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

Printing date 21.07.2025 *Version number 7 (replaces version 6)* *Revision: 21.07.2025*

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

1.1 Product identifier
Trade name: Aluminum universal flux ZnAl,
Aluminum soft solder flux ZnAl
UFI: *TJ39-V0C1-P004-SG15*

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.:0208/8 50 35-0
Fax.:0208/2 60 80
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


GHS08 health hazard

STOT RE 1 *H372 Causes damage to organs through prolonged or repeated exposure.*


GHS05 corrosion

Eye Dam. 1 *H318 Causes serious eye damage.*


GHS07

Acute Tox. 4 *H332 Harmful if inhaled.*

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 CLP regulation.
Hazard pictograms


GHS05 GHS07 GHS08

Signal word *Danger*

Hazard-determining components of labelling:
Caesiumaluminiumfluorid
2,2'-oxybisethanol

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Hazard statements
H332 Harmful if inhaled.
H318 Causes serious eye damage.
H372 Causes damage to organs through prolonged or repeated exposure.
H412 Harmful to aquatic life with long lasting effects.
Precautionary statements
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P280 Wear eye protection / face protection.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a POISON CENTER/doctor if you feel unwell.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
Additional information:
Restricted to professional users.
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: 138577-01-2 *ELINCS: 434-690-3* *Reg.nr.: 01-0000018082-78*	*Caesiumaluminiumfluorid* *STOT RE 1, H372* *Eye Dam. 1, H318* *Acute Tox. 4, H332* *Aquatic Chronic 3, H412*	*30-80%*
CAS: 111-46-6 *EINECS: 203-872-2* *Index number: 603-140-00-6* *Reg.nr.: 01-2119457857-21*	*2,2'-oxybisethanol* *STOT RE 2, H373* *Acute Tox. 4, H302*	*<25%*
CAS: 25265-71-8 *EINECS: 246-770-3* *Reg.nr.: 01-2119456811-38*	*Dipropylene glycol (isomer unspecified)* *substance with a Community workplace exposure limit*	*<50%*

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.*
After skin contact:
Immediately wash with water and soap and rinse thoroughly.
Rub in Ca-gluconate solution or Ca-gluconate gel immediately.
If skin irritation continues, consult a doctor.
After eye contact: *Rinse opened eye for several minutes under running water. Then consult a doctor.*
After swallowing:
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; call for medical help 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
Medical supervision for at least 48 hours.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents: *Use fire extinguishing methods suitable to surrounding conditions.*

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For safety reasons unsuitable extinguishing agents: *Water with full jet*
5.2 Special hazards arising from the substance or mixture
Formation of toxic gases is possible during heating or in case of fire.
Hydrogen fluoride (HF)
5.3 Advice for firefighters
Protective equipment:
Do not inhale explosion gases or combustion gases.
Wear self-contained respiratory protective device.
Additional information *Collect contaminated fire fighting water separately. It must not enter the sewage system.*

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Ensure adequate ventilation
Wear protective equipment. Keep unprotected persons away.
Avoid formation of dust.
6.2 Environmental precautions:
Do not allow product to reach sewage system or any water course.
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:
Pick up mechanically.
Send for recovery or disposal in suitable receptacles.
Dispose contaminated material as waste according to section 13.
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
Use only in well ventilated areas.
Prevent formation of dust.
Information about fire - and explosion protection: *The product is not flammable.*

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:
Do not store together with acids.
Store away from foodstuffs.
Further information about storage conditions:
Keep container tightly sealed.
Store in dry conditions.
Protect from humidity and water.
Storage class: *6.1 C*
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:	
25265-71-8 Dipropylene glycol (isomer unspecified)	
AGW (Germany)	*Long-term value: 100 E mg/m³* *2(II);DFG, Y, 11*
111-46-6 2,2'-oxybisethanol	
WES (Australia)	*Long-term value: 100 mg/m³, 23 ppm*
AGW (Germany)	*Long-term value: 44 mg/m³, 10 ppm* *4(II);DFG, Y, 11*

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WEL (Great Britain)	*Long-term value: 101 mg/m³, 23 ppm*
OEL (Ireland)	*Long-term value: 100 mg/m³, 23 ppm*

Regulatory information
AGW (Germany): TRGS 900
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:
111-46-6 2,2-oxybisethanol: NIOSH 5523(E) "Glycols"
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:
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.
Respiratory protection: *Filter P3*
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
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: ≥ 0.33 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:	*Whitish*
Odour:	*Characteristic*
Odour threshold:	*Not determined.*
Boiling point or initial boiling point and boiling range	*Undetermined.*
Flammability	*Not determined.*
Lower and upper explosion limit	
Lower:	*0.7 Vol %*
Upper:	*22.0 Vol %*
Flash point:	*> 120 °C*
Auto-ignition temperature:	*225 °C*
Decomposition temperature:	*Not determined.*

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pH	*Not applicable.*
Viscosity:	
Kinematic viscosity	*Not applicable.*
Dynamic:	*Not applicable.*
Solubility	
water:	*Partly miscible.*
Partition coefficient n-octanol/water (log value)	*Not determined.*
Vapour pressure:	*Not applicable.*
Density and/or relative density	
Density at 20 °C:	*3.1 g/cm³*
Relative density	*Not determined.*
Vapour density	*Not applicable.*
Particle characteristics	*See section 3.*

9.2 Other information

Appearance:	
Form:	*Solid*
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.*
Change in condition	
Evaporation rate	*Not applicable.*

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
Thermal decomposition / conditions to be avoided: *No decomposition if used according to specifications.*
10.3 Possibility of hazardous reactions *Contact with water releases toxic gases.*
10.4 Conditions to avoid *Reaction with acids.*
10.5 Incompatible materials: *Acids.*
10.6 Hazardous decomposition products: *Hydrogen fluoride*

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008
Acute toxicity
Harmful if inhaled.

LD/LC50 values relevant for classification:		
ATE (Acute Toxicity Estimates)		
Inhalative	*LC50/4 h*	*3 mg/l*

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138577-01-2 Caesiumaluminiumfluorid		
Oral	*LD50*	*>2,000 mg/kg (rat)*
Dermal	*LD50*	*>2,000 mg/kg (rat)*
Inhalative	*LC50/4 h*	*1.5 mg/l (ATE)*

Primary irritant effect:
Skin corrosion/irritation *Based on available data, the classification criteria are not met.*
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 *Based on available data, the classification criteria are not met.*
STOT-repeated exposure
Causes 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
None of the ingredients is listed.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity:	
138577-01-2 Caesiumaluminiumfluorid	
LC50(96h)	*>100 mg/l (fish)*
EC(48h)	*31 mg/l (daphnia)*
ErC50(72h)	*12 mg/l (algae)*

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: *Harmful to fish*
Additional ecological information:
General notes:
Harmful to aquatic organisms
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even 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
16 05 06: laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals*
HP 4: Irritant - skin irritation and eye damage
HP 5: Specific Target Organ Toxicity (STOT)/Aspiration Toxicity
HP 14: Ecotoxic

cleaned plastic can:
15 01 02: plastic packaging

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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: *Alcohol*

SECTION 14: Transport information

14.1 UN number or ID number
ADR, ADN, IMDG, IATA *Void*
14.2 UN proper shipping name
ADR, ADN, IMDG, IATA *Void*
14.3 Transport hazard class(es)

ADR, ADN, IMDG, IATA
Class *Void*
14.4 Packing group
ADR, IMDG, IATA *Void*
14.5 Environmental hazards:
Marine pollutant: *No*
14.6 Special precautions for user *Not applicable.*
14.7 Maritime transport in bulk according to IMO instruments *Not applicable.*
UN "Model Regulation": *Void*

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.*
REGULATION (EU) 2019/1021 on persistent organic pollutants (POP) *None of the ingredients are included.*

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 2 (Self-assessment): 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:
04.24.2016: adaptations to Regulation 453/2010/EC, 830/2015/EU, 2012/18/EU
Section 2 Classification and labelling
10.27.2016: Section 3 Adjustment classification and labelling

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07.17.2018: Section 1, 3
06.28.2021: Section 1, 3, 15, 16
05.22.2024: Section 2
21.07.2025: Section 1, 8, 11, 12, 15
Information referred to in Annex I, point 1.3.4.2 of Regulation 1272/2008/EC:

Relevant phrases
H302 Harmful if swallowed.
H318 Causes serious eye damage.
H332 Harmful if inhaled.
H372 Causes damage to organs through prolonged or repeated exposure.
H373 May cause damage to organs through prolonged or repeated exposure.
H412 Harmful to aquatic life with long lasting effects.
Contact: *Dr. M. Probst*
Version number of previous version: *6*
Abbreviations and acronyms:
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)
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
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3
Safety data sheet *SD3291*