

## Safety Data Sheet

according to Regulation (EC) No 1907/2006

### Zinc-nickel plating solution

Revision date: 28.09.2023

Product code: DG-008

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

### 1.1. Product identifier

Zinc-nickel plating solution

UFI: RS20-C0V4-C00H-0RG5

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

#### Use of the substance/mixture

Zink-nickel plating of metals

#### 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; H332  
Skin Corr. 1A; H314  
Eye Dam. 1; H318  
Skin Sens. 1; H317  
Aquatic Chronic 3; H412

Full text of hazard statements: see SECTION 16.

### 2.2. Label elements

#### Regulation (EC) No 1272/2008

#### Hazard components for labelling

caustic soda, sodium hydroxide  
2,2'-iminodiethylamine; diethylenetriamine  
nickel sulfate  
nickel dichloride  
nickel sulfamate

Signal word: Danger

Pictograms:



#### Hazard statements

H290 May be corrosive to metals.  
H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.

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- |      |  |
|------|--|
| H332 | Harmful if inhaled.                                |
| H412 | Harmful 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/fume/gas/mist/vapours/spray.   |
| P280           | Wear protective gloves and eye/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

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### Hazardous components

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification (Regulation (EC) No 1272/2008)			
1310-73-2	caustic soda, sodium hydroxide			15 - < 20 %
	215-185-5	011-002-00-6	01-2119457892-27	
	Met. Corr. 1, Skin Corr. 1A; H290 H314			
102-60-3	1,1',1'',1'''-ethylenedinitrilotetrapropan-2-ol			2.5 - < 5 %
	203-041-4			
	Eye Irrit. 2; H319			
111-40-0	2,2'-iminodiethylamine; diethylenetriamine			<3 %
	203-865-4	612-058-00-X		
	Acute Tox. 2, Acute Tox. 4, Acute Tox. 4, Skin Corr. 1B, Eye Dam. 1, Skin Sens. 1, STOT SE 3; H330 H312 H302 H314 H318 H317 H335			
1314-13-2	zinc oxide			1 - < 2.5 %
	215-222-5	030-013-00-7	01-2119463881-32	
	Aquatic Acute 1, Aquatic Chronic 1; H400 H410			
7786-81-4	nickel sulfate			< 0.1 %
	232-104-9	028-009-00-5	01-2119439361-44	
	Carc. 1A, Muta. 2, Repr. 1B, Acute Tox. 4, Acute Tox. 4, Skin Irrit. 2, Resp. Sens. 1, Skin Sens. 1, STOT RE 1, Aquatic Acute 1, Aquatic Chronic 1; H350i H341 H360D H332 H302 H315 H334 H317 H372 H400 H410			
7718-54-9	nickel dichloride			< 0.1 %
	231-743-0	028-011-00-6	01-2119486973-20	
	Carc. 1A, Muta. 2, Repr. 1B, Acute Tox. 3, Acute Tox. 3, Skin Irrit. 2, Resp. Sens. 1, Skin Sens. 1, STOT RE 1, Aquatic Acute 1, Aquatic Chronic 1; H350i H341 H360D H331 H301 H315 H334 H317 H372 H400 H410			
13770-89-3	nickel sulfamate			< 0.1 %
	237-396-1	028-018-00-4		
	Carc. 1A, Muta. 2, Repr. 1B, Acute Tox. 4, Resp. Sens. 1, Skin Sens. 1, STOT RE 1, Aquatic Acute 1, Aquatic Chronic 1; H350i H341 H360D H302 H334 H317 H372 H400 H410			

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

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#### Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity
		Specific Conc. Limits, M-factors and ATE	
1310-73-2	215-185-5	caustic soda, sodium hydroxide	15 - < 20 %
		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	
111-40-0	203-865-4	2,2'-iminodiethylamine; diethylenetriamine	<3 %
		inhalation: ATE = 0,5 mg/l (vapours); inhalation: ATE = 0,05 mg/l (dusts or mists); dermal: LD50 = 1045 mg/kg; oral: LD50 = 1553 mg/kg	
1314-13-2	215-222-5	zinc oxide	1 - < 2,5 %
		oral: LD50 = > 5000 mg/kg	
7786-81-4	232-104-9	nickel sulfate	< 0.1 %
		inhalation: ATE = 11 mg/l (vapours); inhalation: ATE = 1,5 mg/l (dusts or mists); oral: ATE = 500 mg/kg Skin Irrit. 2; H315: >= 20 - 100 Skin Sens. 1; H317: >= 0,01 - 100 STOT RE 1; H372: >= 1 - 100 STOT RE 2; H373: >= 0,1 - < 1 Aquatic Acute 1; H400: M=1 Aquatic Chronic 1; H410: M=1	
7718-54-9	231-743-0	nickel dichloride	< 0.1 %
		inhalation: ATE = 3 mg/l (vapours); inhalation: ATE = 0,5 mg/l (dusts or mists); oral: LD50 = 105 - 681 mg/kg Skin Irrit. 2; H315: >= 20 - 100 Skin Sens. 1; H317: >= 0,01 - 100 STOT RE 1; H372: >= 1 - 100 STOT RE 2; H373: >= 0,1 - < 1 Aquatic Acute 1; H400: M=1 Aquatic Chronic 1; H410: M=1	
13770-89-3	237-396-1	nickel sulfamate	< 0.1 %
		oral: ATE 853 mg/kg Skin Sens. 1; H317: >= 0,01 - 100 STOT RE 1; H372: >= 1 - 100 STOT RE 2; H373: >= 0,1 - < 1 Aquatic Acute 1; H400: M=1 Aquatic Chronic 1; H410: M=1	

#### 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

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Allergic reactions

#### **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 (CO<sub>2</sub>). 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. Nitrogen oxides (NO<sub>x</sub>). Sulfur oxides.

#### **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**

Avoid breathing dust/fume/gas/mist/vapours/spray. Provide adequate ventilation. 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.  
Do not empty into drains; dispose of this material and its container in a safe way.

##### **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**

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#### 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)

Zink-nickel plating of metals

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### Occupational exposure limits

CAS No	Substance	ppm	mg/m <sup>3</sup>	fib/cm <sup>3</sup>	Category	Origin
111-40-0	2,2-Diaminodiethylamine	1	4		TWA (8 h)	
-	Nickel, inorganic compounds (as Ni), soluble compounds	-	0.1		TWA (8 h)	
1310-73-2	Sodium hydroxide	-	2		STEL (15 min)	
1314-13-2	Zinc oxide, fume (Respirable Fraction)	-	2		TWA (8 h)	
		-	10		STEL (15 min)	

##### Biological limit values

CAS No	Substance	Parameter	Value	Test material	Sampling time
-	Nickel compounds	Ni	3 µg/L	Urine	After several consecutive working shifts

##### DNEL/DMEL values

CAS No	Substance	Exposure route	Effect	Value
1314-13-2	zinc oxide			
Consumer DNEL, long-term		oral		0,83 mg/kg bw/day
Consumer DNEL, long-term		dermal		83,3 mg/kg bw/day
Worker DNEL, long-term		dermal		83,3 mg/kg bw/day
Consumer DNEL, long-term		inhalation		2,5 mg/m <sup>3</sup>
Worker DNEL, long-term		inhalation		5 mg/m <sup>3</sup>

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#### PNEC values

CAS No	Substance	
Environmental compartment		Value
1314-13-2	zinc oxide	
Freshwater		0,021 mg/l
Marine water		0,006 mg/l
Freshwater sediment		117,8 mg/kg
Marine sediment		56,5 mg/kg
Micro-organisms in sewage treatment plants (STP)		0,052 mg/l
Soil		35,6 mg/kg

#### Additional advice on limit values

Currently there are no further exposure limits available.

#### 8.2. Exposure controls

##### Appropriate engineering controls

Provide adequate ventilation. Provide protection equipment (eye wash bottles, etc.).

##### Individual protection measures, such as personal protective equipment

##### Eye/face protection

Tightly sealed safety glasses.

##### 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:: CR (polychloroprenes, Chloroprene rubber).

Thickness of glove material: >0,5 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:	violet	
Odour:	characteristic	
Melting point/freezing point:		no data available
Boiling point or initial boiling point and boiling range:		100 °C
Flammability:		no data available
Lower explosion limits:		no data available

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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):	14
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/cm <sup>3</sup>
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

Protect against contaminations.

#### 10.5. Incompatible materials

Oxidising substances

#### 10.6. Hazardous decomposition products

Upon exposure to fire, harmful gases may be emitted. Nitrogen oxides (NO<sub>x</sub>). Hydrogen chloride (HCl). Sulfur oxides.

### SECTION 11: Toxicological information

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



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#### Acute toxicity

Harmful if inhaled.

#### ATEmix calculated

ATE (oral) 103533 mg/kg; ATE (dermal) 69667 mg/kg; ATE (inhalation vapour) 33,33 mg/l; ATE (inhalation dust/mist) 3,333 mg/l

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
111-40-0	2,2'-iminodiethylamine; diethylenetriamine				
	oral	LD50 1553 mg/kg			
	dermal	LD50 1045 mg/kg			
	inhalation vapour	ATE 0,5 mg/l			
	inhalation dust/mist	ATE 0,05 mg/l			
1314-13-2	zinc oxide				
	oral	LD50 > 5000 mg/kg	Rat		
7786-81-4	nickel sulfate				
	oral	ATE 500 mg/kg			
	inhalation vapour	ATE 11 mg/l			
	inhalation dust/mist	ATE 1,5 mg/l			
7718-54-9	nickel dichloride				
	oral	LD50 105 - 681 mg/kg	Rat	GESTIS	
	inhalation vapour	ATE 3 mg/l			
	inhalation dust/mist	ATE 0,5 mg/l			
13770-89-3	nickel sulfamate				
	oral	ATE 853 mg/kg			

#### Irritation and corrosivity

Causes severe skin burns and eye damage.

Causes serious eye damage.

#### Sensitising effects

May cause an allergic skin reaction. (2,2'-iminodiethylamine; diethylenetriamine; nickel sulfate; nickel dichloride; nickel sulfamate)

#### Carcinogenic/mutagenic/toxic effects for reproduction

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.

#### 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.

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#### Further information

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

### SECTION 12: Ecological information

#### 12.1. Toxicity

Harmful to aquatic life with long lasting effects.

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
1310-73-2	caustic soda, sodium hydroxide					
	Acute fish toxicity	LC50 45,4 mg/l	96 h	Onchorhynchus mykiss		
111-40-0	2,2'-iminodiethylamine; diethylenetriamine					
	Acute fish toxicity	LC50 430 mg/l	96 h	Leuciscus idus		
	Acute algae toxicity	ErC50 1164 mg/l	72 h	Selenastrum capricornutum		
	Acute crustacea toxicity	EC50 53,5 mg/l	48 h	Daphnia magna		
1314-13-2	zinc oxide					
	Acute fish toxicity	LC50 1,31 mg/l	96 h	Oncorhynchus mykiss (Rainbow trout)		
	Acute algae toxicity	ErC50 0,21 mg/l	72 h	Pseudokirchneriella subcapitata		
	Acute crustacea toxicity	EC50 2,2 mg/l	48 h	Daphnia magna		
	Algae toxicity	NOEC 0,04 mg/l		Pseudokirchneriella subcapitata		

#### 12.2. Persistence and degradability

No data available.

#### 12.3. Bioaccumulative potential

No data available.

#### Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
111-40-0	2,2'-iminodiethylamine; diethylenetriamine	-2,13

#### 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.

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#### 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 1719

**14.2. UN proper shipping name:**

CAUSTIC ALKALI LIQUID, N.O.S. (caustic soda, sodium hydroxide; 2,2'-iminodiethylamine; diethylenetriamine)

**14.3. Transport hazard class(es):**

8

**14.4. Packing group:**

II

Hazard label:

8



Classification code:

C5

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 1719

**14.2. UN proper shipping name:**

CAUSTIC ALKALI LIQUID, N.O.S. (caustic soda, sodium hydroxide; 2,2'-iminodiethylamine; diethylenetriamine)

**14.3. Transport hazard class(es):**

8

**14.4. Packing group:**

II

Hazard label:

8



Classification code:

C5

Special Provisions:

274

Limited quantity:

1 L

Excepted quantity:

E2

#### Marine transport (IMDG)

**14.1. UN number or ID number:**

UN 1719

**14.2. UN proper shipping name:**

CAUSTIC ALKALI LIQUID, N.O.S. (Sodium hydroxide, diethylenetriamine)

**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:**

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<b>14.2. UN proper shipping name:</b>	CAUSTIC ALKALI LIQUID, N.O.S. (Sodium hydroxide, diethylenetriamine)
<b>14.3. Transport hazard class(es):</b>	8
<b>14.4. Packing group:</b>	II
<b>Hazard label:</b>	8 
<b>Special Provisions:</b>	A3 A803
<b>Limited quantity Passenger:</b>	0.5 L
<b>Passenger LQ:</b>	Y840
<b>Excepted quantity:</b>	E2
<b>IATA-packing instructions - Passenger:</b>	851
<b>IATA-max. quantity - Passenger:</b>	1 L
<b>IATA-packing instructions - Cargo:</b>	855
<b>IATA-max. quantity - Cargo:</b>	30 L

#### 14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

#### 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 27, Entry 28, Entry 75

Information according to 2012/18/EU (SEVESO III): Not subject to 2012/18/EU (SEVESO III)

##### 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 850/2004 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

Employment restrictions: Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC).

Water hazard class (D): 1 - slightly 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:

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caustic soda, sodium hydroxide  
zinc oxide  
nickel sulfate  
nickel dichloride

**SECTION 16: Other information****Changes**

This data sheet contains changes from the previous version in section(s): 2,3,4,5,6,7,8,9,10,11,12,14,15,16.

Version 1,00 - 19.03.2021 - first creation

Version 1,01 - 09.02.2022 - General update

Version 1,02 - 28.09.2023 - Change and revision of the SDS because of new information / recipe

## Safety Data Sheet

according to Regulation (EC) No 1907/2006

### Zinc-nickel plating solution

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#### Abbreviations and acronyms

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  
 Met. Corr: Substance or mixture corrosive to metals  
 Acute Tox: Acute toxicity  
 Skin Corr: Skin corrosion  
 Skin Irrit: Skin irritation  
 Eye Dam: Eye damage  
 Eye Irrit: Eye irritation  
 Resp. Sens: Respiratory sensitisation  
 Skin Sens: Skin sensitisation  
 Muta: Germ cell mutagenicity  
 Carc: Carcinogenicity  
 Repr: Reproductive toxicity  
 STOT SE: Specific target organ toxicity - single exposure  
 STOT RE: Specific target organ toxicity - repeated exposure  
 Aquatic Acute: Acute aquatic hazard  
 Aquatic Chronic: Chronic aquatic hazard

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#### 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; H332	Calculation method
Skin Corr. 1A; H314	Calculation method
Eye Dam. 1; H318	Calculation method
Skin Sens. 1; H317	Calculation method
Aquatic Chronic 3; H412	Calculation method

#### Relevant H and EUH statements (number and full text)

H290	May be corrosive to metals.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H341	Suspected of causing genetic defects.
H350i	May cause cancer by inhalation.
H360D	May damage the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful 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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*(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)*