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

1.1. Product identifier

Copper plating solution - alkaline

UFI: 2F00-Q07E-3005-4HRE

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture

Coating of acid-sensitive metals with copper

Uses advised against

Other uses than those specified in section 1.2 of this safety data sheet are not recommended.

1.3. Details of the supplier of the safety data sheet

Company name:	Thomas Henning e.K.
Street:	Buschurweg 4
Place:	D-76870 Kandel
Telephone:	+49 7275 94 78 199
E-mail:	info@drgalva.com
Internet:	drgalva.net

1.4. Emergency telephone number:

Emergency Action: In the event of a medical enquiry involving this product, please contact your doctor or local hospital accident and emergency department or the NHS enquiry service.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Met. Corr. 1; H290
Acute Tox. 4; H302
Skin Corr. 1A; H314
Eye Dam. 1; H318
Aquatic Acute 1; H400
Aquatic Chronic 2; H411

Full text of hazard statements: see SECTION 16.

2.2. Label elements

Regulation (EC) No 1272/2008

Hazard components for labelling

Etidronic acid
caustic potash, potassium hydroxide
copper sulphate pentahydrate

Signal word: Danger

Pictograms:

Hazard statements

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H400	Very toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P260	Do not breathe dust/vapours/spray.
P280	Wear protective gloves/protective clothing and eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
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.
P501	Do not discard content with household waste and forward for disposal according to regional/national guidelines.

2.3. Other hazards

The components in this formulation do not meet the criteria for classification as PBT or vPvB .
This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.
This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Relevant ingredients

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification (Regulation (EC) No 1272/2008)			
2809-21-4	Etidronic acid			20 - < 25 %
	220-552-8		01-2119510391-53	
	Met. Corr. 1, Acute Tox. 4, Eye Dam. 1; H290 H302 H318			
1310-58-3	caustic potash, potassium hydroxide			15 - < 20 %
	215-181-3	019-002-00-8	01-2119487136-33	
	Met. Corr. 1, Acute Tox. 4, Skin Corr. 1A; H290 H302 H314			
7758-99-8	copper sulphate pentahydrate			5 - < 10 %
	231-847-6	029-023-00-4	01-2119520566-40	
	Acute Tox. 4, Skin Irrit. 2, Eye Dam. 1, Aquatic Acute 1, Aquatic Chronic 1; H302 H315 H318 H400 H410			
497-19-8	sodium carbonate			2,5 - < 5 %
	207-838-8	011-005-00-2	01-2119485498-19	
	Eye Irrit. 2; H319			

Full text of H and EUH statements: see section 16.

Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity
	Specific Conc. Limits, M-factors and ATE		
2809-21-4	220-552-8	Etidronic acid	20 - < 25 %
	oral: ATE = 500 mg/kg		
1310-58-3	215-181-3	caustic potash, potassium hydroxide	15 - < 20 %
	oral: LD50 = 333 mg/kg Skin Corr. 1A; H314: >= 5 - 100 Skin Corr. 1B; H314: >= 2 - < 5 Skin Irrit. 2; H315: >= 0,5 - < 2 Eye Irrit. 2; H319: >= 0,5 - < 2		
7758-99-8	231-847-6	copper sulphate pentahydrate	5 - < 10 %
	oral: ATE 481 mg/kg Aquatic Acute 1; H400: M=10 Aquatic Chronic 1; H410: M=1		
497-19-8	207-838-8	sodium carbonate	2,5 - < 5 %
	oral: LD50 = 4090 mg/kg		

Further Information

The percentages of the ingredients not listed here are all below the level of consideration.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

In case of troubles or persistent symptoms, consult an doctor/physician.

After inhalation

Provide fresh air. In case of respiratory tract irritation, consult a physician.
In case of irregular breathing or respiratory arrest, perform artificial respiration. No mouth-to-mouth or mouth-to-nose resuscitation. Use Ambu bag or ventilator.

After contact with skin

After contact with skin, wash immediately with plenty of water and soap. Call a doctor. Change contaminated clothing. Wash contaminated clothing before reuse.

After contact with eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately. Protect uninjured eye.

After ingestion

Rinse mouth, spit liquid again. Do NOT induce vomiting. Let water be drunken in little sips (dilution effect). Call a physician immediately. If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects).

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

irritation. burnes. gastro-intestinal ailment. Spasms. vomiting. Dyspnoea. Nausea. Stomach perforation. Circulatory collapse. Pulmonary oedema

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Co-ordinate fire-fighting measures to the fire surroundings.
Carbon dioxide (CO2). Extinguishing powder. Atomized water. Foam.

Unsuitable extinguishing media

High power water jet.

5.2. Special hazards arising from the substance or mixture

Upon exposure to fire, harmful gases may be emitted.

5.3. Advice for firefighters

Co-ordinate fire-fighting measures to the fire surroundings. Wear a self-contained breathing apparatus and chemical protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General advice

Wear suitable protective clothing.
Avoid contact with skin, eyes and clothes. Wear personal protection equipment.

6.2. Environmental precautions

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

6.3. Methods and material for containment and cleaning up

For containment

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents). Wear personal protection equipment. Treat the recovered material as prescribed in the section on waste disposal.

For cleaning up

Clean contaminated articles and floor according to the environmental legislation.

6.4. Reference to other sections

Safe handling: see section 7
Personal protection equipment: see section 8
Disposal: see section 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Personal precautions: refer to section 8 Persons with a history of skin sensitisation problems should not be employed in any process in which this product is used.
Provide adequate ventilation, especially in confined areas.

Advice on general occupational hygiene

Avoid contact with skin, eyes and clothes. Remove contaminated, saturated clothing immediately. Protect skin by using skin protective cream. After work, wash hands and face. When using do not eat or drink.

Further information on handling

Wash hands before breaks and after work. When using do not eat, drink, smoke, sniff.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Store only in original container. Keep container tightly closed in a cool, well-ventilated place.
Protect from heat/overheating.
Store separately from oxidizing agents.

Hints on joint storage

Keep away from food, drink and animal feedingstuffs.

7.3. Specific end use(s)

Coating metals with a shiny copper layer

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

CAS No	Substance	ppm	mg/m³	fib/cm³	Category	Origin
1310-58-3	Potassium hydroxide	-	2		STEL (15 min)	

8.2. Exposure controls

Appropriate engineering controls

Do not breathe gas/fumes/vapour/spray. Provide protection equipment (eye wash bottles, etc.).

Individual protection measures, such as personal protective equipment

Eye/face protection

Eye glasses with side protection

Hand protection

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits.
The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.

Suitable material:: NBR (Nitrile rubber).
Thickness of glove material: >0,3 mm
penetration time (maximum wearing period): >480 min.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Skin protection

Protective clothing: Chemical resistant safety shoes
The design of personal protective equipment must be selected specifically for the job, depending on the concentration and quantity of hazardous substances. The chemical resistance of the protective agents should be clarified with their suppliers.

Respiratory protection

Wear breathing apparatus if exposed to vapours/dusts/aerosols.
Protective respiration apparatus not using surrounding air (breathing apparatus) (DIN EN 133).

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state:	liquid
Colour:	dark blue
Odour:	characteristic
Melting point/freezing point:	no data available
Boiling point or initial boiling point and boiling range:	ca.100 °C
Flammability:	no data available
Lower explosion limits:	no data available
Upper explosion limits:	no data available
Flash point:	not applicable
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH-Value (at 20 °C):	8 - 10
Viscosity / kinematic:	no data available
Water solubility:	no data available

Solubility in other solvents

no data available

Dissolution rate:	no data available
Partition coefficient n-octanol/water:	no data available
Dispersion stability:	no data available
Vapour pressure:	no data available
Vapour pressure:	no data available
Density:	1,1-1,2 g/cm³
Relative density:	no data available
Bulk density:	no data available
Relative vapour density:	no data available
Particle characteristics:	no data available

9.2. Other information

Information with regard to physical hazard classes

Explosive properties

not Explosive.

Self-ignition temperature

Solid: no data available

Oxidizing properties

no data available

Other safety characteristics

Viscosity / dynamic: no data available

Further Information

no data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Substances or mixtures corrosive to metals.

10.2. Chemical stability

The product is stable under normal environmental conditions (room temperature).

10.3. Possibility of hazardous reactions

No dangerous reactivity under regular conditions.

10.4. Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5. Incompatible materials

Oxidising substances

10.6. Hazardous decomposition products

In case of fire hazardous decomposition products may be formed.
Carbon dioxide (CO2). Carbon monoxide. Metal oxide smoke, toxic

SECTION 11: Toxicological information

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

Acute toxicity

Harmful if swallowed.

ATEmix calculated

ATE (oral) 931,6 mg/kg; ATE (dermal) > 2000 mg/kg; ATE (inhalation vapour) > 20 mg/l; ATE (inhalation dust/mist) > 5 mg/l

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
2809-21-4	Etidronic acid				
	oral	ATE 500 mg/kg			
1310-58-3	caustic potash, potassium hydroxide				
	oral	LD50 333 mg/kg	Rat		
7758-99-8	copper sulphate pentahydrate				
	oral	ATE 481 mg/kg			
497-19-8	sodium carbonate				
	oral	LD50 4090 mg/kg	Rat	IUCLID	

Irritation and corrosivity

Skin corrosion/irritation: Causes severe skin burns and eye damage.
Serious eye damage/eye irritation: Causes serious eye damage.

Sensitising effects

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

Carcinogenic/mutagenic/toxic effects 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

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

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.
If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects).

11.2. Information on other hazards

Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

SECTION 12: Ecological information

12.1. Toxicity

Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h] | [d]	Species	Source	Method
497-19-8	sodium carbonate					
	Acute fish toxicity	LC50 300 mg/l	96 h	Lepomis macrochirus		
	Acute crustacea toxicity	EC50 265 mg/l	48 h	Daphnia magna	IUCLID	

12.2. Persistence and degradability

No data available.

12.3. Bioaccumulative potential

No data available.

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

12.6. Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

12.7. Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal recommendations

Disposal according to official regulations.
Consult the local waste disposal expert about waste disposal. According to EAKV, allocation of waste identity numbers/waste descriptions must be carried out in a specific way for every industry and process.

Contaminated packaging

Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number or ID number:	UN 1760
14.2. UN proper shipping name:	CORROSIVE LIQUID, N.O.S. (Etidronic acid; caustic potash, potassium hydroxide)
14.3. Transport hazard class(es):	8
14.4. Packing group:	II
Hazard label:	8

Classification code:	C9
Special Provisions:	274
Limited quantity:	1 L
Excepted quantity:	E2
Transport category:	2
Hazard No:	80
Tunnel restriction code:	E

Inland waterways transport (ADN)

14.1. UN number or ID number:	UN 1760
14.2. UN proper shipping name:	CORROSIVE LIQUID, N.O.S. (Etidronic acid; caustic potash, potassium hydroxide)
14.3. Transport hazard class(es):	8
14.4. Packing group:	II
Hazard label:	8

Classification code:	C9
Special Provisions:	274

Limited quantity: 1 L
Excepted quantity: E2

Marine transport (IMDG)

14.1. UN number or ID number: UN 1760
14.2. UN proper shipping name: CORROSIVE LIQUID, N.O.S.
(Etidronic acid; potassium hydroxide)
14.3. Transport hazard class(es): 8
14.4. Packing group: II
Hazard label: 8

Special Provisions: 274
Limited quantity: 1 L
Excepted quantity: E2
EmS: F-A, S-B

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number or ID number: UN 1760
14.2. UN proper shipping name: CORROSIVE LIQUID, N.O.S.
(Etidronic acid; potassium hydroxide)
14.3. Transport hazard class(es): 8
14.4. Packing group: II
Hazard label: 8

Special Provisions: A3 A803
Limited quantity Passenger: 0.5 L
Passenger LQ: Y840
Excepted quantity: E2
IATA-packing instructions - Passenger: 851
IATA-max. quantity - Passenger: 1 L
IATA-packing instructions - Cargo: 855
IATA-max. quantity - Cargo: 30 L

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: Yes

Danger releasing substance: copper sulphate pentahydrate

14.6. Special precautions for user

No special precautions known.

14.7. Maritime transport in bulk according to IMO instruments

not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulatory information

Restrictions on use (REACH, annex XVII):

Entry 3, Entry 75

Information according to Directive 2012/18/EU (SEVESO III): E1 Hazardous to the Aquatic Environment

Additional information

Regulation (EC) No. 1907/2006 (REACH)
Regulation (EC) No. 648/2004 [Detergents regulation]: not applicable
Regulation (EC) No. 1005/2009 on substances that lead to the depletion of the ozone layer: not applicable
Regulation (EC) No 2019/1021 on persistent organic pollutants: not applicable
Regulation (EC) No 649/2012 of the European Parliament and of the Council concerning the export and import of dangerous chemicals: This mix contains no chemicals that are subject to the export notification procedures (annex 1).
This mixture contains the following substances of very high concern (SVHC) which are included in the Candidate List according to Article 59 of REACH: none
This mixture contains the following substances of very high concern (SVHC) which are subject to authorisation according to Annex XIV of REACH: none

National regulatory information

Water hazard class (D): 3 - highly hazardous to water

Additional information

Observe in addition any national regulations!

15.2. Chemical safety assessment

For the following substances of this mixture a chemical safety assessment has been carried out:
caustic potash, potassium hydroxide
copper sulphate pentahydrate
sodium carbonate

SECTION 16: Other information

Changes

This data sheet contains changes from the previous version in section(s): 2,3,4,6,8,9,10,11,12,14,15,16.
Version 1,00 - 12.04.2021 - first creation
Version 1,01 - 09.02.2022 - General update
Version 1,02 - 19.09.2023 - General update

Abbreviations and acronyms

Met. Corr. 1: Corrosive to metals, hazard category 1
Acute Tox. 4: Acute toxicity, hazard category 4
Skin Corr. 1A: Skin corrosion, sub-category 1A
Skin Irrit. 2: Skin irritation, hazard category 2
Eye Dam. 1: Serious eye damage, hazard category 1
Eye Irrit. 2: Eye irritation, hazard category 2
Aquatic Acute 1: Hazardous to the aquatic environment, hazard category: Acute 1
Aquatic Chronic 1: Hazardous to the aquatic environment, long-term hazard category: Chronic 1
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
BImSchV (Fed.Imm.Prot.Act): Directive on the Implementation of the Federal Immission Protection Act
CAS: Chemical Abstracts Service
DIN: Norm of the Deutsche Institut für Normung (German Institute for Standardization)
EC: Effective Concentration
EG: European Community (Europäische Gemeinschaft)
EN: European Norm
IATA: International Air Transport Association
IBC Code: International Code for the Construction and Equipment of ships carrying Dangerous Chemicals in Bulk
ICAO: International Civil Aviation Organization
IMDG: International Maritime Code for Dangerous Goods
ISO: Norm of the International Standards Organization
CLP: Classification, Labeling, Packaging
IUCLID: International Uniform ChemicaL Information Database
LC: Lethal concentration
LD: Lethal dose
log Kow: Octanol/water partition coefficient
MARPOL: Maritime Pollution Convention = Convention for the Prevention of Maritime Pollution from Ships
OECD: Organisation for Economic Co-operation and Development
PBT: Persistent, bio-cumulative, toxic
RID: Regulation Concerning the International Transport of Dangerous Goods by Rail
TRGS: Technische Regeln für Gefahrstoffe
UN: United Nations
VOC: Volatile Organic Compounds
vPvB: very persistent and very bio-cumulative
VwVwS: Administrative Regulation for Water Pollutants
WGK: German Water Hazard Class
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
DNEL: Derived No Effect Level
PNEC: Predicted No Effect Concentration
TLV: Threshold Limiting Value
STOT: Specific Target Organ Toxicity

Classification for mixtures and used evaluation method according to Regulation (EC) No 1272/2008 [CLP]

Classification	Classification procedure
Met. Corr. 1; H290	On basis of test data
Acute Tox. 4; H302	Calculation method
Skin Corr. 1A; H314	Calculation method
Eye Dam. 1; H318	Calculation method
Aquatic Acute 1; H400	Calculation method
Aquatic Chronic 2; H411	Calculation method

Relevant H and EUH statements (number and full text)

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.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

Further Information

The information given in this safety data sheet is to describe the product's safety regulations. It is not for guaranteeing certain characteristics and is based on today's knowledge. The safety data sheet was generated upon information of pre-suppliers by:

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Phone: +49 (0)6021 - 1 50 86-0, Fax: +49 (0)6021 - 1 50 86-77, E-Mail: eu-sds@asseso.eu, www.asseso.eu

(The data for the relevant ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)