5c FLAMMABLE LIQUIDS
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 (EC) No 1907/2006 ANNEX XVII *Conditions of restriction: 3, 55, 65*

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:
22.06.2015: adaption to regulation 453/2010/EC appendix II
23.02.2018: section 7, 8, 9, 11, 13, 15
11.03.2020: section 1, 13

Relevant phrases
H225 Highly flammable liquid and vapour.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.
H400 Very toxic to aquatic life.
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)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport 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
Flam. Liq. 2: Flammable liquids – Category 2
Flam. Liq. 3: Flammable liquids – Category 3
Acute Tox. 4: Acute toxicity - oral – 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
Safety data sheet *SD3207*