

## zinc Z1 SHG

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

#### 1.1. Product identifier

<b>Product name</b>	: zinc Z1 SHG
<b>Synonyms</b>	: KATHODE EN ONGELEGEERD ZINK; SSHG; Z1; zinc; ZINC BATTERY GRADE; ZINC CATHODES; ZINC ELECTROLIQUE; zinc, solid, in massive state; ZINK, SHG (Special High Grade)
<b>Registration number REACH</b>	: 01-2119467174-37-0000 (Nyrstar Belgium NV/SA) 01-2119467174-37-0035 (Nyrstar Budel BV) 01-2119467174-37-0045 (Nyrstar France SAS)
<b>Product type REACH</b>	: Substance/mono-constituent
<b>CAS number</b>	: 7440-66-6
<b>EC number</b>	: 231-175-3
<b>Molecular mass</b>	: 65.37 g/mol
<b>Formula</b>	: Zn

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

##### 1.2.1 Relevant identified uses

- IU01: Zinc metal production RLE (GESZn 0)
  - IU03: Storage of ingots-slabs in warehouses (GESZn 1)
  - IU04: Production of chemicals (pyro) (GESZn 3)
  - IU07: Melting, alloying and casting (GESZn 1)
  - IU08: Cathodic protection - sacrificial anodes (GESZn 1)
  - IU09: Downstream use of zinc-based sacrificial anodes (GESZn 8)
  - IU10: Extraction of PM (Parkes process) (GESZn 5)
  - IU11: Zinc casting / granules, pellets, prills, ... (GESZn 1, GESZn 6)
  - IU12: Zinc sheet casting and rolling (GESZn 1, GESZn 6)
  - IU13: Wire and rods manufacturing (GESZn 1, GESZn 6)
  - IU14: Downstream use of Zn based wire for metal spraying (GESZn 8)
  - IU15: Component for soldering/brazing/welding products (GESZn 1, GESZn 6)
  - IU16: Downstream use of Zinc based brazing/soldering products (GESZn 8)
  - IU17: Strips and coins manufacturing (GESZn 1, GESZn 6)
  - IU18: Batteries ballots, cans manufacturing (GESZn 1, GESZn 6)
  - IU19: Zinc (pure or alloyed) powder manufacturing (GESZn 2)
  - IU20: Passivated zinc powder manufacturing (pure or alloyed) (GESZn 2)
  - IU30: Brass manufacturing (GESZn 1)
  - IU31: Use of brass casts for transformation into semi-products (GESZn 6)
  - IU32: Use of brass containing products (GESZn 8)
  - IU33: Die-casting alloys manufacturing (GESZn 1)
  - IU34: Use of die-casting ingots (GESZn 6)
  - IU35: Manufacturing of Zinc containing Al-alloys (GESZn 1)
  - IU36: Use of zinc containing Al alloys (GESZn 6)
  - IU37: General hot dip galvanizing (GESZn 5)
  - IU38: Continuous hot dip galvanizing (GESZn 5)
  - IU39: Electroplating (GESZn 5)
  - IU40: Electroplating (GESZn 5)
  - IU41: Production of "targets by (EB) PVD or other sputtering techniques (GESZn 5)
  - IU42: Use of galvanized goods Generic consumer/environment
- For more detailed information regarding the Identified Uses and the associated Exposure Scenarios: see attached annex

##### 1.2.2 Uses advised against

No uses advised against

#### 1.3. Details of the supplier of the safety data sheet

##### Supplier of the safety data sheet

Nyrstar Belgium N.V. on behalf of Nyrstar Sales & Marketing A.G.  
Zinkstraat 1  
B-2490 Balen  
☎ +32 14 44 95 00  
☎ +32 14 81 05 31  
infoSDS@nyrstar.com

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Nyrstar Budel B.V. on behalf of Nyrstar Sales & Marketing A.G.

Hoofdstraat 1  
6024 AA Budel-Dorplein  
☎ +32 14 44 96 80  
☎ +32 14 44 95 52  
infoSDS@nyrstar.com

Nyrstar France S.A.S. on behalf of Nyrstar Sales & Marketing A.G.

Rue Jean Jacques Rousseau  
F-59950 Aubry  
☎ +32 14 44 96 80  
☎ +33 3 27 88 39 48  
infoSDS@nyrstar.com

## **Manufacturer of the product**

Nyrstar Sales & Marketing SA  
1 Rue de Jargonnant  
CH-1207 Geneva  
infoSDS@nyrstar.com

## **1.4. Emergency telephone number**

24h/24h (Telephone advice: English, French, German, Dutch) :

+32 14 58 45 45 (BIG)

## SECTION 2: Hazards identification

### **2.1. Classification of the substance or mixture**

Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

### **2.2. Label elements**

Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

### **2.3. Other hazards**

The criteria of PBT and vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006 do not apply to inorganic substances

The melting down of moist metal leads to explosion risk

Heated product causes burns

Heated product causes eye burns

## SECTION 3: Composition/information on ingredients

### **3.1. Substances**

Not applicable

### **3.2. Mixtures**

Name REACH Registration No	CAS No EC No	Conc. (C)	Classification according to CLP	Note	Remark	M-factors and ATE
zinc 01-2119467174-37	7440-66-6 231-175-3	C>99.995		(2)(10)	Mono-constituent	
lead massive: [particle diameter ≥1mm] 01-2119513221-59	7439-92-1 231-100-4	C<30 ppm	Repr. 1A; H360FD Lact. ; H362 STOT RE 1; H372	(1)(2)(4)(6)(10)	Impurity	

(1) For H- and EUH-statements in full: see section 16

(2) Substance with a Community workplace exposure limit

(4) Enumerated in candidate list of substances of very high concern (SVHC) for authorisation (Article 59 of Regulation (EC) No. 1907/2006)

(6) Enumerated in Annex VI of Regulation (EC) No. 1272/2008 but the classification has been adapted after evaluation of available test data

(10) Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006

## SECTION 4: First aid measures

### **4.1. Description of first aid measures**

#### **General:**

Observe (own) safety. If possible, approach victim and check vital functions. In case of injury and/or intoxication, call the European emergency number 112. Treat symptoms starting with most life-threatening injuries and disorders. Keep victim under observation, possibility of delayed symptoms.

#### **After inhalation:**

After inhalation of fume: Remove victim into fresh air. In case of respiratory problems, consult a doctor/medical service.

#### **After skin contact:**

In case of burns: Wash immediately with plenty of water for 30 minutes or shower. Cut clothing; never remove burnt clothing from the wound. Do not give any pain medication. Consult a doctor/medical service.

#### **After eye contact:**

After contact with fume: Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Consult a doctor/medical service.

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## After ingestion:

Not applicable.

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

### 4.2.1 Acute symptoms

#### After inhalation:

AFTER INHALATION OF DUST: Irritation of the nasal mucous membranes. Dry/sore throat. Coughing. AFTER INHALATION OF FUME: Feeling of weakness. Metal fume fever. Vomiting. Nausea.

#### After skin contact:

IF MELTING: Burns.

#### After eye contact:

IF MELTING: Burns.

#### After ingestion:

No effects known.

### 4.2.2 Delayed symptoms

No effects known.

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

Not applicable.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### 5.1.1 Suitable extinguishing media:

Adapt extinguishing media to the environment for surrounding fires.

#### 5.1.2 Unsuitable extinguishing media:

Not applicable.

### 5.2. Special hazards arising from the substance or mixture

On burning formation of metal oxides (zinc oxide). In molten state: violent to explosive reaction with water (moisture).

### 5.3. Advice for firefighters

#### 5.3.1 Instructions:

Dilute toxic gases with water spray. In case of metal bath fire: add metal blocks. When cooling/extinguishing: no water in the substance.

#### 5.3.2 Special protective equipment for fire-fighters:

Gloves (EN 374). Protective clothing (EN 14605 or EN 13034). Heat/fire exposure: self-contained breathing apparatus (EN 136 + EN 137).

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

No naked flames. Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.

#### 6.1.1 Protective equipment for non-emergency personnel

See section 8.2

#### 6.1.2 Protective equipment for emergency responders

Gloves (EN 374). Protective clothing (EN 14605 or EN 13034).

#### Suitable protective clothing

See section 8.2

### 6.2. Environmental precautions

No data available

### 6.3. Methods and material for containment and cleaning up

If melted: allow liquid to solidify before taking it up. Pick-up the material. Wash clothing and equipment after handling.

### 6.4. Reference to other sections

See section 13.

## SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

### 7.1. Precautions for safe handling

Avoid raising dust. Keep away from naked flames/heat. Observe strict hygiene. On (re)melting down: dry and preheat installation before use. Add only dry material to the metal bath.

### 7.2. Conditions for safe storage, including any incompatibilities

#### 7.2.1 Safe storage requirements:

Storage temperature: Temperature above dew point. Meet the legal requirements. Store in a dry area. Keep at temperature above dew point.

#### 7.2.2 Keep away from:

Heat sources, (strong) acids.

#### 7.2.3 Suitable packaging material:

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No data available

## 7.2.4 Non suitable packaging material:

No data available

## 7.3. Specific end use(s)

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### 8.1.1 Occupational exposure

##### a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

##### Belgium

Zinc (oxyde de)	Time-weighted average exposure limit 8 h	2 mg/m <sup>3</sup> (1)
	Short time value	10 mg/m <sup>3</sup> (1)

(1) Fraction alvéolaire

##### France

Zinc (oxyde de)	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	10 mg/m <sup>3</sup> (1)
	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	5 mg/m <sup>3</sup> (2)

(1) poussières

(2) fumées

##### Germany

Zink und seine anorganischen Verbindungen	Time-weighted average exposure limit 8 h (MAK)	0.1 mg/m <sup>3</sup> (1)
	Time-weighted average exposure limit 8 h (MAK)	2 mg/m <sup>3</sup> (2)

(1) Alveolengängige Fraktion; UF: I(4)

(2) Einatembare Fraktion; UF: I(2); Zinkchlorid: Kurzzeitkategorie I(1)

##### Austria

Zinkoxid-Rauch	Tagesmittelwert (MAK)	5 mg/m <sup>3</sup> (1)
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(1) Alveolengängige Fraktion

##### USA (TLV-ACGIH)

Zinc oxide	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	2 mg/m <sup>3</sup> (1)
	Short time value (TLV - Adopted Value)	10 mg/m <sup>3</sup> (1)

(1) (R): Respirable fraction

##### b) National biological limit values

If limit values are applicable and available these will be listed below.

#### 8.1.2 Sampling methods

Product name	Test	Number
Zinc & Cpds (as Zn)	NIOSH	7030
Zinc (Elements on wipes)	NIOSH	9102
Zinc (Elements)	NIOSH	7300
Zinc (Elements, aqua regia ashing)	NIOSH	7301
Zinc (Elements, hot block/HCl/HNO <sub>3</sub> digestion)	NIOSH	7303
Zinc (Zn)	NIOSH	7306
Zinc (Zn)	NIOSH	8005
Zinc (Zn)	NIOSH	8200
Zinc (Zn)	NIOSH	8310
Zinc Oxide	NIOSH	7030
Zinc Oxide	NIOSH	7502
Zinc Oxide	OSHA	ID 121
Zinc Oxide	OSHA	ID 143
Zinc	NIOSH	7030
Zinc	OSHA	1006
Zinc	OSHA	ID 121
Zinc	OSHA	ID 125G

#### 8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

#### 8.1.4 Threshold values

##### PNEC

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Compartment	Value	Remark
Fresh water	19.7 µg/l	Zinc ion
Marine water	7.7 µg/l	Zinc ion
STP	100 µg/l	Zinc ion

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Fresh water sediment	146.9 mg/kg sediment dw	Zinc ion
Marine water sediment	162.2 mg/kg sediment dw	Zinc ion
Soil	83.1 mg/kg soil dw	Zinc ion

## 8.1.5 Control banding

If applicable and available it will be listed below.

## 8.2. Exposure controls

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

### 8.2.1 Appropriate engineering controls

Avoid raising dust. Keep away from naked flames/heat.

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

Observe strict hygiene. Do not eat, drink or smoke during work.

#### a) Respiratory protection:

Dust production: dust mask with filter type P2.

#### b) Hand protection:

Protective gloves against chemicals (EN 374), On heating: heat insulating gloves (EN 407).

Materials	Remark
leather	Good resistance

#### c) Eye protection:

On (re)melting down: face shield.

#### d) Skin protection:

Protective clothing (EN 14605 or EN 13034). On (re)melting down: heatproof clothing (EN 11612). Protective clothing against molten metal splash (EN 9185). Protective clothing for workers exposed to heat (EN 11612). Safety shoes type S3.

### 8.2.3 Environmental exposure controls:

See sections 6.2, 6.3 and 13

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical form	Solid
	Metal
	Physical state depending on the production process
Colour	Commercial substance: grey-white
Odour	Odourless
Odour threshold	Not applicable
Melting point	416 °C ; 1013 hPa ; EU Method A.1
Boiling point	Not applicable (melting point > 300 °C)
Flammability	Not classified as flammable
Explosion limits	Not applicable
Flash point	Not applicable (solid)
Auto-ignition temperature	Not applicable
Decomposition temperature	No data available in the literature
pH	Not applicable (non-soluble in water)
Kinematic viscosity	Not applicable (solid)
Dynamic viscosity	Not applicable (solid)
Solubility	Water ; insoluble
Log Kow	Not applicable (inorganic)
Vapour pressure	< 0.01 hPa ; 20 °C
Absolute density	7100 kg/m <sup>3</sup> ; 22 °C ; EU Method A.3
Relative density	7.1 ; 22 °C ; EU Method A.3
Relative vapour density	Not applicable (solid)
Particle size	D50 ; ASTM E323-09 ; 71 mm - 2380 mm

### 9.2. Other information

Surface tension	Not applicable (water solubility < 1 mg/l)
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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Not applicable.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

In molten state: violent to explosive reaction with water (moisture). Oxidizes slowly in moist air.

### 10.4. Conditions to avoid

Precautionary measures

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Avoid raising dust. Keep away from naked flames/heat.

## 10.5. Incompatible materials

(strong) acids.

## 10.6. Hazardous decomposition products

Reacts with (some) acids: release of highly flammable gases/vapours (hydrogen). On burning formation of metal oxides (zinc oxide).

## SECTION 11: Toxicological information

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

#### 11.1.1 Test results

##### - Toxicokinetics: summary

Zinc compounds release, depending on their solubility, zinc cations which determine the biological activity of the respective zinc compounds. Sufficient data is available on the soluble zinc compounds zinc chloride and zinc sulphate and on the slightly soluble zinc compounds ZnO and ZnCO<sub>3</sub>.

Zinc is an essential trace element which is regulated and maintained in the various tissues mainly by the gastrointestinal absorption and secretion during high and low dietary zinc intake and because of the limited exchange of zinc between tissues, a constant supply of zinc is required to sustain the physiological requirements. The zinc absorption process in the intestines includes both passive diffusion and a carrier-mediated process. The absorption can be influenced by several factors such as ligands in the diet and the zinc status. Persons with adequate nutritional levels absorb 20-30% and animals absorb 40-50%. Persons that are zinc deficient absorb more, while persons with excessive zinc intake absorb less.

For the soluble zinc compounds, the available information suggests an oral absorption value of 20%. This value can be considered as the lower bound range at adequate nutritional levels. The oral absorption of the slightly soluble zinc oxide has been shown to be 60% of that of the soluble zinc compounds. This corresponds to approximately 12-18%. No oral absorption information is available for the remaining slightly soluble and insoluble zinc compounds (i.e., ZnO, Zn(OH)<sub>2</sub>, Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>, ZnCO<sub>3</sub>, Zn, ZnS). However, considering that these substances have lower water solubility than ZnO, it can be conservatively assumed that the oral absorption of these compounds is ≤ 12%.

Animal data suggests that there is pulmonary absorption following inhalation exposure. Half-life values of 14 and 6.3 hours were reported for dissolution of zinc oxide. The absorption of inhaled zinc depends on the particle size and the deposition of these particles therefore data was provided on the particle size distribution of zinc aerosol from three different industry sectors. The particle size distribution data was evaluated by using a multiple path particle deposition (MPPDep) model. This model revealed that for zinc aerosols the largest part of the deposition is in the head region and much less in the tracheobronchial and pulmonary region. Although most of the material deposited in the head and tracheobronchial region is rapidly translocated to the gastrointestinal tract, a part will also be absorbed locally.

Based on data for local absorption of radionuclides in the different airway regions, it can be assumed that the local absorption of the soluble zinc compounds will be approximately 20% of the material deposited in the head region, 50% of the material deposited in the tracheobronchial region and 100% of the material deposited in the pulmonary region. For the slightly soluble and insoluble zinc compounds a negligible absorption can be assumed for materials deposited in the head and the tracheobronchial region. 100% of the deposited slightly or insoluble zinc compounds are assumed to be absorbed in the pulmonary tract. The deposited material will be cleared via the lung clearance mechanisms into the gastrointestinal tract where it will follow oral absorption kinetics. Therefore the inhalation absorption for the soluble zinc compounds is a maximum of 40% and for the slightly soluble and insoluble zinc compounds inhalation absorption is at a maximum of 20%. These values can be assumed as a reasonable worst case, because they are considered to cover existing differences between the different zinc industry sectors with respect to the type of exercise activities (and thus breathing rate) and particle size distribution. The available information from in vivo as well as the in vitro studies suggests the dermal absorption of zinc compounds through intact skin to be less than 2%. In vitro studies that estimated dermal absorption values only on the basis of the zinc levels in the receptor medium without taking into account the zinc present in the stratum corneum appear to underestimate absorption values derived from in vivo studies. Such zinc trapped in the skin layers may become systemically available at a later stage. Quantitative data to evaluate the relevance of this skin depot are however lacking. Given the efficient homeostatic mechanisms of mammals to maintain the total body zinc and the physiologically required levels of zinc in the various tissues to be constant, the anticipated slow release of zinc from the skin is not expected to disturb the homeostatic zinc balance of the body. Considering the available information on dermal absorption, the default for dermal absorption of all zinc compounds (solutions or suspensions) is 2%. Based on the physical appearance, for dust exposure to zinc and zinc compounds a 10-fold lower default value of 0.2% is a reasonable assumption.

Zinc appears to be distributed to all tissues and tissue fluids and it is a cofactor in over 200 enzyme systems. The excretion of zinc is primarily via faeces, but also via urine, saliva, hair loss, sweat and mothers-milk.

#### Acute toxicity

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Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 401	> 2000 mg/kg bw		Rat (male / female)	Experimental value	
Dermal						Data waiving	
Inhalation (dust)	LC50	OECD 403	> 5.41 mg/l	4 weeks (daily, 5 days / week)	Rat (male / female)	Experimental value	

#### Conclusion

Toxicity is only applicable when components are released  
Low acute toxicity by the dermal route  
Low acute toxicity by the oral route  
Low acute toxicity by the inhalation route

#### Corrosion/irritation

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Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating				Rabbit	Literature study	
Not applicable (in vitro test)	Not irritating				In vitro: SkinEthic Reconstituted epithelium model	Experimental value	
Inhalation (ZnO, metal oxides)	Not irritating					Literature study	

## Conclusion

Not classified as irritating to the skin  
 Not classified as irritating to the eyes  
 Not classified as irritating to the respiratory system

## Respiratory or skin sensitisation

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Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal (on the ears)	Sensitizing	Equivalent to OECD 429			Mouse (female)	Experimental value	
Skin	Not sensitizing	OECD 406			Guinea pig (male / female)	Experimental value	

## Conclusion

Not classified as sensitizing for inhalation  
 Not classified as sensitizing for skin

## Specific target organ toxicity

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Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Oral (stomach tube)	NOAEL	OECD 408	31.25 mg/kg bw/day	Blood (no effect)	90 day(s)	Rat (male / female)	Experimental value	
Dermal		OECD 411		No effect	90 day(s)	Rat (male / female)	Experimental value	Not quantifiable
Inhalation (aerosol)	NOAEC	OECD 412	0.47 mg/m <sup>3</sup> air	No effect	4 weeks (6h / day, 5 days / week)	Rat (male / female)	Experimental value	
Inhalation (ZnO, metal oxides)		Human observation		No effect		Human	Literature study	

## Conclusion

Low sub-chronic toxicity by the dermal route  
 Low sub-chronic toxicity by the oral route  
 Low sub-chronic toxicity by inhalation route

## Mutagenicity (in vitro)

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Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 471	Bacteria ( <i>S. typhimurium</i> and <i>E. coli</i> )		Experimental value	
Negative with metabolic activation, negative without metabolic activation	OECD 473	Chinese hamster lung fibroblasts (V79)		Experimental value	

The chronic toxicity of the component(s) relates only to the substance in finely divided state and/or in molten state

## Mutagenicity (in vivo)

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Result	Method	Exposure time	Test substrate	Organ/Effect	Value determination	Remark
Negative (Inhalation (aerosol))	OECD 474	2 weeks (6h / day, 5 days / week)	Rat (male / female)	Bone marrow (no effect)	Experimental value	

The chronic toxicity of the component(s) relates only to the substance in finely divided state and/or in molten state

## Conclusion

Not classified for mutagenic or genotoxic toxicity

## Carcinogenicity

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Route of exposure	Parameter	Method	Value	Organ/Effect	Exposure time	Species	Value determination	Remark
Oral (drinking water)	NOAEL	Carcinogenic toxicity study	> 22000 mg/l	No carcinogenic effect	52 week(s)	Mouse (male / female)	Experimental value	

The chronic toxicity of the component(s) relates only to the substance in finely divided state and/or in molten state

## Conclusion

Not classified for carcinogenicity

## Reproductive toxicity

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Category	Parameter	Method	Value	Exposure time	Species	Effect/Organ	Value determination	Remark
Developmental toxicity (Inhalation (aerosol))	NOAEC	OECD 414	7.5 mg/m <sup>3</sup> air	14 days (6h / day)	Rat	No effect	Experimental value	
Maternal toxicity (Inhalation (aerosol))	NOAEC	OECD 414	1.5 mg/m <sup>3</sup> air	14 days (6h / day)	Rat	No effect	Experimental value	
Effects on fertility (Oral (stomach tube))	LOAEL	Equivalent to OECD 416	7.5 mg/kg bw/day		Rat (male / female)	Adverse effects on fertility	Experimental value	

The chronic toxicity of the component(s) relates only to the substance in finely divided state and/or in molten state

## Conclusion

Not classified for reprotoxic or developmental toxicity

## Aspiration hazard

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Not classified for aspiration toxicity

## Toxicity other effects

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No (test) data on the mixture available

## Chronic effects from short and long-term exposure

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No effects known.

## 11.2. Information on other hazards

No evidence of endocrine disrupting properties

## SECTION 12: Ecological information

### 12.1. Toxicity

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	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity crustacea	NOEC		308 µg/l		Daphnia magna			Literature study; Zinc ion
Toxicity algae and other aquatic plants	NOEC		41 µg/l		Pseudokirchneriella subcapitata			Literature study; Acute
	NOEC		11 µg/l - 118 µg/l		Pseudokirchneriella subcapitata			Literature study; Chronic
Toxicity sediment organisms	NOEC		218 µg/l - 1101 µg/l					Literature study; Zinc ion

	Parameter	Method	Value	Duration	Species	Value determination
Toxicity soil micro-organisms	NOEC		31.2 mg/kg soil dw - 8003.5 mg/kg soil dw			Literature study
Toxicity terrestrial plants	NOEC		31.2 mg/kg soil dw - 8003.5 mg/kg soil dw			Literature study

## Conclusion

Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008

## 12.2. Persistence and degradability

### Water

Biodegradability: not applicable

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## 12.3. Bioaccumulative potential

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### Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (inorganic)			

### Conclusion

Not bioaccumulative

## 12.4. Mobility in soil

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### (log) Koc

Parameter	Method	Value	Value determination
	OECD 106	3.24	Literature study

### Conclusion

Low potential for mobility in soil

## 12.5. Results of PBT and vPvB assessment

The criteria of PBT and vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006 do not apply to inorganic substances.

## 12.6. Endocrine disrupting properties

No evidence of endocrine disrupting properties

## 12.7. Other adverse effects

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### Greenhouse gases

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 2024/573)

### Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

## SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

### 13.1. Waste treatment methods

#### 13.1.1 Provisions relating to waste

##### European Union

Can be considered as non hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.

Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).

17 04 04 (metals (including their alloys): Zinc). Depending on branch of industry and production process, also other waste codes may be applicable.

#### 13.1.2 Disposal methods

Remove waste in accordance with local and/or national regulations. Do not discharge into drains or the environment. Dispose of at authorized waste collection point.

#### 13.1.3 Packaging/Container

No data available

## SECTION 14: Transport information

### Road (ADR), Rail (RID), Inland waterways (ADN), Sea (IMDG/IMSBC), Air (ICAO-TI/IATA-DGR)

#### 14.1. UN number or ID number

Transport	Not subject
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#### 14.2. UN proper shipping name

#### 14.3. Transport hazard class(es)

Hazard identification number	
Class	
Classification code	

#### 14.4. Packing group

Packing group	
Labels	

#### 14.5. Environmental hazards

Environmentally hazardous substance mark	no
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#### 14.6. Special precautions for user

Special provisions	
Limited quantities	

#### 14.7. Maritime transport in bulk according to IMO instruments

Annex II of MARPOL 73/78	Not applicable
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## SECTION 15: Regulatory information

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

#### Special remark

This substance/mixture does not contain Per-and Polyfluoroalkyl Substances (PFAS). During alloy production, no PFAS is intentionally added as raw material or product additive.

#### European legislation:

VOC content Directive 2010/75/EU

VOC content	Remark
	Not applicable (inorganic)

Directive 2012/18/EU (Seveso III)

Not subject to registration according to Directive 2012/18/EU (Seveso III)

Prior informed consent (PIC)

Contains component(s) listed in Annex I of Regulation (EU) No 649/2012: Part 1 - List of chemicals subject to export notification procedure

REACH Candidate list

Contains component(s) included in candidate list of substances of very high concern (SVHC) for authorisation (Article 59 of Regulation (EC) No 1907/2006)

REACH Annex XIV - Authorisation

Not enumerated in Annex XIV of Regulation (EC) No 1907/2006: list of substances subject to authorisation

REACH Annex XIV - Authorisation

Does not contain component(s) included in Annex XIV of Regulation (EC) No 1907/2006: list of substances subject to authorisation

REACH Annex XVII - Restriction

Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006: restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

	Designation of the substance, of the group of substances or of the mixture	Conditions of restriction
· zinc	Substances falling within one or more of the following points: (a) substances classified as any of the following in Part 3 of Annex VI to Regulation (EC) No 1272/2008: — carcinogen category 1A, 1B or 2, or germ cell mutagen category 1A, 1B or 2, but excluding any such substances classified due to effects only following exposure by inhalation — reproductive toxicant category 1A, 1B or 2 but excluding any such substances classified due to effects only following exposure by inhalation — skin sensitiser category 1, 1A or 1B — skin corrosive category 1, 1A, 1B or 1C or skin irritant category 2 — serious eye damage category 1 or eye irritant category 2 (b) substances listed in Annex II to Regulation (EC) No 1223/2009 of the European Parliament and of the Council (c) substances listed in Annex IV to Regulation (EC) No 1223/2009 for which a condition is specified in at least one of the columns g, h and i of the table in that Annex (d) substances listed in Appendix 13 to this Annex. The ancillary requirements in paragraphs 7 and 8 of column 2 of this entry apply to all mixtures for use for tattooing purposes, whether or not they contain a substance falling within points (a) to (d) of this column of this entry.	Mixtures for tattooing purposes are subject to the restrictions of Regulation (EU) 2020/2081

#### National legislation Belgium

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lead massive: [particle diameter  $\geq 1\text{mm}$ ]

Agents cancérogènes, mutagènes et reprotoxiques et aux agents possédant des propriétés perturbant le système endocrinien (Code du bien-être au travail, Livre VI, titre 2)

Plomb et ses composés inorganiques; VI.2.3.; Liste non limitative de substances, mélanges et procédés visés à l'article VI.2-1, alinéa 3

## National legislation The Netherlands

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Waterbezuwaarlijkheid

B (4); Algemene Beoordelingsmethodiek (ABM)

## National legislation France

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No data available

## National legislation Germany

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WGK

nwg; Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV) - 18. April 2017

## National legislation Austria

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No data available

## National legislation United Kingdom

zinc Z1 SHG

No data available

## Other relevant data

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No data available

## 15.2. Chemical safety assessment

A chemical safety assessment has been performed.

## SECTION 16: Other information

### Full text of any H- and EUH-statements referred to under section 3:

H360FD May damage fertility. May damage the unborn child.

H362 May cause harm to breast-fed children.

H372 Causes damage to organs (blood, central nervous system, kidneys) through prolonged or repeated exposure.

(*)	INTERNAL CLASSIFICATION BY BIG
ADI	Acceptable daily intake
AOEL	Acceptable operator exposure level
ATE	Acute Toxicity Estimate
BCF	Bioconcentration Factor
BEI	Biological Exposure Indices
CLP (EU-GHS)	Classification, labelling and packaging (Globally Harmonised System in Europe)
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
EC10	Effect Concentration 10 %
EC50	Effect Concentration 50 %
ErC50	EC50 in terms of reduction of growth rate
GLP	Good Laboratory Practice
LC0	Lethal Concentration 0 %
LC50	Lethal Concentration 50 %
LD50	Lethal Dose 50 %
LOAEC/LOAEL	Lowest Observed Adverse Effect Concentration/Lowest Observed Adverse Effect Level
NOAEC/NOAEL	No Observed Adverse Effect Concentration/No Observed Adverse Effect Level
NOEC/NOEL	No Observed Effect Concentration/No Observed Effect Level
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent, Bioaccumulative & Toxic
PNEC	Predicted No Effect Concentration
STP	Sludge Treatment Process
vPvB	very Persistent & very Bioaccumulative

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the

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