

SAFETY DATA SHEET

Based on Regulation (EC) No. 1907/2006 (REACH) Article 31 and Annex II

Zinc Nickel Bismuth Alloys - Galvanizing

1. Identification of the substance/preparation and of the company/undertaking

1.1 Identification of the substance or preparation:

Product name: Zinc Nickel Bismuth Alloys - Galvanizing
Synonyms: Technigalva; Technigalva plus; ZnBi; ZnNi; ZnNiBi

1.2 Use of the substance/preparation:

Metal industry: hot dip galvanizing

1.3 Company/undertaking identification:

NYRSTAR Sales & Marketing AG
Tessinerplatz 7
CH-8002 Zürich
Tel: +41 44 745 81 00
Fax: +41 44 745 81 10
infoSDS@nyrstar.com

1.4 Emergency telephone:

24h/24h:
+32 14 58 45 45 (BIG)

2. Hazards identification

DSD/DPD

Not classified as dangerous according to the criteria of directive(s) 67/548/EEC and/or 1999/45/EC

Other hazards

The melting down of moist metal leads to explosion risk
Heated product causes burns
Caution! This substance is subject to exposure limits
May produce an allergic reaction
Contains a substance which is (possibly) carcinogenic

CLP

Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008
Contains sensitising substance. May produce an allergic reaction.(EUH208)

Other hazards

The melting down of moist metal leads to explosion risk
Heated product causes burns
Caution! This substance is subject to exposure limits
May produce an allergic reaction
Contains a substance which is (possibly) carcinogenic

3. Composition/information on ingredients

Name	CAS No EINECS/ELINCS	Conc.	Classification according to DSD/DPD	Classification according to CLP	Note
zinc, solid	7440-66-6 231-175-3	97.55%=<C<99.50%			(2)
bismuth	7440-69-9 231-177-4	0.00%=<C<2.45%	Xi; R36/38	Eye Irrit. 2; H319 Skin Irrit. 2; H315	(1)
nickel	7440-02-0 231-111-4	0.00%=<C<0.55%	Carc. Cat. 3; R40 T; R48/23 R43	Carc. 2; H351 STOT RE 1; H372 Skin Sens. 1; H317	(2)

(1) For R-phrases and H-statements in full: see heading 16

(2) Substance with a Community workplace exposure limit

4. First aid measures

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Publication date: 2010-10-22

Date of revision:

Reason for revision:

Revision number:

Product number: 49014

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87-252-16274 - GB

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4.1 After inhalation:

After inhalation of fume:

Remove the victim into fresh air

Respiratory problems: consult a doctor/medical service

4.2 Skin contact:

In case of burns:

Wash immediately with lots of water (15 minutes)/shower

Remove clothing while washing

Do not tear off solidified product from the skin

Do not remove clothing if it sticks to the skin

Cover wounds with sterile bandage

Consult a doctor/medical service

If burned surface > 10%: take victim to hospital

4.3 Eye contact:

Rinse immediately with plenty of water for 15 minutes

Take victim to an ophthalmologist

4.4 After ingestion:

Not applicable

5. Fire-fighting measures

5.1 Suitable extinguishing media:

5.2 Unsuitable extinguishing media:

If molten: no water

5.3 Special exposure hazards:

On burning: formation of metallic fumes (nickel oxides, zinc oxide)

In molten state: violent to explosive reaction with water (moisture)

5.4 Instructions:

Dilute toxic gases with water spray

In case of metal bath fire: add metal blocks

When cooling/extinguishing: no water in the substance

5.5 Special protective equipment for fire-fighters:

Gloves

Protective clothing

Heat/fire exposure: compressed air/oxygen apparatus

6. Accidental release measures

6.1 Personal precautions:

See heading 8.2

6.2 Environmental precautions:

See heading 13

6.3 Methods for cleaning up:

If melted: allow liquid to solidify before taking it up

Pick-up the material

Wash clothing and equipment after handling

7. Handling and storage

7.1 Handling:

Avoid raising dust

Observe strict hygiene

Keep away from naked flames/heat

On (re)melting down: dry and preheat installation before use

Add only dry material to the metal bath

7.2 Storage:

Safe storage requirements:

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Store in a dry area

Store at ambient temperature

Meet the legal requirements

Keep away from:

(strong) acids

7.3 Specific use(s):

See information supplied by the manufacturer for the identified use(s)

8. Exposure controls/Personal protection

8.1 Exposure limit values:

8.1.1 Occupational exposure:

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

Indicative exposure limit (the Netherlands)

Nikkel	Time-weighted average exposure limit	- ppm 1 mg/m ³
Zinkoxide (rook)	Time-weighted average exposure limit	- ppm 5 mg/m ³

Limit Value (Belgium)

Nikkel(metaal)	Short time value	- ppm - mg/m ³
	Time-weighted average exposure limit	- ppm 1 mg/m ³
Nikkel (onoplosbare anorganische verbindingen)(als Ni)	Short time value	- ppm - mg/m ³
	Time-weighted average exposure limit	- ppm 0.2 mg/m ³
Zinkoxide(rook)	Short time value	- ppm 10 mg/m ³
	Time-weighted average exposure limit	- ppm 5 mg/m ³
Zinkoxide(stof)	Short time value	- ppm - mg/m ³
	Time-weighted average exposure limit	- ppm 10 mg/m ³

TLV (USA)

Nickel Elemental	Short time value	- mg/m ³
	Time-weighted average exposure limit	1.5 l mg/m ³
Nickel Insoluble inorganic compounds NOS as Ni	Short time value	-(Ni) mg/m ³
	Time-weighted average exposure limit	0.2 l(Ni) mg/m ³
Zinc oxide	Short time value	10 R mg/m ³
	Time-weighted average exposure limit	2 R mg/m ³

Limit Value (France)

Nickel(métal)	Short time value	- ppm - mg/m ³
	Time-weighted average exposure limit	- ppm 1 mg/m ³
Zinc(oxyde de,fumées)	Short time value	- ppm - mg/m ³
	Time-weighted average exposure limit	- ppm 5 fumées mg/m ³
Zinc(oxyde de,poussières)	Short time value	- ppm - mg/m ³
	Time-weighted average exposure limit	- ppm 10 pouss. mg/m ³

Limit Value (UK)

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Nickel Metal	Short time value	- ppm - mg/m ³
	Time-weighted average exposure limit	- ppm 0.5 mg/m ³
Nickel,insoluble inorganic comp.(as Ni)(exc. Ni-carbonyl	Short time value	-(Ni) ppm -(Ni) mg/m ³
	Time-weighted average exposure limit	-(Ni) ppm 0.5(Ni) mg/m ³

8.1.2 Sampling methods:

Product name	Test	Number	Sampling method	Remarks
Bismuth	OSHA	ID121		
Bismuth	OSHA	CSI		
Nickel	OSHA	ID 125		
Nickel	OSHA	ID 121	filter	
Nickel (Elements on wipes)	NIOSH	9102	filter	
Nickel (Elements)	NIOSH	7300	filter	
Nickel (Elements, aqua regia ashing)	NIOSH	7301	filter	
Nickel (Elements, hot block/HCl/HNO3 digestion)	NIOSH	7303	filter	
Nickel (Ni)	NIOSH	8310		
Nickel (Ni)	NIOSH	8005		
Nickel, Metal and Insoluble compounds (as Ni)	OSHA	CSI		
Nickel, Soluble Compounds (as Ni)	OSHA	CSI		
Zinc	OSHA	ID 125G	filter	
Zinc	NIOSH	7030		
Zinc	OSHA	ID 125		
Zinc	OSHA	ID 121	filter	
Zinc	OSHA	CSI		
Zinc & Cpds (as Zn)	NIOSH	7030		
Zinc (Elements on wipes)	NIOSH	9102	filter	
Zinc (Elements)	NIOSH	7300	filter	
Zinc (Elements, aqua regia ashing)	NIOSH	7301	filter	
Zinc (Elements, hot block/HCl/HNO3 digestion)	NIOSH	7303	filter	
Zinc (Zn)	NIOSH	8005		
Zinc (Zn)	NIOSH	8310		
Zinc Oxide	NIOSH	7502	filter	
Zinc Oxide	OSHA	ID 121	filter	
Zinc Oxide	NIOSH	7030		
Zinc Oxide	OSHA	ID 143	filter	
Zinc Oxide (Respirable Fraction)	OSHA	CSI		
Zinc Oxide (Total Dust)	OSHA	CSI		
Zinc Oxide Fume	OSHA	CSI		
Zinc Oxide Fume	OSHA	ID 125		

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Measure the concentration in the air regularly

Carry operations in the open/under local exhaust/ventilation or with respiratory protection

Personal protective equipment:

a) Respiratory protection:

Dust production: dust mask with filter type P2

b) Hand protection:

Gloves

On heating: insulated gloves

- leather

c) Eye protection:

On (re)melting down: face shield

d) Skin protection:

Protective clothing

Protective clothing against molten metal splash (EN-ISO 9185)

Protective clothing for workers exposed to heat (EN-ISO 11612)

On (re)melting down: heatproof clothing

8.2.2 Environmental exposure controls:

See headings 6.2, 6.3 and 13

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9. Physical and chemical properties

9.1 General information:

Physical form	Solid
	Metal
	Physical state depending on the production process
Odour	Odourless
Colour	Metallic blue-grey

9.2 Important health, safety and environmental information:

Flashpoint	Not applicable
Solubility in solvents	Soluble in acids

9.3 Other information:

10. Stability and reactivity

10.1 Conditions to avoid:

Possible fire hazard

heat sources

Stability

Stable under normal conditions

Reactions

In molten state: violent to explosive reaction with water (moisture)

Oxidizes slowly in moist air

10.2 Materials to avoid:

(strong) acids

10.3 Hazardous decomposition products:

Reacts with (some) acids: release of highly flammable gases/vapours (hydrogen)

On burning: formation of metallic fumes (nickel oxides, zinc oxide)

11. Toxicological information

11.1 Acute toxicity:

bismuth

LD50 oral (rat)	5000 mg/kg
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nickel

LD50 oral (rat)	> 9000 mg/kg
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11.2 Chronic toxicity:

Caution! This substance is subject to exposure limits

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

Contains a substance which is (possibly) carcinogenic

Contains a substance of group C (MAK-Schwangerschaftsgruppe)

nickel

EC carc cat	3
IARC - classification	2B
TLV - Carcinogen	A5
Carc. Cat.	C3
MAK - Krebszeugend Kategorie	1
MAK - Schwangerschaft Gruppe	-
CLP carc cat	category 2

zinc, solid

MAK - Schwangerschaft Gruppe	C
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Listed in SZW - List of carcinogenic substances	yes
TLV - Carcinogen	A1(Ni)
MAK - Krebszeugend Kategorie	1
MAK - Schwangerschaft Gruppe	-

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11.3 Acute effects/symptoms:

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

Skin contact:

IF MELTING:

Burns

Eye contact:

IF MELTING:

Burns

Ingestion:

Not applicable

11.4 Chronic effects:

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT:

Skin rash/inflammation

12. Ecological information

12.1 Ecotoxicity:

No (test) data on the mixture available.

12.2 Mobility:

Volatile organic compounds (VOC)

Solubility in/reaction with water

Not applicable

Literature reports: insoluble in water

Substance sinks in water

12.3 Persistence and degradability:

BOD20

Biodegradability: not applicable

Not applicable

12.4 Bioaccumulative potential:

No bioaccumulation data available

12.5 Results of PBT assessment:

Not applicable, based on available data

12.6 Other adverse effects:

Not dangerous for the ozone layer (1999/45/EC)

13. Disposal considerations

13.1 Provisions relating to waste:

Waste material code (Directive 2008/98/EC, decision 2001/118/EC)

11 01 99 : wastes not otherwise specified

Depending on branch of industry and production process, also other EURAL codes may be applicable

Can be considered as non hazardous waste according to Directive 2008/98/EC

13.2 Disposal methods:

Recycle/reuse

Remove waste in accordance with local and/or national regulations

Do not discharge into surface water (2000/60/EC, Council decision 2455/2001/EC, O.J. L331 of 15/12/2001)

13.3 Packaging/Container:

No available data

14. Transport information

ADR

Revision number:

Product number: 49014

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Transport	Not subject
UN number	-
Class	
Packing group	
Hazard identification number	
Classification code	
Labels	
Environmentally hazardous substance mark	

RID

Transport	Not subject
UN number	-
Class	
Packing group	
Classification code	
Labels	
Environmentally hazardous substance mark	

ADNR

Transport	Not subject
UN number	-
Class	
Packing group	
Classification code	
Labels	
Environmentally hazardous substance mark	

IMO

Transport	Not subject
UN number	-
Class	
Packing group	
Labels	
Marine pollutant	
Environmentally hazardous substance mark	

ICAO

Transport	Not subject
UN number	-
Class	
Packing group	
Labels	
Environmentally hazardous substance mark	

15. Regulatory information

15.1 EU Legislation:

DSD/DPD

Not classified as dangerous in compliance with Directive 67/548/EEC and/or Directive 1999/45/EC

CLP

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

Supplemental information

EUH208	Contains sensitising substance. May produce an allergic reaction.
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15.2 National provisions:

The Netherlands

Waterbezwaarlijkheid (for NL)

1

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Waste identification other lists of waste materials

LWCA (the Netherlands): KGA category 05

Germany

TA-Luft
WGK

nickel: TA-Luft Klasse 5.2.2/II
1

Classification water polluting based on the components in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 4)

16. Other information

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. Old versions must be destroyed. 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 information provided. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult your BIG licence agreement for details.

(*) = INTERNAL CLASSIFICATION (NFPA)

PBT-substances = persistent, bioaccumulative and toxic substances

DSD Dangerous Substance Directive
DPD Dangerous Preparation Directive
CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

Full text of any R-phrases referred to under headings 2 and 3:

R36/38	Irritating to eyes and skin
R40	Limited evidence of a carcinogenic effect
R43	May cause sensitisation by skin contact
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation

Full text of any H-statements referred to under headings 2 and 3:

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure if inhaled

Full text of any classes referred to under headings 2 and 3:

Carc.	Carcinogenicity
Eye Irrit.	Eye irritation
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitization
STOT RE	Specific target organ toxicity - repeated exposure