SAFETY DATA SHEET

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

zinc alloys Die Casting

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

1.1 Identification of the substance or preparation:

Product name: zinc alloys Die Casting

Synonyms: zinc alloys DC ; alloy 2 ; alloy 5; kayem1; kayem2; ZA-12; ZA-27; ZA-8; zamak 2; zamak 3; zamak 5; zamak KS; zinc alloys for diecasting - galfans; ZL1110; ZL12; ZL-27; ZL2720; ZnAl11Cu1; ZnAl27Cu2; ZnAl4; ZnAl4Cu1; ZnAl4Cu3

1.2 Use of the substance/preparation:

Metal industry: pressure die casting, centrifugal die casting, gravity die casting

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

CLP

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

Other hazards

The melting down of moist metal leads to explosion risk

Heated product causes burns

Caution! This substance is subject to exposure limits

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	69.70%<=C<=96.10%			(2)
aluminium	7429-90-5 231-072-3	3.90%<=C<=28.00%	F; R11 - 15	Water-react. 2; H261 Flam. Sol. 1; H228	(1)(2)
copper	7440-50-8 231-159-6	0%<=C<3.90%			(2)
magnesium	7439-95-4 231-104-6	0.02%<=C<0.1%	F; R11 - 15	Flam. Sol. 1; H228 Water-react. 2; H261 Self-heat. 1; H251	(1)(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

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 (zinc oxide)
On burning formation of metallic fumes (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:
Store in a dry area
Keep at temperature above dew point

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.

Regulatory exposure limit (The Netherlands)

Koper (inhaleerbaar)	Time-weighted average exposure limit	- ppm 0.1 mg/m³

Indicative exposure limit (the Netherlands)

Aluminium	Time-weighted average exposure limit	- ppm 10 mg/m³
Zinkoxide (rook)	Time-weighted average exposure limit	- ppm 5 mg/m³

Limit Value (Belgium)

Aluminium(metaal)	Short time value	- ppm - mg/m³
	Time-weighted average exposure limit	- ppm 10 mg/m³
Koper(rook)(als Cu)	Short time value	- ppm - mg/m³
	Time-weighted average exposure limit	- ppm 0.2 mg/m³
Koper(stof en nevel)(als Cu)	Short time value	- ppm - mg/m³
	Time-weighted average exposure limit	- ppm 1 mg/m³
Zinkoxide(rook)	Short time value	- ppm 10 mg/m³
	Time-weighted average exposure limit	- ppm 5 mg/m³
Zinkoxide(stof)	Short time value	- ppm - mg/m³
	Time-weighted average exposure limit	- ppm 10 mg/m³

TLV (USA)

Aluminium, Metal	Short time value	- mg/m³
	Time-weighted average exposure limit	1 R mg/m³
Copper fume,dust & mists, as Cu	Short time value	- (Cu) mg/m³
	Time-weighted average exposure limit	2.2fu/1du+a(Cu) mg/m³
Zinc oxide	Short time value	10 R mg/m³
	Time-weighted average exposure limit	2 R mg/m³

Limit Value (France)

Aluminium(métal/pulvérent)	Short time value	- ppm - mg/m³
	Time-weighted average exposure limit	- ppm 5 fu/10 p mg/m³
Cuivre(fumées/poussières en Cu)	Short time value	- ppm - fu/2 p mg/m³
	Time-weighted average exposure limit	- ppm 0.2 fu/1 p mg/m³
Zinc(oxyde de,fumées)	Short time value	- ppm - mg/m³

Zinc(oxyde de,fumées)	Time-weighted average exposure limit	- ppm 5 fumées mg/m³
Zinc(oxyde de,poussières)	Short time value	- ppm - mg/m³
	Time-weighted average exposure limit	- ppm 10 pouss. mg/m³

Limit Value (UK)

Aluminium metal (inhalable and respirable dust)	Short time value	- ppm - mg/m³
	Time-weighted average exposure limit	- ppm 4 R/10 I mg/m³
Copper fume, dusts and mist, as Cu	Short time value	- ppm 2du+a(Cu) mg/m³
	Time-weighted average exposure limit	- ppm 0.2fu/1du+a(Cu) mg/m³

8.1.2 Sampling methods:

Product name	Test	Number	Sampling method	Remarks
Aluminium	NIOSH	7013	filter	
Aluminum	OSHA	ID121		
Aluminum (Al)	NIOSH	8310		
Aluminum (as Al), Metal (Respirable Fraction)	OSHA	CSI		
Aluminum (as Al), Metal (Total Dust)	OSHA	CSI		
Aluminum (as Al), Soluble Salts	OSHA	CSI		
Aluminum (Elements)	NIOSH	7300	filter	
Aluminum (Elements, aqua regia ashing)	NIOSH	7301	filter	
Aluminum (Elements, hot block/HCl/HNO3 digestion)	NIOSH	7303	filter	
Copper	OSHA	ID 121	filter	
Copper	OSHA	ID 125G	filter	
Copper (Cr)	NIOSH	8310		
Copper (Cu)	NIOSH	8005		
Copper (Elements on wipes)	NIOSH	9102	filter	
Copper (Elements)	NIOSH	7300	filter	
Copper (Elements, aqua regia ashing	NIOSH	7301	filter	
Copper (Elements, hot block/HCl/HNO3 digestion)	NIOSH	7303	filter	
Copper Dust and fume	NIOSH	7029		
Copper Dusts & Mists (as Cu)	OSHA	CSI		
Copper Fume (as Cu)	OSHA	CSI		
Magnesium	OSHA	CSI		
Magnesium	OSHA	ID 121	filter	
Magnesium (Elements)	NIOSH	7300	filter	
Magnesium (Elements, aqua regia ashing)	NIOSH	7301	filter	
Magnesium (Elements, hot block/HCl/HNO3 digestion)	NIOSH	7303	filter	
Magnesium (Mg)	NIOSH	8005		
vary depending upon the compound: alumina	NIOSH	8013	filter	
Zinc	OSHA	CSI		
Zinc	NIOSH	7030		
Zinc	OSHA	ID 125		
Zinc	OSHA	ID 125G	filter	
Zinc	OSHA	ID 121	filter	
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 143	filter	
Zinc Oxide	OSHA	ID 121	filter	
Zinc Oxide	NIOSH	7030		
Zinc Oxide (Respirable Fraction)	OSHA	CSI		
Zinc Oxide (Total Dust)	OSHA	CSI		
Zinc Oxide Fume	OSHA	ID 125		
Zinc Oxide Fume	OSHA	CSI		

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

On (re)melting down: heatproof clothing

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

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

Safety shoes type S3

8.2.2 Environmental exposure controls:

See headings 6.2, 6.3 and 13

9. Physical and chemical properties

9.1 General information:

Physical form	Solid
	Metal
	Physical state depending on the production process
Odour	Odourless
Colour	Grey

9.2 Important health, safety and environmental information:

Boiling point	900-910 °C
Flashpoint	Not applicable
Relative density	4-7
Solubility in solvents	Soluble in acids

9.3 Other information:

Melting point	375-485 °C

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 (zinc oxide)

11. Toxicological information

11.1 Acute toxicity:

magnesium

LD50 oral (rat)	> 2000 mg/kg

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 of group C (MAK-Schwangerschaftsgruppe)

copper

MAK - Schwangerschaft Gruppe	C

zinc, solid

MAK - Schwangerschaft Gruppe	C

aluminium

TLV - Carcinogen	A4
MAK - Schwangerschaft Gruppe	D

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:

12. Ecological information

12.1 Ecotoxicity:

12.2 Mobility:

Volatile organic compounds (VOC) — Not applicable
Solubility in/reaction with water — Literature reports: insoluble in water
Substance sinks in water

12.3 Persistence and degradability:

BOD20 — Not applicable
Biodegradability: 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 drains or the environment

13.3 Packaging/Container:

No available data

14. Transport information

ADR

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

15.2 National provisions:

The Netherlands

Waterbezwaarlijkheid (for NL)	11
Waste identification other lists of waste materials	LWCA (the Netherlands): KGA category 05

Germany

TA-Luft	copper: TA-Luft Klasse 5.2.2/III aluminium: TA-Luft Klasse 5.2.1
WGK	- Classification non-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:

R11	Highly flammable
R15	Contact with water liberates extremely flammable gases

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

H228	Flammable solid.
H251	Self-heating: may catch fire.
H261	In contact with water releases flammable gases.

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

Flam. Sol.	Flammable solid
Self-heat.	Self-heating substance or mixture
Water-react.	Substance or mixture which in contact with water emits flammable gas