

SAFETY DATA SHEET

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

1.1. Product identifier

Trade name

Zinc-Nickel Alloy

Product no.

5XXX

REACH registration number

Not applicable

Other means of identification

ZiNiGal, ZiNiGal Light, ZiNiGal Plus, ZiNiGal Bright, ZiNiGal-Light-Bright

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

Relevant identified uses of the substance or mixture

Hot dip galvanizing

Uses advised against

No uses advised against

1.3. Details of the supplier of the safety data sheet

Company and addressBoliden Commercial
Box 750
SE-101 35 Stockholm
Sweden

Tel +46 8 610 15 00

Fax +46 8 31 55 45

Contact person**E-mail**

info.market@boliden.com

SDS date

2018-02-09

SDS Version

1.1

1.4. Emergency telephone number

999 (or 111 for non-emergency medical advice). 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). See section 16.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

-

2.2. Label elements

Hazard pictogram(s)

-

Signal word

-

Hazard statement(s)

-

Safety statement(s)	General	-
	Prevention	-

According to EC-Regulation 1907/2006 (REACH)

Response -
Storage -
Disposal -

Identity of the substances primarily responsible for the major health hazards

-

2.3. Other hazards

This product contains substances which are considered or proven to be carcinogenic.

Additional labelling

Contains Nickel. May produce an allergic reaction. (EUH208)

Additional warnings

-

VOC

-

SECTION 3: Composition/information on ingredients

3.1. Substances

-

3.2. Mixtures

NAME: zinc
IDENTIFICATION NOS.: CAS-no: 7440-66-6 EC-no: 231-175-3 REACH-no: 01-2119467174-37 Index-no: 030-001-00-1
CONTENT: 98,9-99,99%
CLP CLASSIFICATION: NA

NAME: nickel
IDENTIFICATION NOS.: CAS-no: 7440-02-0 EC-no: 231-111-4 Index-no: 028-002-00-7
CONTENT: 0,05-0,75%
CLP CLASSIFICATION: STOT RE 1, Skin Sens. 1, Carc. 2
H317, H351, H372

NAME: Bismuth
IDENTIFICATION NOS.: CAS-no: 7440-69-9 EC-no: 231-177-4
CONTENT: 0,0-0,2%
CLP CLASSIFICATION: NA

NAME: Tin
IDENTIFICATION NOS.: CAS-no: 7440-31-5 EC-no: 231-141-8
CONTENT: 0,0-0,05%
CLP CLASSIFICATION: NA

(*) See full text of H-phrases in chapter 16. Occupational exposure limits are listed in section 8, if these are available.

Other informations

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

Zinc in massive form is not hazardous. During production and use the following hazardous derivatives may be formed: Respirable zinc-bearing particles and soluble zinc compounds.

General advice: Get medical attention if any discomfort develops. Show this sheet to doctor.

Inhalation

Zinc metal is not acutely poisonous by inhalation. Large amounts of dust can cause irritation in respiratory ducts. In this case move the patient to fresh air. Get medical attention if discomfort persists. Welding and galvanizing (temperature >930 °C) combined with poor industrial hygiene practice can expose to metal fume fever ("zinc fever") which is caused by zinc oxide fumes formed in high temperatures. Symptoms can be fever, nausea, rigor, vomiting, stomach pain, muscle pain and in some cases hallucinations or incoherence. Symptoms will pass within 24 hours causing no permanent effects. Treat symptomatically if needed: removal from exposure, bed rest, oral hydration, medication against fever (ibuprofen, salicylates).

According to EC-Regulation 1907/2006 (REACH)

In severe cases seek for medical attention, show this sheet to doctor.

Skin contact

Zinc itself is not a skin irritant. Exposure to zinc oxide can cause eczema. Use general hygiene measure for contact with material: wash with soap and warm water. In case of contact with molten product cool rapidly with water and seek immediate medical attention. Never attempt to remove molten product from skin because skin will tear easily.

Cuts or abrasions should be treated promptly with thorough cleansing.

Eye contact

Rinse with water for 15 minutes, consult a doctor if pain persists. Do not rub eyes. Remove any contact lenses. If the patient gets into or splashes of melted metal in the eye, the patient must be taken to a doctor immediately.

Ingestion

Not a normal route of entry. Zinc is an essential nutrient. In case of significant oral intake rinse mouth and give water to drink if the patient is conscious. Do not induce vomiting. Seek medical attention in case of any discomfort.

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

Metal fume fever (Zinc fever): fever, nausea, rigor, vomiting, stomach pain, muscle pain and in some cases hallucinations or incoherence Ingestion (acute): nausea, vomiting, lack of appetite, stomach pain, diarrhea, headache Ingestion (chronic): Ingesting doses of zinc >100 mg/day for prolonged periods interferes with copper metabolism causing low blood copper levels, RBC microcytosis and impaired immunity.

Larger doses (200-800 mg/day) ingested for prolonged periods can cause anorexia, vomiting and diarrhea.

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

Supportive care and removal from source is usually adequate treatment for zinc toxicosis. In case of severe metal fume fever ("zinc fever") intravenous steroid or inhaled bronchodilators (for wheezing) might be required. Oxygen therapy in case of hypoxemia.

Information to medics

Bring this safety data sheet.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Material is not flammable. Recommended: alcohol-resistant foam, carbonic acid, powder, water mist.

Water jets should not be used, since they can spread the fire.

Never use water in presence of molten metal. Water expands explosively in contact with molten / liquid metal.

5.2. Special hazards arising from the substance or mixture

Respirable dust.

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective clothing to prevent contact.

Prevent the water/foam from extinguishing the fire to reach ground water, waterways, water catchment, surface water, conduit, or water treatment plant.

SECTION 6: Accidental release measures

Zinc in massive form is not hazardous. During production and some uses hazardous material (e.g. zinc-containing respirable particles and soluble compounds) may be formed and accidental release of these is considered.

6.1. Personal precautions, protective equipment and emergency procedures

Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material.

Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Ch. 8)

6.2. Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3. Methods and material for containment and cleaning up

In case of molten material: Allow to solidify before cleaning. Move containers from spill area. Vacuum or sweep up material and place in a designated, labelled waste container. Avoid creating dusty conditions.

6.4. Reference to other sections

See section on "Disposal considerations" with regard to the handling of waste. See section on 'Exposure controls/personal protection' for protective measures.

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

See section on 'Exposure controls/personal protection' for information on personal protection. Zinc is not classified in massive forms and no protective measures are needed for safe handling. Zinc ingots must not be allowed to get wet or damp, or be smeared with other substances, quality and identification marks must not be damaged and ingots must not be allowed to move during transportation.

Zinc ingots may contain water or moisture in hair cracks or hollows. To prevent splashes of molten metal or explosion, ingots must be carefully dried before being fed into the smelter. Persons working in the smelting process and at work stations in the immediate vicinity should use appropriate protective clothing. In case of smoke from melted product: Avoid inhalation. Avoid dust formation.

7.2. Conditions for safe storage, including any incompatibilities

Always store in containers of the same material as the original. Zinc ingots must be stored in a clean, dry, well-ventilated space so that they do not become smeared with other substances and are not contaminated by water. Storage in close proximity to acids, alkalis or oxidants should be avoided. Avoid storing with acids, bases and oxidizers. Finely pulverized substance mixed with air may cause dust explosion.

Storage temperature

No data available.

7.3. Specific end use(s)

This product should only be used for applications described in Section 1.2

SECTION 8: Exposure controls/personal protection**8.1. Control parameters****OEL**

Zinc oxide, fume or respirable dust

Long-term exposure limit (8-hour TWA reference period): - ppm | 5 mg/m³

Short-term exposure limit (15-minute reference period): - ppm | 10 mg/m³

Nickel, inorganic compounds, water-insoluble (as Ni) (not Ni(CO)₄)

Long-term exposure limit (8-hour TWA reference period): - ppm | 0,5 mg/m³

Short-term exposure limit (15-minute reference period): - ppm | - mg/m³

Nickel, inorganic compounds, water-soluble (as Ni) (not Ni(CO)₄)

Long-term exposure limit (8-hour TWA reference period): - ppm | 0,1 mg/m³

Short-term exposure limit (15-minute reference period): - ppm | - mg/m³

DNEL / PNEC

DNEL (zinc): 0.83 mg Zn/kg bw/day - Exposure: Oral - Remarks: soluble Zn

DNEL (zinc): 0.83 mg Zn/kg bw/day - Exposure: Oral - Remarks: insoluble Zn

DNEL (zinc): 8.3 mg Zn/kg bw/day - Exposure: Dermal - Remarks: soluble Zn

DNEL (zinc): 83 mg Zn/kg bw/day - Exposure: Dermal - Remarks: insoluble Zn

DNEL (zinc): 1 mg Zn/m³ - Exposure: Inhalation - Remarks: soluble Zn, worker

DNEL (zinc): 5 mg Zn/m³ - Exposure: Inhalation - Remarks: insoluble Zn, worker

DNEL (zinc): 1.3 mg Zn/m³ - Exposure: Inhalation - Remarks: soluble Zn, consumer

DNEL (zinc): 2.5 mg Zn/m³ - Exposure: Inhalation - Remarks: insoluble Zn, consumer

PNEC (zinc): 21 µg/L - Exposure: Freshwater - Remarks: added value, Zn ion

PNEC (zinc): 6 µg/L - Exposure: Marine water - Remarks: added value, Zn ion

PNEC (zinc): 52 µg/L - Exposure: Sewage Treatment Plant - Remarks: Zn ion

PNEC (zinc): 118 mg/kg d.w. - Exposure: Freshwater sediment - Remarks: added value, Zn ion

PNEC (zinc): 57 mg/kg d.w. - Exposure: Marine water sediment - Remarks: added value, Zn ion

PNEC (zinc): 36 mg/kg d.w. - Exposure: Soil - Remarks: added value, Zn ion

8.2. Exposure controls

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

General recommendations

Observe general occupational hygiene.

Exposure scenarios

If there is an appendix to this safety data sheet, the indicated exposure scenarios must be complied.

Exposure limits

According to EC-Regulation 1907/2006 (REACH)

Trade users are covered by the rules of the working environment legislation on maximum concentrations for exposure. See work hygiene threshold values above.

Appropriate technical measures

Take ordinary precautions when using the product. Avoid inhalation of gas or dust. Process enclosure where applicable. Local exhaust ventilation on furnaces and other work areas with potential dust generation, dust capturing and removal techniques.

Hygiene measures

Whenever you take a break in using this product and when you have finished using it, all exposed areas of the body must be washed. Always wash hands, forearms and face.

Measures to avoid environmental exposure

No specific requirements.

Individual protection measures, such as personal protective equipment

Generally

Only CE-marked personal protection equipment should be used.

Respiratory Equipment

With normal handling no respiratory personal protection is necessary. If risk for exceedance of OEL/ DNEL use dust filter mask.

Dust filter-halfmask:

P1 (efficiency 75%)

P2 (efficiency 90%)

P3 (efficiency 95%)

Dust filter – full mask:

P1 (efficiency 75%)

P2 (efficiency 90%)

P3 (efficiency 97,5%)

Skin protection

Protective clothing. On heating: heatproof clothing, protective clothing against molten metal splash. Protective clothing for workers exposed to heat. Safety shoes.

Hand protection

Wearing gloves is compulsory. On heating: insulated gloves.

Eye protection

Safety glasses are optional. On melting: face shield.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	Colour	Odour	pH	Viscosity	Density (g/cm ³)
Solid	Silver	None	-	-	7,1

Phase changes

Melting point (°C)

416

Boiling point (°C)

-

Vapour pressure (mm Hg)

-

Data on fire and explosion hazards

Flashpoint (°C)

-

Ignition (°C)

-

Self ignition (°C)

-

Explosion limits (Vol %)

-

Oxidizing properties

-

Solubility

Solubility in water

Zinc in massive form has very limited solubility.

n-octanol/water coefficient

-

9.2. Other information

Solubility in fat

-

Additional information

N/A

SECTION 10: Stability and reactivity

According to EC-Regulation 1907/2006 (REACH)

10.1. Reactivity

React with oxidants e.g. ammoniumnitrate, nitric acid, potassium chlorate. Zinc dust liberates hydrogen gas in contact with oxygen and water. Forms "white rust" in humid air

10.2. Chemical stability

The product is stable under the conditions, noted in the section on "Handling and storage".

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

To avoid white rust on galvanized steel the new pieces of galvanized equipment should be kept dry and well ventilated until the surface has passivated.

10.5. Incompatible materials

Strong acids, strong bases, strong oxidizing agents, and strong reductants agents.

10.6. Hazardous decomposition products

The product is not degraded when used as specified in section 1. Reacts with some acids forming hydrogen. On burning: zinc oxide fumes.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

Substance

nickel

zinc

zinc

Species

Rat

Rat

Rat

Test

LD50

LD50

LC50

Route of exposure

Oral

Oral

Inhalation

Result

>5000 mg/kg body weight

>2000 mg/kg

>5.4 mg/L/4h

Skin corrosion/irritation

Data on substance: zinc

Result: Not irritant

Serious eye damage/irritation

Data on substance: zinc

Result: Not irritant

Respiratory or skin sensitisation

Data on substance: zinc

Result: Not sensitizing

Data on substance: nickel

Result: sensitizing

Germ cell mutagenicity

Data on substance: zinc

No adverse effect observed.

Carcinogenicity

Data on substance: zinc

No adverse effect observed.

Reproductive toxicity

Data on substance: zinc

No adverse effect observed.

STOT-single exposure

Data on substance: zinc

Result: No evidence

STOT-repeated exposure

Data on substance: zinc

Result: No evidence

Aspiration hazard

No data available.

Long term effects

Carcinogenic effects: This product contains substances which are considered or proven to be carcinogenic. The danger may lie in inhalation, skin contact or ingestion.

This product contains substances that may cause an allergic reaction in people who are already so disposed.

SECTION 12: Ecological information

According to EC-Regulation 1907/2006 (REACH)

12.1. Toxicity

Substance	Species	Test	Test duration	Result
nickel	Fish	LC50	96h	>100 mg/l
nickel	Daphnia	EC50	48h	>100 mg/l
nickel	Algae	IC50	72h	0.18 mg/l
zinc	Daphnia	EC50	48 h	0.413 mg Zn ⁺⁺ /l, pH <7
zinc	Algae	EC50	72 h	0.136 mg Zn ⁺⁺ /l, pH >7-8.5
zinc	Daphnia	EC50	48 h	11.5 mg Zn/l, pH <7
zinc	Algae	EC50	72 h	15.1 mg Zn/l, pH >7-8.5

12.2. Persistence and degradability

Substance	Biodegradability	Test	Result
zinc	not applicable	No data available	No data available

12.3. Bioaccumulative potential

Substance	Potential bioaccumulation	LogPow	BFC
zinc	No	No data available	No data available

12.4. Mobility in soil

In the CSR a solids-water partitioning coefficient of 158,5 kl/l (log value 2,2) was applied for zinc in soils (CSR zinc 2010)

12.5. Results of PBT and vPvB assessment

The PBT and vPvB criteria do not apply to inorganic substances.

12.6. Other adverse effects

No special

SECTION 13: Disposal considerations

13.1. Waste treatment methods

The product is covered by the regulations on dangerous waste.

Waste

EWC code

10 03 15, 10 05 10, 10 08 10, 10 05 03, 10 05 05, 10 05 06, 10 05 08, 10 05 10, 11 02 02, 06 04 05, 16 08 02, 17 04 04, 19 12 03

Specific labelling

-

Contaminated packing

Packaging which contains leftovers from the product must be disposed of in the same way as the product.

SECTION 14: Transport information

Not listed as dangerous goods under ADR and IMDG regulations.

14.1 – 14.4

ADR/RID

14.1. UN number

14.2. UN proper shipping name

14.3. Transport hazard class(es)

14.4. Packing group

Notes

Tunnel restriction code

IMDG

UN-no.

Proper Shipping Name

Class

PG*

EmS

MP**

According to EC-Regulation 1907/2006 (REACH)

Hazardous constituent

IATA/ICAO

UN-no.

Proper Shipping Name

Class

PG*

14.5. Environmental hazards

-

14.6. Special precautions for user

-

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No data available

(*) Packing group

(**) Marine pollutant

SECTION 15: Regulatory information

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

Restrictions for application

-

Demands for specific education

-

Additional information

-

Sources

EC regulation 1907/2006 (REACH)

Directive 2000/532/EC

EC Regulation 1272/2008 (CLP)

EH40/2005

15.2. Chemical safety assessment

No

SECTION 16: Other information

Full text of H-phrases as mentioned in section 3

H317 - May cause an allergic skin reaction.

H351 - Suspected of causing cancer.

H372 - Causes damage to organs through prolonged or repeated exposure.

The full text of identified uses as mentioned in section 1

-

Other symbols mentioned in section 2

-

Other

It is recommended to hand over this safety data sheet to the actual user of the product. Information in this safety data sheet cannot be used as a product specification.

The information in this safety data sheet applies only to this specific product (mentioned in section 1) and is not necessarily correct for use with other chemicals/products.

A change (in proportion to the last essential change (first cipher in SDS version)) is marked with a blue triangle.

Emergency numbers

According to EC-Regulation 1907/2006 (REACH)

Belgium: 070 - 245 245

Austria: Poison Control Centre Emergency helpline +43 1 406 43 43, 112

Portugal: Em caso de intoxicacao, ligue 808 250 143

Czech Republic: Toxikologické informační středisko Telefon: +420 224 919 293, +420 224 915 402

Estonia: 112, 16662, ((+372) 626 93 90)

Lithuania: Visuomenės sveikatos centrams +370 5 236 20 52 arba +370 687 53378

Italy: Centro antiveleni di Roma - Policlinico Umberto I tel. 06-49978000

Spain: Servicio de Información Toxicológica Teléfono: + 34 91 562 04 20 (solo emergencias toxicológicas)

Información en español (24h/365 días)

Sweden: 112, 08-331231 (vardagar kl 9-17)

United Kingdom: 999 (or 111 for non-emergency medical advice). 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)

Denmark: Kontakt Giftlinien på tlf.nr.: 82 12 12 12 (åbent 24 timer i døgnet).

Germany: Giftnotruf Berlin, Emergency telephone: +49 30 19240 (Tag und Nacht)

Finland: 09-4711/Myrkytystietokeskus tai suora numero 09-471977 Myrkytystietokeskus/HUS, Tukholmankatu 17, 00029 HUS (Helsinki) 112

Norway: Giftinformasjonssentralen på tlf.nr.: 22 59 13 00, 113

France: ORFILA (INRS) : + 33 (0)1 45 42 59 59. 24 heures sur 24 et 7 jours sur 7

Hungary: Telefon: 06-80-20-11-99

Iceland: Neyðarlínan: Sími 112. Eitrunarmiðstöð Landsspítalans. Sími: 543 2222.

Netherlands: 30-2748888

Bulgaria: +359 2 9154 409

Greece: +30 10 779 3777

Ireland: +353 1 8379964

Latvia: +371 704 2468

Malta: 2425 0000

Poland: +48 58301 65 16 / +48 58 349 2831

Romania: +40 21 3183606

Slovakia: +421 2 54 77 4166

Slovenia: + 386 41 650500

**Date of last essential change
(First cipher in SDS version)**

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**Date of last minor change
(Last cipher in SDS version)**

9.2.2017