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

Printing date 28.01.2026 *Version number 9* *Revision: 18.02.2025*

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

1.1 Product identifier
Trade name: Lötwasser
Solder liquid
UFI: *2ED8-908M-N00F-4DPH*

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-hour emergency information:
Giftnotruf Berlin, counselling in German and English
Phone: (030) 30686 700
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 Chronic 2 *H411 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


GHS05 GHS07 GHS09

Signal word *Danger*

Hazard-determining components of labelling:
zinc chloride
Hazard statements
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

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H411 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

GHS05 GHS07 GHS09

Signal word *Danger*

Hazard-determining components of labelling:
zinc chloride
Hazard statements
H314 Causes severe skin burns and eye damage.
Precautionary statements
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.
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.*

Dangerous components:		
CAS: 7646-85-7 *EINECS: 231-592-0* *Index number: 030-003-00-2* *Reg.nr.: 01-2119472431-44*	*zinc chloride* *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 %*	*<25%*
CAS: 12125-02-9 *EINECS: 235-186-4* *Index number: 017-014-00-8* *Reg.nr.: 01-2119487950-27*	*ammonium chloride* *Acute Tox. 4, H302; Eye Irrit. 2, H319*	*<10%*

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 soiled by the product.*
After inhalation:
Supply fresh air; consult doctor in case of complaints.
In case of unconsciousness place patient stably in side position for transportation.

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After skin contact:
Immediately wash with water and soap and rinse thoroughly.
Seek medical treatment.
After eye contact:
Protect unharmed eye.
Seek medical treatment.
Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing:
Rinse out mouth and then drink plenty of water.
Seek medical treatment.
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.*
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 fires with water spray.*
5.2 Special hazards arising from the substance or mixture *Hydrogen chloride (HCl)*
5.3 Advice for firefighters
Protective equipment:
Do not inhale explosion gases or combustion gases.
Mouth respiratory protective device.

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:
Do not allow product to reach sewage system or any water course.
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: *Keep respiratory protective device available.*

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 separately from metals.
Further information about storage conditions: *Keep container tightly sealed.*
Storage class: *8 B*
7.3 Specific end use(s) *No further relevant information available.*

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:	
12125-02-9 ammonium chloride	
WES (Australia)	*Short-term value: 20 mg/m³* *Long-term value: 10 mg/m³* *fume*
WEL (Great Britain)	*Short-term value: 20 mg/m³* *Long-term value: 10 mg/m³*
OEL (Ireland)	*Short-term value: 20 mg/m³* *Long-term value: 10 mg/m³*

Regulatory information
WES (Australia): Workplace exposure standards for airborne contaminants
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:
7646-85-7 zinc chloride: NIOSH 7300, 7301, 7303(E) "Zinc", OSHA, ID-121(E)
Additional information: *The lists valid during the making were used as basis.*

8.2 Exposure controls
Appropriate engineering controls *No further data; see section 7.*
Appropriate engineering controls:
Ensure adequate ventilation.
Remove the fumes by means of suitable suction devices.
Ensure adequate ventilation.
Remove the fumes by 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 P2
Filter B
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
As protection from splashes gloves made of the following materials are suitable: *Nitrile rubber, NBR*
Eye/face protection

Tightly sealed goggles

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Body protection: *Protective work clothing*

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information	
Colour:	*Yellowish*
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	
Lower:	*Not determined*
Upper:	*Not determined*
Flash point:	*Not applicable*
Decomposition temperature:	*Not determined*
pH at 20 °C	*5*
Viscosity:	
Kinematic viscosity	*Not determined*
Dynamic:	*Not determined*
Solubility	
water:	*Fully miscible.*
Partition coefficient n-octanol/water (log value)	*Not determined*
Vapour pressure at 20 °C:	*23 hPa*
Density and/or relative density	
Density at 20 °C:	*1.18 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.	
Ignition temperature:	*Product is not selfigniting.*
Explosive properties:	*Product does not present an explosion hazard.*
Solvent content:	
Organic solvents:	*0.0 %*
Water:	*75.4 %*
VOC (EC)	*0.00 %*
Solids content:	*24.5 %*
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*

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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 *Reacts with strong oxidising agents.*
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*

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 relevant for classification:		
ATE (Acute Toxicity Estimates)		
Oral	*LD50*	*4,860-5,435 mg/kg (rat)*

7646-85-7 zinc chloride		
Oral	*LD50*	*1,100-1,260 mg/kg (rat)*
12125-02-9 ammonium chloride		
Oral	*LD50*	*1,650 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.*
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
The product does not contain substances with endocrine disrupting properties.
12.7 Other adverse effects
Remark: *Toxic for fish*
Additional ecological information:
General notes:
The product contains heavy metals. Avoid transfer into the environment. Specific preliminary treatments are necessary

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Must not reach sewage water or drainage ditch undiluted or unneutralised.
Also poisonous for fish and plankton in water bodies.
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.

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 8: Corrosive
HP 14: Ecotoxic

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 or ID number
ADR, IMDG, IATA *UN1840*
14.2 UN proper shipping name
ADR *1840 ZINC CHLORIDE SOLUTION, ENVIRONMENTALLY HAZARDOUS*
IMDG *ZINC CHLORIDE SOLUTION, MARINE POLLUTANT*
IATA *ZINC CHLORIDE SOLUTION*
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: *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): *80*
EMS Number: *F-A,S-B*
Segregation groups *(SGG1) Acids, (SGG7) heavy metals and their salts (including their organometallic compounds)*

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Stowage Category	*A*
14.7 Maritime transport in bulk according to IMO instruments	*Not applicable*

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*
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 1840 ZINC CHLORIDE SOLUTION, 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 *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*
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:
23.04.2015: chapter 7 LGK
14.10.2015: chapter 1, 8, 15 adaption to Regulation 453/2010/EG, 830/2015/EU, 18/2012/EU
10.03.2017: chapter 2, 11, 12, 13, 15
30.04.2018: adaption to Regulation 2016/918/EU, chapter 13

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08.01.2020: section 1 UFI
19.01.2022: section 11, 15, 16
02.02.2023: section 1, 11, 12, 14, 15
18.02.2025: section 14, 15
Information referred to in Annex I, point 1.3.4.2 of Regulation 1272/2008/EC:

Relevant phrases
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
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 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
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
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2
Safety data sheet *SD3033*