

Uppgiftslämnaren reserverar sig för eventuella fel i produktinformationen eller felaktigt registrerade uppgifter och förbehåller sig rätten att korrigera och/eller komplettera produktinformation utan föregående avisering

## 1

## GRUNDDATA

## Varubeskrivning

Hot-dip galvanised steel pipe sleeve or bend

## Övriga upplysningar

## Klassificeringar

ETIM ›

BK04 ›

BSAB ›

UNSPSC ›

## Leverantörsuppgifter

## Företagsnamn

OBO Bettermann AB

## Organisationsnummer

5566815519

## Adress

## Hemsida

www.obobettermann.se

Miljökontaktperson

## Namn

Matthew Wise

## Telefon

+46 73-423 24 75

## E-post

wise.matthew@obobettermann.se

## 2

## HÅLLBARHETSARBETE

## Företagets certifiering

■ ISO 9000

■ ISO 14000

## INNEHÅLLSDEKLARATION

<b>Kemisk produkt</b>	Nej
<b>Omfattas varan av RoHS-direktivet</b>	Nej
<b>Innehåller produkten tillsatt nanomaterial, som är medvetet tillsatta för att uppnå en viss funktion</b>	Nej
<b>Varans vikt</b>	0,022 - 1,742 kg

### Vara / Delkomponenter

**Koncentrationen har beräknats på komponentnivå**

Steel - 91% - 94% av hela varan

Ingående material /komponenter	Vikt-% i komponent	CAS-nr (alt legering)	EG-nr (alt legering)	Vikt % i produkt	Kommentar
Steel - DIN EN 10139 DC 01 (St 12) 1.0330	100%			91 - 94%	

Galvanizing mixture - 6% - 9% av hela varan

Ingående material /komponenter	Vikt-% i komponent	CAS-nr (alt legering)	EG-nr (alt legering)	Vikt % i produkt	Kommentar
SECONDARY ZINC R2	34%			2,04 - 3,06%	
Nickel-Zinc 0,5% Ni	33%			1,98 - 2,97%	
ELECTROLYT-FINE ZINC 99.995 Pr.	33%			1,98 - 2,97%	

**Del av materialinnehållet som är deklarerat** 100%

### Särskilt farliga ämnen

Varan innehåller INTE några ämnen med särskilt farliga egenskaper (Substances of very high concern, SVHC-ämnen) som finns med på kandidatförteckningen i en koncentration som överstiger 0,1 vikts-%

**Utgåva av kandidatförteckningen som har använts**

2021-01-22 00:00:00

### Övrigt

Ämnen är redovisade ned till 0.01 viktprocent enligt iBVDs redovisningskrav. Eventuell avvikelse från redovisningskraven redovisas nedan

### Kompletterande information

Se bifogade säkerhetsdatablad

4

## RÅVAROR

### Återvunnet material

Innehåller varan återvunnet material: Nej

### Träråvara

Träråvara ingår i varan: Nej

5

## MILJÖPÅVERKAN

Finns en miljövarudeklaration framtagen enligt EN15804 eller ISO14025 för varan

Nej

Finns annan miljövarudeklaration

Nej

6

## DISTRIBUTION

Beskrivning av emballagehantering för distribution av varan

The main packaging is made of paper/cardboard. In addition, PE film or PE bags are sometimes used as protective packaging.

7

## BYGGSKEDET

Ställer varan särskilda krav vid lagring?

Nej

Ställer varan särskilda krav på omgivande byggvaror?

Nej

8

## BRUKSSKEDET

Finns skötselanvisningar/skötselråd?

Nej

Finns en energimärkning enligt energimärkningsdirektivet (2010/30/EU) för varan?

Ej relevant

9

## RIVNING

Kräver varan särskilda åtgärder för skydd av hälsa och miljö vid rivning/demontering?

Nej

Omfattas den levererade varan av förordningen (2014:1075) om producentansvar för elektriska och elektroniska produkter när den blir avfall?	Nej
Är återanvändning möjlig för hela eller delar av varan?	Nej
Är materialåtervinning möjlig för hela eller delar av varan?	Ja
Components can be recycled.	
Är energiåtervinning möjlig för hela eller delar av varan?	Nej
Har leverantören restriktioner och rekommendationer för återanvändning, material- eller energiåtervinning eller deponering?	Nej
När den levererade varan blir avfall, klassas den då som farligt avfall?	Nej
Avfallskod (EWC) för den levererade varan	170405

E-nummer	Leverantörens artikelnummer	GTIN
14 030 62	2046816	4012196387953
14 030 63	2046817	4012196387960
14 030 64	2046818	4012196387991
14 030 65	2046819	4012196388004
14 030 66	2046820	4012196388011
14 030 67	2046821	4012196388028
14 030 68	2046822	4012196388059
14 030 69	2046620	4012195782384
14 030 70	2046621	4012195782391
14 030 71	2046622	4012195782407
14 030 72	2046623	4012195782445
14 030 73	2046624	4012195782452
14 030 74	2046625	4012195782469
14 030 75	2046626	4012195782490

**Produktdatablad** 01-190VBS pipe systems.pdf

**PrestandadeklARATION**

**Säkerhetsblad**

**MiljövarudeklARATION**

**Skötselanvisning**








**Övriga bifogade dokument**

-2018 - 08 SDB Zinc Version 2 (en).pdf

-msds\_ZnNi, ZnNiBi\_49014\_10498534.pdf

-SDS\_10498542\_U-Zink englisch - Juli 2020.pdf

## Pipe systems

	<b>Steel pipe, electrogalvanised</b>	354
	<b>Steel pipe, black, powder-coated</b>	356
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# IEC classification in accordance with DIN EN 61386-1

The OBO Bettermann pipe systems are machined and tested according to DIN EN 61386 (Electrical installation pipe systems for electrical energy and information) and DIN EN 60423 (External diameters of electrical installation

pipes and thread for electrical installation pipes and their accessories).

## Numeric code

DIN EN 61386-1 classifies installation pipes using a 12-digit numeric

code, which provides information on the pressure resistance, impact resistance or use temperatures. You can find the first five digits in the product descriptions of the pipe systems.

### First digit

Compression resistance

### Second digit

Impact resistance

### Third digit

Minimum use temperature

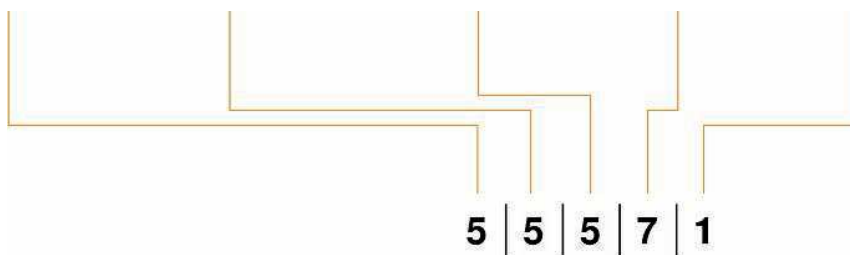
### Fourth digit

Maximum use temperature

### Fifth digit

Bending resistance

	First digit		Second digit		Third digit		Fourth digit		Fifth digit
	Pressure resistance		Impact resistance		Minimum use temperature		Maximum use temperature		Bending behaviour
1	Very light (125 N)	1	Very light (0.5 kg/100 mm)	1	+ 5 °C	1	+ 60 °C	1	Rigid
2	Light (320 N)	2	Light (1.0 kg/100 mm)	2	– 5 °C	2	+ 90 °C	2	Bendable
3	Medium (750 N)	3	Medium (2.0 kg/100 mm)	3	– 15 °C	3	+ 105 °C	3	Bendable, self-healing
4	Heavy (1250 N)	4	Heavy (2.0 kg/300 mm)	4	– 25 °C	4	+ 120 °C	4	Flexible
5	Very heavy (4000 N)	5	Very heavy (6.8 kg/300 mm)	5	– 45 °C	5	+ 150 °C		
						6	+ 250 °C		
						7	+ 400 °C		





# Electrical installation pipes

## Classification according to IEC EN 61386-1: Corrosion protection

	9th digit	
	Resistance against corrosion	Suitable surfaces
1	Low protection, inside and outside	
2	Medium protection, inside and outside	<ul style="list-style-type: none"> <li>• Painted black (SW)</li> <li>• Electrogalvanised (G)</li> <li>• Strip galvanised (FS)</li> </ul>
3	Medium protection inside, high protection outside	
4	High protection, inside and outside	<ul style="list-style-type: none"> <li>• Hot-dip galvanised (FT)</li> <li>• Stainless steel (V2A, V4A)</li> </ul>



### Protection against mechanical loads

OBO metal pipes are particularly suited to use under tough industrial conditions. They provide reliable protection against very heavy mechanical loads during cable routing.

The different material and surface qualities, from galvanised to painted, allow perfect adaptation to the requirements of the appropriate environment.

### Maintenance of electrical function to E30/E90

Our steel pipes guarantee the maintenance of electrical function to E30/E90. They are thus ideal for the connection of safety-relevant equipment, such as fire alarm systems.



### Electrogalvanised threaded pipe

- VDE-tested
- Trimmed weld
- Internally galvanised



### Electrogalvanised plug-in pipe

- VDE-tested
- Trimmed weld
- Galvanised inside



### Black, powder-coated Threaded pipe

- VDE-tested
- Trimmed weld



### Black, powder-coated Plug-in pipe

- VDE-tested
- Trimmed weld



### Hot galvanised threaded pipe

- VDE-tested
- Trimmed weld
- High corrosion protection
- Zinc/nickel sleeve



### Hot galvanised plug-in pipe

- VDE-tested
- Trimmed weld
- High corrosion protection



### Stainless steel pipe, V2A

- VDE-tested
- Brushed surface



### Stainless steel plug-in pipe, V4A

- VDE-tested
- Brushed surface



### Aluminium threaded pipe

- VDE-tested



### Aluminium plug-in pipe

- VDE-tested



### Accessories

- Wide range of application options

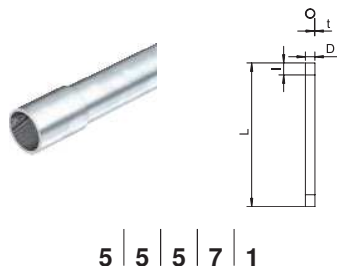


### Quick pipe

- Innovative system
- VDE-tested
- Reclosable



## Electrogalvanised steel pipe, with thread



5 | 5 | 5 | 7 | 1



Type	Thread	Dimension D mm	Dimension L mm	Dimension I mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
<b>SM16W G</b>	M16x1,5	16	3000	13	1.3	30	50.390	<b>2046861</b>
<b>SM20W G</b>	M20x1,5	20	3000	13	1.5	30	66.667	<b>2046862</b>
<b>SM25W G</b>	M25x1,5	25	3000	18	1.5	30	92.290	<b>2046863</b>
<b>SM32W G</b>	M32x1,5	32	3000	18	1.5	21	120.000	<b>2046864</b>
<b>SM40W G</b>	M40x1,5	40	3000	20.5	1.5	15	151.450	<b>2046865</b>
<b>SM50W G</b>	M50x1,5	50	3000	25	1.5	15	190.000	<b>2046866</b>
<b>SM63W G</b>	M63x1,5	63	3000	25	1.7	9	287.700	<b>2046867</b>

St Steel

G Electrogalvanised

Electrical installation pipe according to EN 61386-1 with threaded ends to EN 60423 for mechanical protection of cables.

With burr-free inner wall. One coupling is already screwed onto each pipe.

## Electrogalvanised steel bend, with thread



Type	Thread	Dimension A mm	Dimension B mm	Dimension D mm	Dimension I mm	Dimension R mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
<b>SBNM16 G</b>	M16x1,5	45	103	16	13	50	1.4	15	10.400	<b>2046778</b>
<b>SBNM20 G</b>	M20x1,5	55	155	20	13	90	1.6	25	21.000	<b>2046779</b>
<b>SBNM25 G</b>	M25x1,5	68	190	25	18	110	1.6	25	33.000	<b>2046780</b>
<b>SBNM32 G</b>	M32x1,5	88	254	32	18	150	1.6	20	56.600	<b>2046781</b>
<b>SBNM40 G</b>	M40x1,5	89	279	40	20.5	170	1.6	15	77.600	<b>2046782</b>
<b>SBNM50 G</b>	M50x1,5	133	358	50	25	200	1.6	5	125.800	<b>2046783</b>
<b>SBNM63 G</b>	M63x1,5	165	446	63	25	250	1.8	3	227.000	<b>2046784</b>

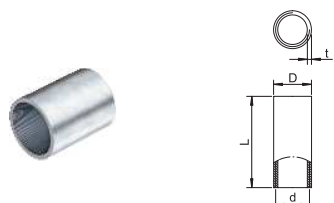
St Steel

G Electrogalvanised

90° bend for electrical installation pipes according to EN 61386-1 with threaded ends to DIN EN 60423. With burr-free inner wall.

One connection sleeve is already screwed onto each pipe bend.

## Electrogalvanised steel sleeve, with thread



Type	Thread	Dimension D mm	Dimension d mm	Dimension L mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
<b>SVM16W G</b>	M16x1,5	18.5	16	26	2	25	2.110	<b>2046875</b>
<b>SVM20W G</b>	M20x1,5	22.5	20	30	2	50	3.400	<b>2046876</b>
<b>SVM25W G</b>	M25x1,5	27.5	25	40	2	50	5.030	<b>2046877</b>
<b>SVM32W G</b>	M32x1,5	35.5	32	40	2.5	50	8.800	<b>2046878</b>
<b>SVM40W G</b>	M40x1,5	43.5	40	45	2.5	25	11.370	<b>2046879</b>
<b>SVM50W G</b>	M50x1,5	53.5	50	54	2.5	10	16.970	<b>2046880</b>
<b>SVM63W G</b>	M63x1,5	68	63	60	3.2	5	30.670	<b>2046881</b>

St Steel

G Electrogalvanised

Accessory part: coupling with thread according to EN 60423 to connect electrical installation pipes and 90° bends.

## Armoured steel pipe without thread, electrogalvanised

E30

E90

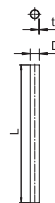


Type	Dimension D mm	Dimension L mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
<b>S16W G</b>	16	3000	1	30	37.000	<b>2046840</b>
<b>S20W G</b>	20	3000	1	30	44.700	<b>2046841</b>
<b>S25W G</b>	25	3000	1.2	30	70.400	<b>2046842</b>
<b>S32W G</b>	32	3000	1.2	21	91.200	<b>2046843</b>
<b>S40W G</b>	40	3000	1.2	15	139.700	<b>2046844</b>
<b>S50W G</b>	50	3000	1.2	15	176.000	<b>2046845</b>
<b>S63W G</b>	63	3000	1.2	9	223.000	<b>2046846</b>

St Steel

G Electrogalvanised

Electrical installation pipe without threaded ends according to EN 61386-1 for mechanical protection of cables. With burr-free inner wall.



4 | 4 | 5 | 7 | 1

## Electrogalvanised steel bend, without thread

E30

E90

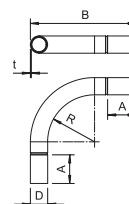


Type	Dimension A mm	Dimension B mm	Dimension D mm	Dimension I mm	Dimension R mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
<b>SBN16 G</b>	43.7	103	18.6	25	50	1	15	7.200	<b>2046808</b>
<b>SBN20 G</b>	53.7	155	22.6	30	90	1	25	13.300	<b>2046809</b>
<b>SBN25 G</b>	66.5	190	28	40	110	1.2	25	24.400	<b>2046810</b>
<b>SBN32 G</b>	86.5	254	35.1	40	150	1.2	20	41.000	<b>2046811</b>
<b>SBN40 G</b>	87.2	279	43.7	50	170	1.5	15	70.200	<b>2046812</b>
<b>SBN50 G</b>	131	358	54	60	200	1.5	5	111.800	<b>2046813</b>
<b>SBN63 G</b>	163	446	67	90	250	1.5	3	174.200	<b>2046814</b>

St Steel

G Electrogalvanised

90° bend with moulded sleeves, for electrical installation pipes according to EN 61386-1. With burr-free inner wall.



## Armoured steel pipe connection sleeve without thread, electrogalvanised

E30

E90

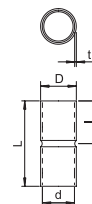


Type	Dimension D mm	Dimension d mm	Dimension L mm	Dimension I mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
<b>SV16W G</b>	18.6	16.6	50	25	1	25	2.400	<b>2046854</b>
<b>SV20W G</b>	23.1	20.7	60	30	1.2	50	4.000	<b>2046855</b>
<b>SV25W G</b>	28.1	25.7	60	30	1.2	50	5.200	<b>2046856</b>
<b>SV32W G</b>	35.2	32.8	70	35	1.2	50	7.200	<b>2046857</b>
<b>SV40W G</b>	43.8	43.8	80	40	1.5	25	13.200	<b>2046858</b>
<b>SV50W G</b>	54	51	100	50	1.5	10	20.000	<b>2046859</b>
<b>SV63W G</b>	67	64	100	50	1.5	5	28.000	<b>2046860</b>

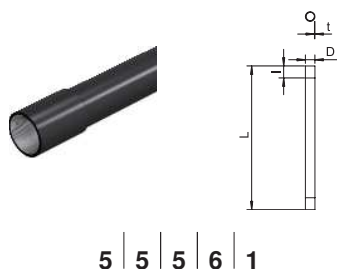
St Steel

G Electrogalvanised

Accessory part: plug-in sleeve for the connections between electrical installation pipes. With burr-free inner wall.



## Armoured steel pipe with thread, black



Type	Thread	Dimension D mm	Dimension L mm	Dimension I mm	Dimension t mm	Colour	Pack. m	Weight kg/100 m	Item No.
SM16W SW	M16x1,5	16	3000	13	1.3	Jet black	30	50.000	2046500
SM20W SW	M20x1,5	20	3000	13	1.5	Jet black	30	73.000	2046501
SM25W SW	M25x1,5	25	3000	18	1.5	Jet black	30	92.000	2046502
SM32W SW	M32x1,5	32	3000	18	1.5	Jet black	21	120.000	2046503
SM40W SW	M40x1,5	40	3000	20.5	1.5	Jet black	15	152.000	2046505
SM50W SW	M50x1,5	50	3000	25	1.5	Jet black	15	190.700	2046506
SM63W SW	M63x1,5	63	3000	25	1.7	Jet black	9	287.700	2046507

Sl Steel

PE50 PES50 - Polyester/epoxy

Electrical installation pipe according to EN 61386-1 with threaded ends to EN 60423 for mechanical protection of cables.

With burr-free inner wall. One coupling is already screwed onto each pipe.

## Black powder-coated steel bend, with thread



Type	Thread	Dimension B mm	Dimension D mm	Dimension R mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
SBNM16 SW	M16x1,5	103	16	50	Jet black	15	10.400	2046793
SBNM20 SW	M20x1,5	155	20	90	Jet black	25	21.000	2046794
SBNM25 SW	M25x1,5	190	25	110	Jet black	25	33.000	2046795
SBNM32 SW	M32x1,5	254	32	150	Jet black	20	56.600	2046796
SBNM40 SW	M40x1,5	279	40	170	Jet black	15	77.600	2046797
SBNM50 SW	M50x1,5	358	50	200	Jet black	5	125.800	2046798
SBNM63 SW	M63x1,5	446	63	250	Jet black	3	227.000	2046799

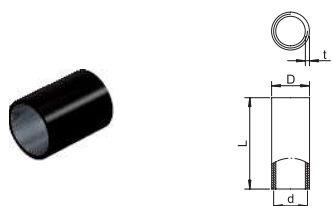
Sl Steel

PE50 PES50 - Polyester/epoxy

90° bend for electrical installation pipes according to EN 61386-1 with threaded ends to DIN EN 60423. With burr-free inner wall.

One connection sleeve is already screwed onto each pipe bend.

## Black powder-coated steel sleeve, with thread



Type	Thread	Dimension D mm	Dimension d mm	Dimension L mm	Dimension t mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
SVM16W SW	M16x1,5	18.5	16	26	2	Jet black	25	2.100	2046522
SVM20W SW	M20x1,5	22.5	20	30	2	Jet black	50	3.400	2046523
SVM25W SW	M25x1,5	27.5	25	40	2	Jet black	50	5.000	2046524
SVM32W SW	M32x1,5	35.5	32	40	2.5	Jet black	50	8.800	2046525
SVM40W SW	M40x1,5	43.5	40	45	2.5	Jet black	25	11.400	2046526
SVM50W SW	M50x1,5	53.5	50	54	2.5	Jet black	10	17.000	2046527
SVM63W SW	M63x1,5	68	63	60	3.2	Jet black	5	30.700	2046528

Sl Steel

PE50 PES50 - Polyester/epoxy

Accessory part: coupling with thread according to EN 60423 to connect electrical installation pipes and 90° bends.



## Armoured steel pipe without thread, black

E30 E90 

Type	Dimension D mm	Dimension L mm	Dimension t mm	Colour	Pack. m	Weight kg/100 m	Item No.
S16W SW	16	3000	1	Jet black	30	37.000	2046565
S20W SW	20	3000	1	Jet black	30	44.700	2046566
S25W SW	25	3000	1.2	Jet black	30	70.400	2046567
S32W SW	32	3000	1.2	Jet black	21	91.200	2046568
S40W SW	40	3000	1.2	Jet black	15	139.700	2046569
S50W SW	50	3000	1.2	Jet black	15	176.000	2046570
S63W SW	63	3000	1.2	Jet black	9	223.000	2046571

St Steel

PE50 PES50 - Polyester/epoxy

Electrical installation pipe without threaded ends according to EN 61386-1 for mechanical protection of cables. With burr-free inner wall.



4 | 4 | 5 | 6 | 1

## Black powder-coated steel bend, without thread

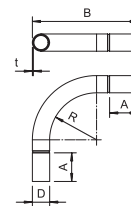
E30 E90 

Type	Dimension B mm	Dimension D mm	Dimension R mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
SBN16 SW	103	16.6	50	Jet black	15	7.200	2046824
SBN20 SW	155	20.6	90	Jet black	25	13.300	2046825
SBN25 SW	190	25.6	110	Jet black	25	24.400	2046826
SBN32 SW	254	32.7	150	Jet black	20	41.000	2046827
SBN40 SW	279	40.7	170	Jet black	15	68.900	2046828
SBN50 SW	358	51	200	Jet black	5	111.800	2046829
SBN63 SW	446	64	250	Jet black	3	174.200	2046830

St Steel

PE50 PES50 - Polyester/epoxy

90° bend with moulded sleeves, for electrical installation pipes according to EN 61386-1. With burr-free inner wall.



## Armoured steel pipe connection sleeve without thread, black

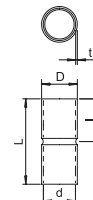
E30 E90 

Type	Dimension D mm	Dimension d mm	Dimension L mm	Dimension I mm	Dimension t mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
SV16W SW	18.6	16.6	50	25	1	Jet black	25	2.400	2046582
SV20W SW	23.1	20.7	60	30	1.2	Jet black	50	3.200	2046583
SV25W SW	28.1	25.7	60	30	1.2	Jet black	50	5.200	2046584
SV32W SW	35.2	32.8	70	35	1.2	Jet black	50	7.200	2046585
SV40W SW	43.8	40.8	80	40	1.5	Jet black	25	13.200	2046586
SV50W SW	54	51	100	50	1.5	Jet black	10	20.000	2046587
SV63W SW	67	64	100	50	1.5	Jet black	5	28.000	2046588

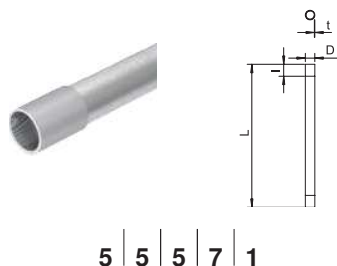
St Steel

PE50 PES50 - Polyester/epoxy

Accessory part: plug-in sleeve for the connections between electrical installation pipes. With burr-free inner wall.



## Hot-dip galvanised steel pipe, with thread



Type	Thread	Dimension D mm	Dimension L mm	Dimension I mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
<b>SM16W FT</b>	M16x1,5	16	3000	13	1.3	30	54.000	<b>2046533</b>
<b>SM20W FT</b>	M20x1,5	20	3000	13	1.5	30	79.000	<b>2046534</b>
<b>SM25W FT</b>	M25x1,5	25	3000	18	1.5	30	99.000	<b>2046535</b>
<b>SM32W FT</b>	M32x1,5	32	3000	18	1.5	21	130.000	<b>2046536</b>
<b>SM40W FT</b>	M40x1,5	40	3000	20.5	1.5	15	164.000	<b>2046537</b>
<b>SM50W FT</b>	M50x1,5	50	3000	25	1.5	15	206.000	<b>2046538</b>
<b>SM63W FT</b>	M63x1,5	63	3000	26	1.8	9	324.700	<b>2046540</b>

**St** Steel

**FT** Hot-dip galvanised

Electrical installation pipe according to EN 61386-1 with threaded ends to EN 60423 for mechanical protection of cables.

With burr-free inner wall. Corrosion protection class 4 (high). One coupling is already screwed onto each pipe.

## Hot-dip galvanised steel bend, with thread



Type	Thread	Dimension A mm	Dimension B mm	Dimension D mm	Dimension I mm	Dimension R mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
<b>SBNM16 FT</b>	M16x1,5	45	103	16	13	50	1.4	15	10.400	<b>2046786</b>
<b>SBNM20 FT</b>	M20x1,5	55	155	20	13	90	1.6	25	21.000	<b>2046787</b>
<b>SBNM25 FT</b>	M25x1,5	68	190	25	18	110	1.6	25	33.000	<b>2046788</b>
<b>SBNM32 FT</b>	M32x1,5	88	254	32	18	150	1.6	20	56.600	<b>2046789</b>
<b>SBNM40 FT</b>	M40x1,5	89	279	40	20.5	170	1.6	15	77.600	<b>2046790</b>
<b>SBNM50 FT</b>	M50x1,5	133	358	50	25	200	1.6	5	125.800	<b>2046791</b>
<b>SBNM63 FT</b>	M63x1,5	165	446	63	25	250	1.8	3	227.000	<b>2046792</b>

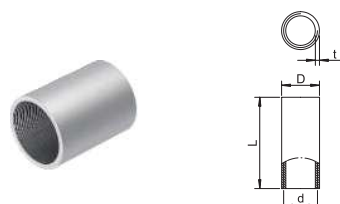
**St** Steel

**FT** Hot-dip galvanised

90° bend for electrical installation pipes according to EN 61386-1 with threaded ends to DIN EN 60423. With burr-free inner wall.

One connection sleeve is already screwed onto each pipe bend.

## Zinc-nickel coated steel sleeve, with thread



Type	Thread	Dimension D mm	Dimension d mm	Dimension L mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
<b>SVM16W DN</b>	M16x1,5	18.5	16	26	2	25	2.100	<b>2046553</b>
<b>SVM20W DN</b>	M20x1,5	22.5	20	30	2	50	3.400	<b>2046554</b>
<b>SVM25W DN</b>	M25x1,5	27.5	25	40	2	50	3.986	<b>2046556</b>
<b>SVM32W DN</b>	M32x1,5	35.5	32	40	2.5	50	8.800	<b>2046557</b>
<b>SVM40W DN</b>	M40x1,5	43.5	40	45	2.5	25	11.400	<b>2046558</b>
<b>SVM50W DN</b>	M50x1,5	53.5	50	54	2.5	10	17.000	<b>2046559</b>
<b>SVM63W DN</b>	M63x1,5	68	63	60	3.2	5	30.700	<b>2046560</b>

**St** Steel

**DN** Zinc / nickel-coated

Accessory part: coupling with thread according to EN 60423 to connect electrical installation pipes and 90° bends.



## Hot-dip galvanised steel pipe, without thread

E30

E90

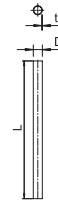


Type	Dimension D mm	Dimension L mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
<b>S16W FT</b>	16	3000	1	30	37.000	<b>2046593</b>
<b>S20W FT</b>	20	3000	1	30	44.700	<b>2046594</b>
<b>S25W FT</b>	25	3000	1.2	30	70.400	<b>2046595</b>
<b>S32W FT</b>	32	3000	1.2	21	91.200	<b>2046596</b>
<b>S40W FT</b>	40	3000	1.2	15	139.700	<b>2046597</b>
<b>S50W FT</b>	50	3000	1.2	15	176.000	<b>2046598</b>
<b>S63W FT</b>	63	3000	1.2	9	223.000	<b>2046599</b>

St Steel

FT Hot-dip galvanised

Electrical installation pipe without threaded ends according to EN 61386-1 for mechanical protection of cables. With burr-free inner wall. Corrosion protection class 4 (high).



4 | 4 | 5 | 7 | 1

## Hot-dip galvanised steel bend, without thread

E30

E90

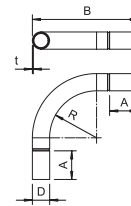


Type	Dimension A mm	Dimension B mm	Dimension D mm	Dimension I mm	Dimension R mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
<b>SBN16 FT</b>	43.7	103	16.6	25	50	1	15	7.200	<b>2046816</b>
<b>SBN20 FT</b>	53.7	155	20.6	30	90	1	25	13.300	<b>2046817</b>
<b>SBN25 FT</b>	66.5	190	25.6	40	110	1.2	25	24.400	<b>2046818</b>
<b>SBN32 FT</b>	86.5	254	32.7	40	150	1.2	20	41.000	<b>2046819</b>
<b>SBN40 FT</b>	87.2	279	40.7	50	170	1.5	15	68.900	<b>2046820</b>
<b>SBN50 FT</b>	131	358	51	60	200	1.5	5	111.800	<b>2046821</b>
<b>SBN63 FT</b>	163	446	64	90	250	1.5	3	174.200	<b>2046822</b>

St Steel

FT Hot-dip galvanised

90° bend with moulded sleeves, for electrical installation pipes according to EN 61386-1. With burr-free inner wall.



## Hot-dip galvanised steel sleeve, without thread

E30

E90

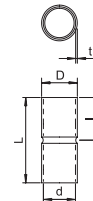


Type	Dimension D mm	Dimension d mm	Dimension L mm	Dimension I mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
<b>SV16W FT</b>	18.6	16.6	50	25	1	25	2.200	<b>2046620</b>
<b>SV20W FT</b>	23.1	20.7	60	30	1.2	50	3.200	<b>2046621</b>
<b>SV25W FT</b>	28.1	25.7	60	30	1.2	50	5.600	<b>2046622</b>
<b>SV32W FT</b>	35.2	32.8	70	35	1.2	50	7.800	<b>2046623</b>
<b>SV40W FT</b>	43.8	40.8	80	40	1.5	25	14.400	<b>2046624</b>
<b>SV50W FT</b>	54	51	100	50	1.5	10	22.000	<b>2046625</b>
<b>SV63W FT</b>	67	63	100	50	1.5	5	28.000	<b>2046626</b>

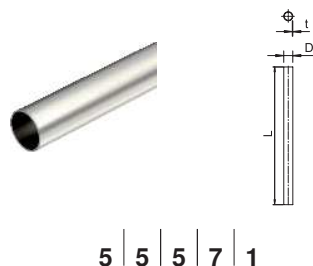
St Steel

FT Hot-dip galvanised

Accessory part: plug-in sleeve for the connections between electrical installation pipes. With burr-free inner wall.



## Stainless steel pipe, V2A



E30 E90

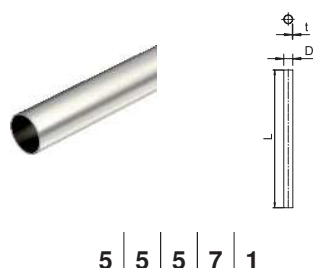
Type	Dimension D mm	Dimension L mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
S16W A2	16	3000	1	30	37.000	2046720
S20W A2	20	3000	1	30	46.900	2046721
S25W A2	25	3000	1	30	59.200	2046722
S32W A2	32	3000	1.2	21	91.200	2046723
S40W A2	40	3000	1.2	15	114.800	2046724
S50W A2	50	3000	1.5	15	179.400	2046725
S63W A2	63	3000	1.5	9	227.500	2046726

V2A Stainless steel, A2

GEB Brushed

Electrical installation pipe without threaded ends to EN 61386-1 for mechanical protection of cables. With burr-free inner wall. Corrosion protection class 4 (high).  
Classification according to DIN EN 61386-1: 555711404010

## Stainless steel pipe, V4A



E30 E90

Type	Dimension D mm	Dimension L mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
S16W A4	16	3000	1	15	37.000	2046750
S20W A4	20	3000	1	15	46.900	2046751
S25W A4	25	3000	1	15	59.200	2046752
S32W A4	32	3000	1.2	15	91.200	2046753
S40W A4	40	3000	1.2	9	114.800	2046754
S50W A4	50	3000	1.5	9	179.400	2046755
S63W A4	63	3000	1.5	9	227.500	2046756

V4A Stainless steel, A4

GEB Brushed

Electrical installation pipe without threaded ends to EN 61386-1 for mechanical protection of cables. With burr-free inner wall. Corrosion protection class 4 (high).

## Stainless steel pipe bend, V4A



E30 E90

Type	Dimension A mm	Dimension B mm	Dimension D mm	Dimension L mm	Dimension R mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SB16W A4	54	104	18.2	25	50	1	5	7.200	2046760
SB20W A4	66	156	22.2	30	90	1	10	13.300	2046761
SB25W A4	81.5	194	27.2	30	112.5	1	10	20.400	2046762
SB32W A4	104	250	34.7	35	146	1.25	10	42.000	2046763
SB40W A4	129	294	42.7	40	165	1.25	5	61.200	2046764
SB50W A4	158	408	52.7	50	250	1.25	5	79.500	2046765
SB63W A4	198	448	65.7	50	250	1.25	3	144.600	2046766

V4A Stainless steel, A4

90° bend with moulded sleeves, for electrical installation pipes according to EN 61386-1. With burr-free inner wall.

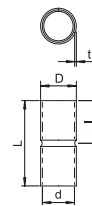
## Stainless steel sleeve V4A

E30 E90

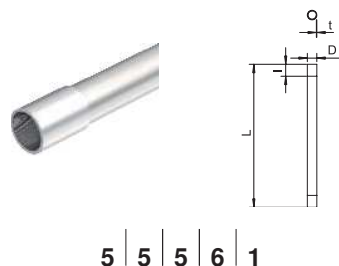
Type	Dimension D mm	Dimension d mm	Dimension L mm	Dimension l mm	Dimension t mm	Pack. pcs.	Weight kg/100 pcs.	Item No.
<b>SV16W A4</b>	18.2	16.2	50	25	1	10	2.100	<b>2046770</b>
<b>SV20W A4</b>	22.2	20.2	60	30	1	15	3.200	<b>2046771</b>
<b>SV25W A4</b>	27.2	25.2	60	30	1	15	3.900	<b>2046772</b>
<b>SV32W A4</b>	34.7	32.2	70	35	1.25	15	7.300	<b>2046773</b>
<b>SV40W A4</b>	42.7	40.2	80	40	1.25	10	10.300	<b>2046774</b>
<b>SV50W A4</b>	52.8	50.2	100	50	1.3	5	16.700	<b>2046775</b>
<b>SV63W A4</b>	65.8	63.2	100	50	1.3	3	20.900	<b>2046776</b>

V4A Stainless steel, A4

Accessory part: plug-in sleeve for the connections between electrical installation pipes. With burr-free inner wall.



## Aluminium pipe, with thread



M

Type	Thread	Dimension D mm	Dimension L mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
SM16W ALU	M16x1,5	16	3000	1.6	30	19.543	2046032
SM20W ALU	M20x1,5	20	3000	1.9	30	29.170	2046033
SM25W ALU	M25x1,5	25	3000	1.9	30	37.230	2046034
SM32W ALU	M32x1,5	32	3000	1.9	30	48.510	2046035
SM40W ALU	M40x1,5	40	3000	1.9	15	61.403	2046036
SM50W ALU	M50x1,5	50	3000	2.1	15	85.323	2046037
SM63W ALU	M63x1,5	63	3000	2.1	15	108.480	2046038

Alu Aluminium

Electrical installation pipe to EN 61386-1 with threaded ends to DIN EN 60423 for mechanical protection of cables.

With burr-free inner wall. One connection sleeve is already screwed onto each pipe.

## Aluminium pipe bend, with thread



M

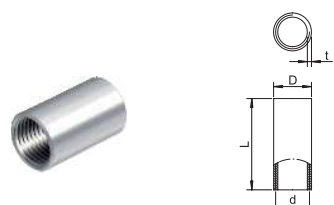
Type	Thread	Dimension A mm	Dimension B mm	Dimension D mm	Dimension I mm	Dimension R mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SBM16W ALU	M16x1,5	78	150	16	15	64	1.6	15	3.300	2046042
SBM20W ALU	M20x1,5	80	170	20	15	80	1.9	25	7.300	2046043
SBM25W ALU	M25x1,5	93	208	25	20	102.5	1.9	25	11.500	2046044
SBM32W ALU	M32x1,5	105	252	32	20	131	1.9	20	20.000	2046045
SBM40W ALU	M40x1,5	115	300	40	20	165	1.9	15	27.300	2046046
SBM50W ALU	M50x1,5	128	358	50	25	205	2.1	5	49.500	2046047
SBM63W ALU	M63x1,5	135	423	63	25	256.5	2.1	3	78.400	2046048

Alu Aluminium

90° bend for electrical installation pipes according to EN 61386-1 with threaded ends to DIN EN 60423. With burr-free inner wall.

One connection sleeve is already screwed onto each pipe bend.

## Aluminium sleeve, with thread



M

Type	Thread	Dimension D mm	Dimension d mm	Dimension L mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SVM16W ALU	M16x1,5	18.5	16	35	2.25	50	1.080	2046052
SVM20W ALU	M20x1,5	22.5	20	35	2.25	50	1.100	2046053
SVM25W ALU	M25x1,5	28	25	45	2.5	50	2.430	2046054
SVM32W ALU	M32x1,5	35	32	45	2.5	50	3.100	2046055
SVM40W ALU	M40x1,5	43.5	40	45	2.75	20	4.270	2046056
SVM50W ALU	M50x1,5	53.5	50	55	2.75	20	6.510	2046057
SVM63W ALU	M63x1,5	66.5	63	55	2.8	20	8.320	2046058

Alu Aluminium

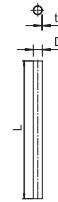
Accessory part: coupling with thread according to EN 60423 to connect electrical installation pipes and 90° bends.

## Aluminium pipe, without thread

Type	Dimension D mm	Dimension L mm	Dimension t mm	Pack. m	Weight kg/100 m	Item No.
<b>S16W ALU</b>	16	3000	1.2	30	15.065	<b>2046002</b>
<b>S20W ALU</b>	20	3000	1.2	30	19.134	<b>2046003</b>
<b>S25W ALU</b>	25	3000	1.3	30	26.134	<b>2046004</b>
<b>S32W ALU</b>	32	3000	1.3	30	33.853	<b>2046005</b>
<b>S40W ALU</b>	40	3000	1.4	15	45.839	<b>2046006</b>
<b>S50W ALU</b>	50	3000	1.4	15	57.714	<b>2046007</b>
<b>S63W ALU</b>	63	3000	1.7	15	88.394	<b>2046008</b>

Alu Aluminium

Electrical installation pipe without threaded ends to EN 61386-1 for mechanical protection of cables. With burr-free inner wall.



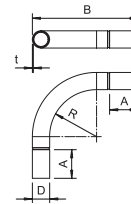
4 | 4 | 5 | 6 | 1

## Aluminium pipe bend, without thread

Type	Dimension A mm	Dimension B mm	Dimension D mm	Dimension I mm	Dimension R mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
<b>SB16W ALU</b>	78	151	16	28	64	1.2	15	2.350	<b>2046012</b>
<b>SB20W ALU</b>	80	171	20	30	80	1.2	25	5.500	<b>2046013</b>
<b>SB25W ALU</b>	93	209	25	38	102.5	1.3	25	9.000	<b>2046014</b>
<b>SB32W ALU</b>	105	253	32	40	131	1.3	20	14.100	<b>2046015</b>
<b>SB40W ALU</b>	115	302	40	50	165	1.4	15	22.400	<b>2046016</b>
<b>SB50W ALU</b>	128	360	50	63	205	1.4	5	35.400	<b>2046017</b>
<b>SB63W ALU</b>	135	425	63	70	256.5	1.7	3	59.500	<b>2046018</b>

Alu Aluminium

90° bend with moulded sleeves, for electrical installation pipes according to EN 61386-1. With burr-free inner wall.

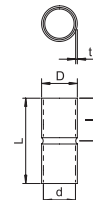


## Aluminium sleeve, without thread

Type	Dimension D mm	Dimension d mm	Dimension L mm	Dimension I mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
<b>SV16W ALU</b>	18.6	16.2	40	20	1.2	50	0.700	<b>2046022</b>
<b>SV20W ALU</b>	22.6	20.2	50	25	1.2	50	1.300	<b>2046023</b>
<b>SV25W ALU</b>	27.6	25.2	60	30	1.2	50	1.900	<b>2046024</b>
<b>SV32W ALU</b>	34.6	32.2	70	35	1.2	50	2.400	<b>2046025</b>
<b>SV40W ALU</b>	43	40.2	70	35	1.4	20	4.000	<b>2046026</b>
<b>SV50W ALU</b>	53	50.2	90	45	1.4	20	6.100	<b>2046027</b>
<b>SV63W ALU</b>	66.2	63.2	110	55	1.5	20	9.000	<b>2046028</b>

Alu Aluminium

Accessory part: plug-in sleeve for the connections between electrical installation pipes. With burr-free inner wall.



Version: 2

Revision date: August 2018

Printing date: 15<sup>th</sup> August 2018**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****1.1. Product identifier**

Substance name: Zinc massive  
Chemical formula: Zn  
Trade name: Zinc  
CAS-Number: 7440-66-6  
Index-No: 034-001-00-2  
EINECS-Number: 231-175-3  
REACH Registration number: 01-2119467174-37-0024

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

Manufacturing of various parts and products. Registered uses, for this product, can be found in section 15 of this eSDS.

**Uses advised against**

—

**1.3. Details of the supplier of the safety data sheet****Company Name**

Wilhelm Grillo Handelsgesellschaft mbH, Am Grillopark 5, 47169 Duisburg, Deutschland/Germany

Tel.: +49 203 40 66 – 0 / Fax: +49 203 40 66 – 114

<http://www.grillohandel.de> – e-mail: [reach@grillohandel.de](mailto:reach@grillohandel.de)

**1.4. Emergency telephone number****SECTION 2: HAZARDS IDENTIFICATION****2.1. Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008 as amended**

This substance does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

**Hazard summary**

Occupational exposure to the substance or mixture may cause adverse health effects.

**2.2. Label elements****Label according to Regulation (EC) No. 1272/2008 as amended**

Contains: Zinc  
Hazard pictograms: None  
Signal word: None  
Hazard statements: The substance does not meet the criteria for classification.

Version: 2

Revision date: August 2018

Printing date: 15<sup>th</sup> August 2018**Precautionary statements**

<b>Prevention</b>	Observe good industrial hygiene practices.
<b>Response</b>	Wash thoroughly after handling.
<b>Storage</b>	Store away from incompatible materials.
<b>Disposal</b>	Dispose of waste and residues in accordance with local authority requirements.
<b>Supplemental label information</b>	None

**2.3. Other hazards**

This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.

**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS****3.1. Substances****General information**

Chemical name	%	CAS-No./ EC-No.	REACH-Registration-No.	Index-No.	Notes
Zinc	≥98,5	7440-66-6 231-175-3	01-2119467174-37-0024	—	
<b>Classification:</b>	—				

<b>Composition comments</b>	This product is registered under the REACH Regulation 1907/2006 as a mono-constituent substance. All concentrations are in percent by weight. For more detailed chemical composition, refer to the certificate of analysis.
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**SECTION 4: FIRST AID MEASURES****4.1. Description of first aid measures****General information**

Get medical attention if any discomfort develops. Seek medical attention for all burns, regardless how minor they may seem. Show this safety data sheet to the doctor in attendance.

**Inhalation**

In case of exposure to fumes or particulates: Move to fresh air. Get medical attention if discomfort persists.

**Skin contact**

Contact with dust: Wash with soap and water. Get medical attention if irritation develops or persists. In case of contact with molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area.

**Eye contact**

Do not rub eyes. Remove any contact lenses. Flush eyes thoroughly with water, taking care to rinse under eyelids. If irritation persists, continue flushing for 15 minutes, rinsing from time to time under eyelids. If discomfort continues, consult a physician.

**Ingestion**

Rinse mouth thoroughly if dust is ingested. Do not induce vomiting. Get medical attention if any discomfort continues.

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

Irritation of eyes and mucous membranes. Irritation of nose and throat. Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain.

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**4.3. Indication of any immediate medical attention and special treatments needed**

Treat symptomatically.

**SECTION 5: FIREFIGHTING MEASURES**

**General fire hazards**

Solid metal is not flammable.

**5.1. Extinguishing media**

**Suitable extinguishing media**

Special powder against metal fires. Dry sand.

**Unsuitable extinguishing media**

Do not use water or halogenated extinguishing media.

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

Fire or high temperatures create: Metal oxides.

**5.3. Advice for fire fighters**

**Special protective equipment for fire fighters**

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Special fire fighting procedures**

Move container from fire area if it can be done without risk.

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

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

**For non-emergency personnel**

Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes.

Wear protective clothing as described in section 8 of this safety data sheet.

**For emergency responders**

Wear protective clothing as described in Section 8 of this safety data sheet.

**6.2. Environmental precautions**

Avoid release to the environment.

**6.3. Methods and materials for containment and cleaning up**

Allow spilled material to solidify and scrape up with shovels into a suitable container for recycle or disposal.

Collect dust or particulates using a vacuum cleaner with a HEPA filter.

**6.4. References to other sections**

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.



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## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Avoid generation and spreading of dust. Welding, burning, sawing, brazing, grinding or machining operations may generate fumes and dusts. Provide adequate ventilation. Use appropriate tools. Avoid contact with sharp edges and hot surfaces. Avoid inhalation of dust and contact with skin and eyes. Avoid contact with molten material. Do not use water on molten metal. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

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

Keep dry. Store away from incompatible materials.

### 7.3. Specific end uses(s)

For detailed information, see section 15. Observe industrial sector guidance on best practices.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

#### Occupational exposure limits

No exposure limits noted for ingredient(s).

#### Biological limit values

No biological exposure limits noted for the ingredient(s).

#### Recommended monitoring procedures

Follow standard monitoring procedures.

#### Derived no effect levels (DNELs)

##### General Population

Product	Value	Assessment factor	Notes
Zinc (CAS 7440-66-6)			
Long-term, Systemic, Dermal	83 mg/kg bw/day		Repeated dose toxicity
Long-term, Systemic, Inhalation	2.5 mg/m <sup>3</sup>		Repeated dose toxicity
Long-term, Systemic, Oral	0.83 mg/kg bw/day		Repeated dose toxicity

##### Workers

Product	Value	Assessment factor	Notes
Zinc (CAS 7440-66-6)			
Long-term, Systemic, Dermal	83 mg/kg bw/day		Repeated dose toxicity
Long-term, Systemic, Inhalation	5 mg/m <sup>3</sup>		Repeated dose toxicity

#### Predicted no effect concentrations (PNECs)

Product	Value	Assessment factor	Notes
Zinc (CAS 7440-66-6)			
Freshwater	20.6 µg/l		
Marine water	6.1 µg/l		
Sediment (freshwater)	117.8 mg/kg		
Sediment (marine water)	56.5 mg/kg		
Soil	35.6 mg/kg		
STP	100 µg/l		

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## 8.2. *Exposure controls*

### **Appropriate engineering controls**

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. If no exposure limits are stated, follow the recommended exposure limit of 10 mg/m<sup>3</sup> for total nuisance dust. Use explosion-proof equipment if high dust/air concentrations are possible.

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

#### **General information**

Use personal protective equipment as required. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

#### **Eye/face protection**

Wear dust-resistant safety goggles where there is danger of eye contact. In addition to safety glasses or goggles, a welding helmet with appropriate shaded shield is required during welding, burning, or brazing. A face shield is recommended, in addition to safety glasses or goggles, during sawing, grinding, or machining.

#### **Skin protection**

##### **– Hand protection**

Wear suitable protective gloves to prevent cuts and abrasions. E.g. type of ¾ dipped natural latex, with steel, fiberglass and Kevlar liner and long knitted cuff, cut protection level 5. When material is heated, wear gloves to protect against thermal burns. Suitable gloves can be recommended by the glove supplier.

##### **– Other**

Wear suitable protective clothing. Regular protective clothing with high visibility according to EN471 Class 2 is recommended.

#### **Respiratory protection**

In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter (type P2). Check with respiratory protective equipment suppliers.

#### **Thermal hazards**

Wear appropriate thermal protective clothing, when necessary.

#### **Hygiene measures**

Wash hands after handling. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practices. Follow up on any medical surveillance requirements.

#### **Environmental exposure controls**

Contain spills and prevent releases and observe national regulations on emissions. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels.

## **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

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

#### **Appearance**

Physical state

Solid

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Form	Massive, solid metal Solid forms such as: Ingots, T-bars, Jumbosand Strips
Colour	Silver-grey
Odour	Odourless
Odour threshold	Not applicable
pH	Not applicable
Melting point/freezing point	419.53 °C (787.15 °F)
Initial boiling point and boiling range	Not applicable
Flash point	Not applicable
Evaporation rate	Not applicable
Flammability (solid, gas)	Non flammable
<b>Upper/lower flammability or explosive limits</b>	
Flammability limit - lower (%)	Not applicable
Flammability limit - upper (%)	Not applicable
Vapour pressure	Not applicable
Vapour density	Not applicable
Relative density	7.14 (25°C / 77°F)
Solubility(ies)	Insoluble
Partition coefficient (n-octanol/water)	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	Not applicable
Viscosity	Not applicable
Viscosity temperature	Not applicable
Explosive properties	Not explosive
Oxidising properties	Not oxidizing

## 9.2. Other information

Dynamic viscosity > 500 mPa.s (417 °C (782.6 °F))

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

Massive metal is non reactive under normal conditions of use, storage and transport.

### 10.2. Chemical stability

Massive metal is stable under normal conditions of use, storage and transport.

### 10.3. Possibility of hazardous reactions

Hazardous polymerisation does not occur. Contact with acids will release flammable hydrogen gas.

### 10.4. Conditions to avoid

Contact with acids. Contact with incompatible materials. Keep away from heat, sparks and open flame.

### 10.5. Incompatible materials

Strong oxidising agents. Mineral acid.

### 10.6. Hazardous decomposition products

Fire or high temperatures create:

Zinc oxides. Welding, burning, sawing, brazing, grinding or machining operations may generate dusts and fumes of metal oxides.

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Printing date: 15<sup>th</sup> August 2018**SECTION 11: TOXICOLOGICAL INFORMATION****General information**

Occupational exposure to the substance or mixture may cause adverse effects.

**Information on likely routes of exposure**

<b>Inhalation</b>	Dust may irritate respiratory system.
<b>Skin contact</b>	Dust may irritate skin.
<b>Eye contact</b>	Dust may irritate the eyes.
<b>Ingestion</b>	Ingestion may cause irritation and malaise.
<b>Symptoms</b>	May cause irritation of nose, throat and mucous membranes. Flu-like symptoms.

**11.1. Information on toxicological effects****Acute toxicity**

Inhalation of powder or fumes may cause metal fume fever.

Product	Species	Test Results
Zinc (CAS 7440-66-6)		
<b>Acute</b>		
<b>Dust</b>		
LC50	Rat	> 5410 mg/m <sup>3</sup> , 4 Hours

**Skin corrosion/irritation**

May cause irritation through mechanical abrasion.

**Serious eye damage/eye irritation**

May cause irritation through mechanical abrasion.

**Respiratory sensitisation**

Based on available data, the classification criteria are not met.

**Skin sensitisation**

Based on available data, the classification criteria are not met.

**Germ cell mutagenicity**

Based on available data, the classification criteria are not met.

**Carcinogenicity**

Based on available data, the classification criteria are not met.

**Reproductive toxicity**

Based on available data, the classification criteria are not met.

**Specific target organ toxicity - single exposure**

Based on available data, the classification criteria are not met.

**Specific target organ toxicity - repeated exposure**

Based on available data, the classification criteria are not met.

**Aspiration hazard**

Not classified.

**Mixture versus substance information**

The product is a substance.

**Other information**

Welding or plasma arc cutting of metal and alloys can generate ozone, nitric oxides and ultraviolet radiation.

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## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

Zinc in massive forms presents a limited hazard for the environment.

Product	Species	Test Results
Zinc (CAS 7440-66-6) Aquatic - Fish	LC50 Rainbow trout, donaldson trout (Oncorhynchus mykiss)	0.41 mg/l, 96 hours

### 12.2. Persistence and degradability

The product is not biodegradable.

### 12.3. Bioaccumulative potential

The product is not bioaccumulating.

**Partition coefficient n-octanol/water (log Kow)** Not applicable.

**Bioconcentration factor (BCF)** Not available.

### 12.4. Mobility in soil

Zinc in massive forms is not mobile in the environment.

#### **Mobility in general**

The product is not volatile but may be spread by dust-raising handling

### 12.5. Results of PBT and vPvB assessment

This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.

### 12.6. Other adverse effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

#### **Residual waste**

Recover and recycle, if practical. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.

#### **Contaminated packaging**

Dispose of in accordance with local regulations.

#### **EU waste code**

12 01 99 The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

#### **Disposal methods/information**

Dispose in accordance with all applicable regulations.

## SECTION 14: TRANSPORT INFORMATION

### 14.1. – 14.6.

#### **ADR / RID / ADN / IATA / IMDG**

Not regulated as dangerous goods.

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Not applicable. This product is a solid. Therefore, bulk transport is governed by IMSBC code. The material is not covered under Appendix I.

**SECTION 15: REGULATORY INFORMATION****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulations**

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I, as amended: Not listed.

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex II, as amended: Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended: Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended  
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended  
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended  
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended  
Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended: Zinc (CAS 7440-66-6).

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA: Not listed.

**Authorisations**

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended: Not listed.

**Restrictions on use**

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended  
Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended: Not listed.

**Other EU regulations**

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended: Not listed.

**Other regulations**

This substance does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006 as amended.

**National regulations**

Follow national regulation for work with chemical agents in accordance with Directive 98/24/EC, as amended.

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**15.2. Chemical Safety Assessment**

Chemical Safety Assessment has been carried out.

**Identified Uses:**

Uses by workers in industrial settings  
Zinc metal production RLE.  
Zinc metal production ISF.  
Storage of ingots-slabs in warehouses.  
Production of chemicals (pyrotechnical process).  
Production of chemicals (hydrotechnical process).  
Additive for production of inorganic catalysts.  
Melting, alloying and casting.  
Cathodic protection - sacrificial anodes,  
Downstream use of zinc-based sacrificial anodes.  
Extraction of PM (Parkes process).  
Zinc casting / granules, pellets, prills, L  
Zinc sheet casting and rolling.  
Wire and rods manufacturing.  
Downstream use of Zn based wire for metal spraying.  
Component for soldering/brazing/welding products.  
Downstream use of Zinc based brazing/soldering products.  
Strips and coins manufacturing.  
Batteries ballots, cans manufacturing.  
Zinc (pure or alloyed) powder manufacturing.  
Passivated zinc powder manufacturing (pure or alloyed).  
Use of active powders for batteries.  
Use of Zinc powders, pure or slightly alloyed, for formulation of paints, coatings, and inks.  
Use of zinc powder for mechanical plating.  
Use of zinc powder based paints, coatings and inks.  
Use of zinc powder as reductant reagent.  
Use of (alloyed) Zn powder as corrosion inhibitor for lubricants.  
Use of zinc powder (pure or alloyed) in the manufacture of diamond tools.  
Use of zinc powder (pure or alloyed) in the manufacture of friction lining.  
Use of zinc powder (pure or alloyed) in the manufacture of carbon brushes

Wilhelm Grillo Handelsgesellschaft mbH, Am Grillopark 5, 47169 Duisburg

Safety Data Sheet according to Regulation No. EC 1907/2006

Zinc

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#### SECTION 16: OTHER INFORMATION

##### List of abbreviations

PBT: Persistent, bioaccumulative and toxic.  
vPvB: Very Persistent and very Bioaccumulative.

##### References

IUCLID  
IARC: Chemical safety report.  
ECHA registered substances database

##### Information on evaluation method leading to the classification of mixture

Not applicable.

##### Full text of any H-statements not written out in full under Sections 2 to 15

None.

##### Revision information:

Version 2  
In all sections.

##### Disclaimer:

The company Wilhelm Grillo Handelsgesellschaft mbH provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. Furthermore, this safety data sheet (including its Annex) is made up based on the legal requirements as set by Regulation (EC) 1907/2006 (REACH). Further information received following the time scale as foreseen by REACH and the guidance policies as described in the REACH Implementation Programs will be added when it becomes available.



## zinc nickel bismuth alloys for hot dip galvanizing

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

#### 1.1. Product identifier

**Product name** : zinc nickel bismuth alloys for hot dip galvanizing  
**Synonyms** : Technigalva; Technigalva plus; zinc bismuth alloy; zinc nickel alloy; zinc nickel bismuth alloys; ZnBi; ZnNi; ZnNiBi  
**Registration number REACH** : Not applicable (mixture)  
**Product type REACH** : Mixture/alloy

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

##### 1.2.1 Relevant identified uses

Metal industry: hot dip galvanizing

##### 1.2.2 Uses advised against

No uses advised against known

#### 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  
 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 AG  
 Tessinerplatz 7  
 CH-8002 Zürich  
 ☎ +41 44 745 81 00  
 📠 +41 44 745 81 10  
 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

##### Supplemental information

EUH208 Contains: nickel. May produce an allergic reaction.

#### 2.3. Other hazards

The melting down of moist metal leads to explosion risk  
 Heated product causes burns

# zinc nickel bismuth alloys for hot dip galvanizing

## 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
zinc 01-2119467174-37	7440-66-6 231-175-3	97.55% =C<99.50%		(2)	Constituent
bismuth	7440-69-9 231-177-4	0.00% =C<2.45%			Constituent
nickel	7440-02-0 231-111-4	0.00% =C<0.55%	Carc. 2; H351 Skin Sens. 1; H317 STOT RE 1; H372	(1)(2)(10)	Constituent

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

(2) Substance with a Community workplace exposure limit

(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:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

#### After inhalation:

After inhalation of fume: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

#### After 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.

#### After eye contact:

Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Take victim to an ophthalmologist.

#### 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:

Not applicable.

#### 4.2.2 Delayed symptoms

No effects known.

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

If applicable and available it will be listed below.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### 5.1.1 Suitable extinguishing media:

Small fire: Dry sand, Quick-acting D powder extinguisher.

#### 5.1.2 Unsuitable extinguishing media:

Small fire: Quick-acting CO2 extinguisher, Water, Foam, Quick-acting ABC powder extinguisher, Quick-acting BC powder extinguisher.

Major fire: Water, Foam.

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

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

### 5.3. Advice for firefighters

Reason for revision: 3.2

Publication date: 2010-10-22

Date of revision: 2019-04-08

Revision number: 0102

Product number: 49014

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## 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. Protective clothing. Heat/fire exposure: compressed air/oxygen apparatus.

## SECTION 6: Accidental release measures

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

No naked flames.

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

See heading 8.2

#### 6.1.2 Protective equipment for emergency responders

Gloves. Protective clothing.

Suitable protective clothing

See heading 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 heading 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. Store in a dry area. Store at ambient temperature. Meet the legal requirements.

#### 7.2.2 Keep away from:

Heat sources, (strong) acids.

#### 7.2.3 Suitable packaging material:

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

Nickel (composés insolubles inorganiques) (en Ni)	Time-weighted average exposure limit 8 h	0.2 mg/m <sup>3</sup>
Nickel (métal)	Time-weighted average exposure limit 8 h	1 mg/m <sup>3</sup>
Zinc (oxyde de) (fraction alvéolaire)	Time-weighted average exposure limit 8 h	2 mg/m <sup>3</sup>
	Short time value	10 mg/m <sup>3</sup>

#### France

Disulfiram	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	2 mg/m <sup>3</sup>
Nickel (métal)	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	1 mg/m <sup>3</sup>
Nickel (oxyde de), en Ni	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	1 mg/m <sup>3</sup>
Zinc (oxyde de, fumées)	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	5 mg/m <sup>3</sup>
Zinc (oxyde de, poussières)	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	10 mg/m <sup>3</sup>

#### Germany

Reason for revision: 3.2

Publication date: 2010-10-22

Date of revision: 2019-04-08

Revision number: 0102

Product number: 49014

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# zinc nickel bismuth alloys for hot dip galvanizing

Nickel und Nickelverbindungen	Time-weighted average exposure limit 8 h (TRGS 900)	0.030 mg/m <sup>3</sup>
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## UK

Nickel metal	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.5 mg/m <sup>3</sup>
Nickel, insoluble inorganic compounds (as Ni)(except nickel tetracarbonyl)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.5 mg/m <sup>3</sup>

## USA (TLV-ACGIH)

Nickel Elemental	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	1.5 mg/m <sup>3</sup> (I)
Nickel, Insoluble inorganic compounds (NOS), as Ni	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.2 mg/m <sup>3</sup> (I)
Zinc oxide	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	2 mg/m <sup>3</sup> (R)
	Short time value (TLV - Adopted Value)	10 mg/m <sup>3</sup> (R)

(I): Inhalable fraction

(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
Bismuth	OSHA	ID121
Nickel (Elements on wipes)	NIOSH	9102
Nickel (Elements)	NIOSH	7300
Nickel (Elements, aqua regia ashing)	NIOSH	7301
Nickel (Elements, hot block/HCl/HNO3 digestion)	NIOSH	7303
Nickel (Ni)	NIOSH	7302
Nickel (Ni)	NIOSH	7304
Nickel (Ni)	NIOSH	7306
Nickel (Ni)	NIOSH	8005
Nickel (Ni)	NIOSH	8310
Nickel	OSHA	1006
Nickel	OSHA	ID 121
Nickel	OSHA	ID 125G
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/HNO3 digestion)	NIOSH	7303
Zinc (Zn)	NIOSH	8005
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 105
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

#### DNEL/DMEL - Workers

zinc

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects dermal	83 mg/kg bw/day	
	Long-term systemic effects inhalation	5 mg/m <sup>3</sup>	

bismuth

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	13.1 mg/m <sup>3</sup>	

nickel

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	0.05 mg/m <sup>3</sup>	
	Long-term local effects inhalation	0.05 mg/m <sup>3</sup>	
	Acute local effects inhalation	11.9 mg/m <sup>3</sup>	
	Long-term local effects dermal	0.035 mg/cm <sup>2</sup>	

#### DNEL/DMEL - General population

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Date of revision: 2019-04-08

Revision number: 0102

Product number: 49014

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# zinc nickel bismuth alloys for hot dip galvanizing

## zinc

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects oral	0.83 mg/kg bw/day	
	Long-term systemic effects dermal	83 mg/kg bw/day	
	Long-term systemic effects inhalation	2.5 mg/m <sup>3</sup>	

## bismuth

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects oral	13.3 mg/m <sup>3</sup>	

## nickel

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	60 ng/m <sup>3</sup>	
	Long-term local effects inhalation	60 ng/m <sup>3</sup>	
	Acute local effects inhalation	0.8 mg/m <sup>3</sup>	
	Long-term local effects dermal	0.035 mg/cm <sup>2</sup>	
	Long-term systemic effects oral	0.011 mg/kg bw/day	
	Acute systemic effects oral	0.37 µg/kg bw/day	

## PNEC

### zinc

Compartment	Value	Remark
Fresh water	20.6 µg/l	
Marine water	6.1 µg/l	
STP	100 µg/l	
Fresh water sediment	117.8 mg/kg sediment dw	
Marine water sediment	56.5 mg/kg sediment dw	
Soil	35.6 mg/kg soil dw	

### bismuth

Compartment	Value	Remark
STP	17.5 mg/l	

### nickel

Compartment	Value	Remark
Fresh water	7.1 µg/l	
Marine water	8.6 µg/l	
Fresh water (intermittent releases)	< 0.01 µg/l	
Marine water (intermittent releases)	< 0.01 µg/l	
STP	0.33 mg/l	
Fresh water sediment	109 mg/kg sediment dw	
Marine water sediment	109 mg/kg sediment dw	
Soil	29.9 mg/kg soil dw	
Oral	0.12 mg/kg food	

### 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. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

### 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:

Gloves, On heating: insulated gloves.

- materials (good resistance)

Leather.

#### c) Eye protection:

On (re)melting down: face shield.

#### d) Skin protection:

Protective clothing. Protective clothing against molten metal splash (EN 9185). Protective clothing for workers exposed to heat (EN 11612). On (re)melting down: heatproof clothing.

### 8.2.3 Environmental exposure controls:

See headings 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
Odour	Odourless

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Product number: 49014

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## zinc nickel bismuth alloys for hot dip galvanizing

Odour threshold	Not applicable
Colour	Metallic blue-grey
Particle size	No data available
Explosion limits	No data available
Flammability	Non-flammable
Log Kow	Not applicable (inorganic)
Dynamic viscosity	No data available
Kinematic viscosity	No data available
Melting point	No data available
Boiling point	No data available
Evaporation rate	No data available
Relative vapour density	Not applicable
Vapour pressure	No data available
Solubility	Water ; insoluble
Relative density	No data available
Decomposition temperature	No data available
Auto-ignition temperature	No data available
Flash point	Not applicable
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	No data available

### 9.2. Other information

No data available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No data available.

### 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

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 metallic fumes (nickel oxides, zinc oxide).

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### 11.1.1 Test results

#### Acute toxicity

zinc nickel bismuth alloys for hot dip galvanizing

No (test)data on the mixture available

zinc

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	> 2000 mg/kg bw		Rat	Experimental value	
Dermal	LD50	Equivalent to OECD 402	> 2000 mg/kg bw	24 weeks (daily, 5 days / week)	Rat	Read-across	
Inhalation	LC50	Equivalent to OECD 403	> 5.41 mg/l	4 weeks (daily, 5 days / week)	Rat	Experimental value	
Inhalation (ZnO, metallic fume)	LC50	Equivalent to OECD 403	> 5.7 mg/l	4 weeks (daily, 5 days / week)	Rat	Experimental value	

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Date of revision: 2019-04-08

Revision number: 0102

Product number: 49014

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# zinc nickel bismuth alloys for hot dip galvanizing

## bismuth

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						Data waiving	

## nickel

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	> 9000 mg/kg		Rat (male / female)	Experimental value	
Dermal						Data waiving	
Inhalation (aerosol)	NOAEC		≥ 10.2 mg/l	1 h	Rat (male / female)	Experimental value	

## **Conclusion**

Not classified for acute toxicity

## **Corrosion/irritation**

### zinc nickel bismuth alloys for hot dip galvanizing

No (test)data on the mixture available

## zinc

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Moderately irritating	Equivalent to OECD 405			Rabbit	Experimental value	
Eye	Not irritating	Equivalent to OECD 405			Rabbit	Experimental value	
Dermal	Not irritating	Equivalent to OECD 404			Rabbit	Weight of evidence	
Dermal (ZnO, metallic fume)	Not irritating	Equivalent to OECD 404			Guinea pig	Read-across	
Dermal	Not irritating	Human observation			Human	Read-across	
Dermal (ZnO, metallic fume)	Not irritating	Human observation			Human	Literature	
Inhalation (ZnO, metallic fume)	Not irritating					Literature	

## bismuth

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405		1; 24; 48; 72 hours	Rabbit	Read-across	
Not applicable (in vitro test)	Not irritating	RHE-model test	15 minutes		Reconstructed human epidermis	Read-across	

## nickel

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405	168 h	48 hours	Rabbit	Read-across	
Skin	Slightly irritating	OECD 404	4 h		Rabbit	Experimental value	

## **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**

### zinc nickel bismuth alloys for hot dip galvanizing

No (test)data on the mixture available

# zinc nickel bismuth alloys for hot dip galvanizing

## zinc

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal	Negative	Equivalent to OECD 429			Mouse	Read-across	
Dermal (ZnO, metallic fume)	Negative	Guinea pig maximisation test			Guinea pig	Experimental value	
Dermal (ZnO, metallic fume)	Negative	Human observation			Human		
Inhalation	Negative					Inconclusive, insufficient data	

## bismuth

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	OECD 429			Mouse (female)	Read-across	

## nickel

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing	Human observation			Human	Experimental value	

## **Conclusion**

Not classified as sensitizing for skin

Not classified as sensitizing for inhalation

## **Specific target organ toxicity**

### zinc nickel bismuth alloys for hot dip galvanizing

No (test)data on the mixture available

## zinc

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral	NOAEL	Equivalent to OECD 408	13.3 mg/kg bw/day	Blood	No effect	90 weeks (daily, 5 days / week)	Rat (male / female)	Read-across
Oral	NOAEL	Human observation study	50 mg/kg bw/day		No effect		Human (male / female)	Weight of evidence
Inhalation (ZnO, metallic fume)	NOAEL	Equivalent to OECD 409	2.7 mg/m <sup>3</sup>	Lungs	No effect	5 day(s)	Guinea pig	Experimental value
Inhalation (ZnO, metallic fume)		Human observation		General	No effect		Human	Literature study

## bismuth

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (stomach tube)	NOAEL	Subacute toxicity test	1000 mg/kg bw/day		No effect	28 days (1x / day)	Rat (male / female)	Experimental value
Dermal								Data waiving
Inhalation								Data waiving

## nickel

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (stomach tube)	NOAEL	OECD 451	2.2 mg/kg bw/day		No effect	104 weeks (daily)	Rat (male / female)	Read-across
Oral (stomach tube)	LOAEL	OECD 451	6.7 mg/kg bw/day	General	Body weight reduction	104 weeks (daily)	Rat (male / female)	Read-across
Dermal								Data waiving
Inhalation (aerosol)	LOAEC	Equivalent to OECD 451	0.1 mg/m <sup>3</sup> air	Respiratory tract	Respiratory difficulties	2 year(s) (6h / day, 5 days / week)	Rat (male / female)	Experimental value

## **Conclusion**

Not classified for subchronic toxicity

## **Mutagenicity (in vitro)**

### zinc nickel bismuth alloys for hot dip galvanizing

No (test)data on the mixture available

## zinc

Result	Method	Test substrate	Effect	Value determination
Negative	OECD 471	Bacteria (S.typhimurium)		Read-across

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Date of revision: 2019-04-08

Revision number: 0102

Product number: 49014

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# zinc nickel bismuth alloys for hot dip galvanizing

## bismuth

Result	Method	Test substrate	Effect	Value determination
Negative with metabolic activation, negative without metabolic activation	OECD 476	Mouse (lymphoma L5178Y cells)		Read-across
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S.typhimurium)		Read-across

## Mutagenicity (in vivo)

### zinc nickel bismuth alloys for hot dip galvanizing

No (test)data on the mixture available

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

### zinc

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative	Equivalent to OECD 474		Rat		Read-across

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

### zinc nickel bismuth alloys for hot dip galvanizing

No (test)data on the mixture available

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

### zinc

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral		Other		51 weeks (daily, 5 days / week)	Rat	No neoplastic effects	General	Literature study
Oral		Human observation study		204 weeks (daily, 5 days / week)	Human	No neoplastic effects	General	Literature study

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

## bismuth

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation								Data waiving
Dermal								Data waiving
Oral								Data waiving

## nickel

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOAEC	OECD 451	0.4 mg/m <sup>3</sup> air	2 year(s) (6h / day, 5 days / week)	Rat (male / female)	No carcinogenic effect	Respiratory tract	Experimental value
Oral	NOAEL	OECD 451	11 mg/kg bw/day	104 weeks (daily)	Rat (male / female)	No effect		Read-across

## Conclusion

Not classified for carcinogenicity

## Reproductive toxicity

### zinc nickel bismuth alloys for hot dip galvanizing

No (test)data on the mixture available

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

# zinc nickel bismuth alloys for hot dip galvanizing

## zinc

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity		Human observation			Human (female)	No effect		Experimental value
	NOAEL	Equivalent to OECD 416	200 mg/kg bw/day	1 days (gestation, daily) - 18 days (gestation, daily)	Rat (female)	No effect		Weight of evidence
Effects on fertility		Human observation			Human (female)	No adverse systemic effects		Experimental value
	NOAEL	Equivalent to OECD 406	200 mg/kg bw/day		Rat (male / female)	No effect		Weight of evidence

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

## bismuth

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity								Data waiving
Effects on fertility								Data waiving

## nickel

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 416	≥ 1.1 mg/kg bw/day		Rat	No effect		Experimental value
Maternal toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 416	10 mg/kg bw/day		Rat	No effect		Experimental value
Effects on fertility (Oral (stomach tube))	NOAEL	Equivalent to OECD 416	10 mg/kg bw/day		Rat (male / female)	No effect		Experimental value

## Conclusion

Not classified for reprotoxic or developmental toxicity

## **Toxicity other effects**

zinc nickel bismuth alloys for hot dip galvanizing

No (test)data on the mixture available

## **Chronic effects from short and long-term exposure**

zinc nickel bismuth alloys for hot dip galvanizing

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation.

## SECTION 12: Ecological information

### **12.1. Toxicity**

zinc nickel bismuth alloys for hot dip galvanizing

No (test)data on the mixture available

Judgement of the mixture is based on the relevant ingredients

# zinc nickel bismuth alloys for hot dip galvanizing

## zinc

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	ASTM	0.169 mg/l	96 h	Oncorhynchus mykiss	Static system	Fresh water	Read-across
	LC50	Other	0.330 mg/l - 0.780 mg/l	96 h	Pimephales promelas	Static system		Read-across
Acute toxicity crustacea	EC50	US EPA	0.413 mg/l	48 h	Ceriodaphnia dubia	Static system	Fresh water	Experimental value
	EC50	Equivalent to OECD 202	0.530 mg/l	48 h	Daphnia magna	Static system	Fresh water	Read-across
	EC50	Other	0.095 mg/l - 0.530 mg/l	48 h	Ceriodaphnia dubia	Static system	Fresh water	Read-across
	NOEC	Other	201 mg/kg sediment dw	35 day(s)	Gammarus pulex	Semi-static system	Fresh water	Read-across
Toxicity algae and other aquatic plants	IC50	OECD 201	0.136 mg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Experimental value
	EC10	Other	0.0077 mg/l	7 day(s)	Ceramium tenuicore	Static system	Salt water	Experimental value
	EC10	Other	0.6708 mg/l	10 day(s)	Algae	Flow-through system	Salt water	Read-across
Acute toxicity other aquatic organisms	NOEC	ASTM	1135 mg/kg sediment dw	28 day(s)	Tubifex tubifex	Flow-through system	Fresh water	Read-across
	NOEC	Other	0.400 mg/l	10 week(s)	Dreissena polymorpha	Static system	Fresh water	Read-across
Long-term toxicity fish	NOEC	Other	0.440 mg/l	72 day(s)	Oncorhynchus mykiss	Flow-through system	Fresh water	Read-across
	NOEC	Other	0.530 mg/l	36 month(s)	Salvelinus fontinalis	Flow-through system	Fresh water	Read-across
	NOEC	Other	0.025 mg/l	27 day(s)	Clupea harengus	Semi-static system	Salt water	Read-across
Long-term toxicity aquatic crustacea	NOEC	Other	0.037 mg/l	3 week(s)	Daphnia magna	Semi-static system	Fresh water	Read-across
	NOEC	US EPA	0.0056 mg/l	24 day(s)	Invertebrata	Semi-static system	Salt water	Read-across
Toxicity aquatic micro-organisms	EC50	Equivalent to OECD 209	5.2 mg/l	3 h		Static system	Fresh water	Read-across

	Parameter	Method	Value	Duration	Species	Value determination
Toxicity soil macro-organisms	NOEC	Other	1634 mg/kg soil dw	42 day(s)	Lumbricus terrestris	Read-across
	EC10	OECD 220	35.7 mg/kg soil dw	42 day(s)	Enchytraeus albidus	Read-across
Toxicity soil micro-organisms	NOEC	Other	17 mg/kg soil dw	12 week(s)	Soil micro-organisms	Read-across
	EC10	Other	2623 mg/kg soil dw	6 week(s)	Soil micro-organisms	Read-across
Toxicity terrestrial plants	EC10	OECD 208	5855 mg/kg soil dw	21 day(s)	Triticum aestivum	Read-across
	NOEC	OECD 208	32 mg/kg soil dw	25 day(s)	Triticum pratense	Read-across
Toxicity birds	NOEC	Other	> 150 mg/kg bw	28 day(s)	Anas platyrhynchos	Experimental value

## bismuth

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	> 100 mg/l	96 h	Danio rerio	Static system	Fresh water	Read-across; GLP
Acute toxicity crustacea	EC50	OECD 202	> 100 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; GLP
Toxicity algae and other aquatic plants	ErC50	OECD 201	> 100 mg/l	72 h	Pseudokirchneriella subcapitata	Static system	Fresh water	Read-across; GLP
Toxicity aquatic micro-organisms	NOEC	OECD 209	≥ 300 mg/l	3 h	Activated sludge	Static system	Fresh water	Read-across; GLP

## Conclusion

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

## **12.2. Persistence and degradability**

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Revision number: 0102

Product number: 49014

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# zinc nickel bismuth alloys for hot dip galvanizing

Biodegradability: not applicable

## 12.3. Bioaccumulative potential

zinc nickel bismuth alloys for hot dip galvanizing

### Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (inorganic)			

zinc

### BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
		Not applicable			

### BCF other aquatic organisms

Parameter	Method	Value	Duration	Species	Value determination
		Not applicable			

### Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable			

bismuth

### Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

nickel

### BCF other aquatic organisms

Parameter	Method	Value	Duration	Species	Value determination
BCF		8 - 45; Fresh weight	≤ 4 week(s)	Cambarus sp.	Experimental value

### Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available			

### Conclusion

Does not contain bioaccumulative component(s)

## 12.4. Mobility in soil

No (test)data on mobility of the components available

## 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. Other adverse effects

zinc nickel bismuth alloys for hot dip galvanizing

### Fluorinated greenhouse gases (Regulation (EU) No 517/2014)

None of the known components is included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014)

### 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).

11 01 99 (wastes from chemical surface treatment and coating of metals and other materials (for example galvanic processes, zinc coating processes, pickling processes, etching, phosphating, alkaline degreasing, anodising): wastes not otherwise specified). Depending on branch of industry and production process, also other waste codes may be applicable.

#### 13.1.2 Disposal methods

Recycle/reuse. Remove waste in accordance with local and/or national regulations. Do not discharge into surface water (Directive 2000/60/EC, Council Decision 2455/2001/EC).

#### 13.1.3 Packaging/Container

No data available

# zinc nickel bismuth alloys for hot dip galvanizing

## SECTION 14: Transport information

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

14.1. UN number	Transport	Not subject
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	
14.6. Special precautions for user		
Special provisions		
Limited quantities		
14.7. Transport in bulk according to Annex II of Marpol and the IBC Code		
Annex II of MARPOL 73/78	Not applicable	

## SECTION 15: Regulatory information

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

#### European legislation:

VOC content Directive 2010/75/EU

VOC content	Remark
	Not applicable (inorganic)

REACH Annex XVII - Restriction

Contains component(s) 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
· nickel	Nickel and its compounds	<p>1. Shall not be used:</p> <p>(a) in any post assemblies which are inserted into pierced ears and other pierced parts of the human body unless the rate of nickel release from such post assemblies is less than 0,2 µg/cm<sup>2</sup> /week (migration limit);</p> <p>(b) in articles intended to come into direct and prolonged contact with the skin such as:</p> <ul style="list-style-type: none"> <li>— earrings,</li> <li>— necklaces, bracelets and chains, anklets, finger rings,</li> <li>— wrist-watch cases, watch straps and tighteners,</li> <li>— rivet buttons, tighteners, rivets, zippers and metal marks, when these are used in garments, if the rate of nickel release from the parts of these articles coming into direct and prolonged contact with the skin is greater than 0,5 µg/cm<sup>2</sup> / week. <p>(c) in articles referred to in point (b) where these have a non-nickel coating unless such coating is sufficient to ensure that the rate of nickel release from those parts of such articles coming into direct and prolonged contact with the skin will not exceed 0,5 µg/cm<sup>2</sup> / week for a period of at least two years of normal use of the article.</p> <p>2. Articles which are the subject of paragraph 1 shall not be placed on the market unless they conform to the requirements set out in that paragraph.</p> <p>3. The standards adopted by the European Committee for Standardisation (CEN) shall be used as the test methods for demonstrating the conformity of articles to paragraphs 1 and 2.</p> <p>Titles and references of harmonised standards under entry 27 of Annex XVII to REACH (see Commission communication (EU) No 2017/C 011/02)</p> </li></ul>

#### National legislation Belgium

zinc nickel bismuth alloys for hot dip galvanizing

No data available

#### National legislation The Netherlands

zinc nickel bismuth alloys for hot dip galvanizing

Waterbezwaarlijkheid	Z (2); Algemene Beoordelingsmethodiek (ABM)
SZW - Lijst van kankerverwekkende stoffen	nikkeldioxide; Listed in SZW-list of carcinogenic substances

#### National legislation France

zinc nickel bismuth alloys for hot dip galvanizing

Catégorie cancérigène	Nickel (oxyde de), en Ni
nickel	
Catégorie cancérigène	Nickel (métal); C2

#### National legislation Germany

zinc nickel bismuth alloys for hot dip galvanizing

Reason for revision: 3.2

Publication date: 2010-10-22

Date of revision: 2019-04-08

Revision number: 0102

Product number: 49014

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# zinc nickel bismuth alloys for hot dip galvanizing

WGK	nwg; Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV) - 18. April 2017
bismuth	
TA-Luft	5.2.1
nickel	
TA-Luft	5.2.2/II
TRGS900 - Risiko der Fruchtschädigung	Nickel und Nickelverbindungen; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
Sensibilisierende Stoffe	Nickel und Nickelverbindungen; Sh; Hautsensibilisierende Stoffe

## National legislation United Kingdom

### zinc nickel bismuth alloys for hot dip galvanizing

Carcinogen	Nickel, insoluble inorganic compounds (as Ni)(except nickel tetracarbonyl); Carc
Skin absorption	Nickel, insoluble inorganic compounds (as Ni)(except nickel tetracarbonyl); Sk

### nickel

Skin absorption	Nickel metal; Sk
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## Other relevant data

### zinc nickel bismuth alloys for hot dip galvanizing

TLV - Carcinogen	Nickel, Insoluble inorganic compounds (NOS), as Ni; A1
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### nickel

TLV - Carcinogen	Nickel Elemental; A5
IARC - classification	2B; Nickel and nickel compounds

## 15.2. Chemical safety assessment

No chemical safety assessment has been conducted for the mixture.

### zinc

A chemical safety assessment has been performed.

## SECTION 16: Other information

### Full text of any H-statements referred to under heading 3:

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H372 Causes damage to organs (lungs) through prolonged or repeated exposure if inhaled.

(*)	INTERNAL CLASSIFICATION BY BIG
ADI	Acceptable daily intake
AOEL	Acceptable operator exposure level
CLP (EU-GHS)	Classification, labelling and packaging (Globally Harmonised System in Europe)
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
EC50	Effect Concentration 50 %
EC50	EC50 in terms of reduction of growth rate
LC50	Lethal Concentration 50 %
LD50	Lethal Dose 50 %
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
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 information provided and cannot be held liable for any changes by third parties. This safety data sheet is only to be used within the European Union, Switzerland, Iceland, Norway and Liechtenstein. Any use outside of this area is at your own risk. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement or when this is failing the general conditions of BIG. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult the mentioned agreement/conditions for details.

Reason for revision: 3.2

Publication date: 2010-10-22

Date of revision: 2019-04-08

Revision number: 0102

Product number: 49014

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Version: 1

Revision date: July 2020

Printing date: 24<sup>th</sup> July 2020**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY****1.1. Identification of the substance or preparation**

Product name:	Remelted zinc (ZS1, ZS2, ZSA according to prEN13283)
Chemical name:	not applicable
Formula:	not applicable
CAS number:	7440-66-6
Product code: -	
Use of the substance/preparation:	Industrial applications
REACH registration number:	01-2119467174-37-XXXX

**1.2. Relevant uses and uses advised against**

- Corrosion inhibitors and anti-scaling agents
- Plating agents and metal surface treating agents
- Laboratory chemicals
- Reducing agents
- Alloying element / castings / sheets / coils / anodic protection / battery component

A complete list of uses for which a Generic Exposure Scenario (GES) is provided in the annex introduction.

➔ no uses advised against

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

Company Name

Wilhelm Grillo Handelsgesellschaft mbH, Am Grillopark 5, 47169 Duisburg, Deutschland/Germany

Tel.: +49 203 40 66 – 0 / Fax: +49 203 40 66 – 114

<http://www.grillohandel.de> – e-mail: [reach@grillohandel.de](mailto:reach@grillohandel.de)

**1.4. Emergency telephone number****SECTION 2: HAZARDS IDENTIFICATION****2.1. Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008 as amended**

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.

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### 2.3. Other hazards

During treatment and at high temperatures, zinc or zinc oxide fumes may arise. Inhalation of these fumes may cause zinc fever, with symptoms of "influenza". Inhalation of zinc dust may cause gastro-intestinal disorder. Zinc fumes may cause local eye irritation. An excessive exposure (inhalation and/or ingestion) to fumes or dust containing lead may lead to : reduced appetiten anaemia, insomnia, headache, excitedness, myalgia and athralgia, muscle weakening, gastritis and liver affections.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

Description : zinc metal in different forms

#### Constituents

Constituent	Typical concentration	Concentration range	Remarks	Classification according to CLP
Zinc CAS: 7440-66-6 EC no. : 231-175-3	<= 99.995 % (w/w)	> 98 - <= 99.995 % (w/w)	Covers secondary and primary SHG zinc	Not classified

#### Impurities

Impurity	Typical concentration	Concentration range	Remarks
Lead	<= 30.0 ppm		Lead can be as high as 1.5 % For secondary zinc grades

EC no. : 231-100-4

#### Typical composition

Components	Weight %
Pb	< 1.5 %
Cd	< 0.05 %
Fe	< 0.12 %
Al	< 0.1 %
Cu	< 0.1 %
Sn	< 0.7 %

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

#### Inhalation

In case of inhalation of dust or fume, terminate exposure immediately and move to fresh air. Contact a physician.

#### Ingestion

Upon ingestion of dust, contact a physician.

#### Skin

Wash the skin with soap and water. Get medical attention if irritation develops.

#### Eyes

Rinse eyes with large amounts of water, including eyelids. Get medical attention if irritation develops:



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

Irritation of eyes and mucous membranes. Irritation of nose and throat. Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain.

#### SECTION 5: FIREFIGHTING MEASURES

<b>Suitable extinguishing media:</b>	dry sand, CO <sub>2</sub>
<b>Extinguishing media not to be used:</b>	no specific measures
<b>Special exposure hazards:</b>	see heading 11
<b>Special protective equipment for fire-fighters:</b>	fire-fighters should wear proper protective clothing and self-contained breathing apparatus

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

<b>Personal precautions:</b>	Avoid creating dust. Wear approved respirators (type P2 or P3) when exposed to dust or fume
<b>Environmental precautions:</b>	prevent the material from spilling to the surface waters
<b>Methods for cleaning up:</b>	collect spilled product for reuse, preferably by vacuuming. Avoid dusting

#### SECTION 7: HANDLING AND STORAGE

##### Handling

Avoid contact with skin. Avoid generating dust or fumes. Avoid breathing fumes or dust. Wear approved respirators if adequate ventilation is not possible.

##### Storage

Zinc ingots may contain voids that could be a site of water accumulation and/or precipitation. If ingots are remelted with such accumulation, a potentially hazardous situation could exist. Storage to avoid such accumulation should be utilized.

#### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

##### OELs for ZnCl<sub>2</sub> – group: soluble zinc compounds

(e.g.: ZnCl<sub>2</sub> – ZnSO<sub>4</sub> – Zn(H<sub>3</sub>PO<sub>4</sub>)<sub>2</sub> – ZnCl<sub>2</sub>/2NH<sub>4</sub>Cl – ZnCl<sub>2</sub>/3NH<sub>4</sub>Cl)

Country/organisation	8 hour-TWA mg/m <sup>3</sup>	15 min-STEL mg/m <sup>3</sup>	References
USA	1	2	ACGIH (1991)
The Netherlands	1		SZW (1997)
UK	1	2 <sup>a)</sup>	HSE (1998)
Sweden	1 <sup>b</sup>		National Board of Occupational Safety and Health, Sweden (1993)
Denmark	0.5		Arbejdstilsynet, 1992

a) This value is a 10 minutes-STEL

b) This TWA is determined for dust

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OELs for ZnO – group: “slightly soluble / insoluble Zn compounds”

(e.g.: ZnO - Zn(OH)<sub>2</sub> – Zn<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> – ZnCO<sub>3</sub> - Zn metal – ZnS)

Country/organisation	8 hour-TWA mg/m <sup>3</sup>	15 min-STEL mg/m <sup>3</sup>	References
USA	5 (fumes)	10 (fumes)	ACGIH (1991) (guidance values)
USA	5 (fumes) 15 (dust; total) 5 (dust; respirable)		OSHA (1989) (legal limit values)
The Netherlands / Belgium	5 (fumes)		SZW (1997) / ARAB 1999
Germany	5 (fumes) 6 (dust)		DFG (1997)
UK	5 (fumes) 10 (dust)		HSE (1998)
Sweden	5 (fumes)		National Board of Occupational Safety and Health, Sweden (1993)
Denmark	4 (fumes) 10 (dust)		Arbejdstilsynet, 1992

OEL for Pb lead, inorganis compounds , fumes and dust

Belgium	0,15 mg/m <sup>3</sup>		ARAB 1999
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### 8.1. DNELs and PNECs

#### DNELs

- **Oral**
  - o DNEL<sub>oral soluble Zn</sub> = 50 mg Zn/day (i.e., 0.83 mg Zn/kg bw/day);
  - o DNEL<sub>oral insoluble Zn</sub> = 50 mg Zn/day (i.e., 0.83 mg Zn/kg bw/day);
- **Dermal**
  - o DNEL<sub>dermal soluble Zn</sub> = 500 mg Zn/day (i.e., 8.3 mg Zn/kg bw/day);
  - o DNEL<sub>dermal insoluble Zn</sub> = 5000 mg Zn/day (i.e., 83 mg Zn/kg bw/day);
- **Inhalation – Worker**
  - o DNEL<sub>inhal soluble Zn (worker)</sub> = 1 mg Zn/m<sup>3</sup>;
  - o DNEL<sub>inhal insoluble Zn (worker)</sub> = 5 mg Zn/m<sup>3</sup>;
- **Inhalation – Consumer**
  - o DNEL<sub>inhal soluble Zn (consumer)</sub> = 1.3 mg Zn/m<sup>3</sup>;
  - o DNEL<sub>inhal insoluble Zn (consumer)</sub> = 2.5 mg Zn/m<sup>3</sup>;

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#### PNECs derived for the zinc ion

Compartment (Environment)	PNEC value for Zn ion
Freshwater	20.6* µg/L
Saltwater	6.1* µg/L
STP	52 µg/L
Freshwater sediment	117.8* mg/kg sediment d.w. A generic bioavailability factor of 0.5 is applied by default: PNEC <sub>bioav</sub> : 235.6 mg/kg sediment d.w.
Saltwater sediment	56.5* mg/kg sediment d.w. A generic bioavailability factor of 0.5 is applied by default: PNEC <sub>bioav</sub> : 113 mg/kg sediment d.w.
Soil	35.6* mg/kg soil d.w. A generic bioavailability/ageing factor of 3 is applied by default: PNEC <sub>bioav</sub> : 106.8 mg/kg soil d.w.
Oral	No potential for bioaccumulation

\*added value

#### Calculation of local exposure- Bioavailability correction

The local exposure at a given site can be calculated specifically using the excel sheet prepared by Arche (see "DU scaling tool" on the "tools" page on <http://www.reach-zinc.eu/>)

In addition, bioavailability corrections can be integrated in the exposure assessment, if the environmental parameters that are needed for the calculations, are documented.

- For water assessment, bioavailability model correction can be applied when the following water parameters are documented for the receiving water: Dissolved organic carbon (DOC), pH, hardness or Ca-concentration. For the calculations, the "zinc BLM-calculator" excel tool is used to this end (see "tools" on <http://www.reach-zinc.eu/>). When the local values of these parameters are unknown, regional data can be used as an alternative. Use of regional instead of local values should always be handled with caution.
- For sediment, a generic bioavailability factor of 2 is already integrated in the PNEC, based on AVS/SEM levels and according to the risk assessment (ECB 2008). A further refinement of local bioavailability can be made when local AVS/SEM concentrations are documented. The bioavailable fraction of zinc is given by subtracting local AVS from local SEM-Zn (SEM-Zn - AVS).
- For soil, a worst case bioavailability correction (corresponding to sandy soils) is already integrated. Further refinement for zinc bioavailability in other soil types is possible, when the local soil type is documented, together with pH, CEC (see "tools" on <http://www.reach-zinc.eu/>)

## **8.2. Exposure controls**

### **8.2.1 Appropriate engineering controls**

#### Technical conditions and measures at process level (source) to prevent release

- Process enclosures or semi-enclosures where appropriate.
- Local exhaust ventilation on furnaces and other work areas with potential dust generation, dust capturing and removal techniques
- Containment of liquid volumes in sumps to collect/prevent accidental spillage

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Technical conditions and measures to control dispersion from source towards the worker

- Local exhaust ventilation system (high efficiency 90-95%)
- Cyclones/filters (for minimizing dust emissions) : efficiency: 70-90% (cyclones), 50-80% (dust filters), 85-95% (double stage, cassette filters)
- Process enclosure, especially in potentially dusty units
- Dust control: dust and Zn in dust needs to be measured in the workplace air (static or individual) according to national regulations.
- Special care for the general establishment and maintenance of a clean working environment by e.g.:
  - Cleaning of process equipment and workshop
  - Storage of packaged Zn finished product in dedicated zones

Organisational measures to prevent /limit releases, dispersion and exposure

In general integrated management systems are implemented at the workplace e.g. ISO 9000, ISO 14000 are IPPC-compliant.

Such management system would include general industrial hygiene practice e.g.:

- information and training of personnel on prevention of exposure/accidents,
- procedures for control of personal exposure (hygiene measures)
- regular cleaning of equipment and floors, extended workers instruction-manuals
- Procedures for process control and maintenance...
- personal protection measures (see below)

**8.2.2 Personal protection**

- Wearing of gloves and protective clothing is compulsory (efficiency  $\geq 90\%$ ).
- With normal handling, no respiratory personal protection (breathing apparatus) is necessary.  
If risk for exceedance of OEL/DNEL, use e.g.:
  - Dust filter-half mask P1 (efficiency 75%)
  - Dust filter-half mask P2 (efficiency 90%)
  - Dust filter-half mask P3 (efficiency 95%)
  - Dust filter-full mask P1 (efficiency 75%)
  - Dust filter-full mask P2 (efficiency 90 %)
  - Dust filter-full mask P3 (efficiency 97.5%)
- Eyes: safety glasses are optional
- Skin protection :  
Wear protective clothing. Remove contaminated clothing before leaving work areas.
- Personal hygiene :  
Practice good housekeeping and personal hygiene procedures. Do not eat, drink or smoke in the work areas. Wash hands thoroughly before eating, drinking or smoking. Avoid inhalation and ingestion of smoke or fumes, avoid contact with skin and eyes. Don't take contaminated clothing home.
- Information-training of the workers and their staff and line managers focused on careful hygiene behaviour.

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### 8.2.3 Environmental exposure control

#### Technical conditions and measures at process level (source) to prevent release

- Process enclosures and closed circuits where relevant
- Careful use of sulphuric acid and corrosive solutions, if used
- When applicable, sump containment is provided under the tanks and the filters i.o. to collect any accidental spillage and process waters need to be specifically treated before release
- Dusty operations occur under a specific local ventilation hood
- Process air is filtered before release outside the building

#### Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

- On-site waste water treatment techniques are (if applicable) e.g.: chemical precipitation, sedimentation, filtration (efficiency 90-99.98%).
- Containment of liquid volumes in sumps to collect/prevent accidental spillage
- Air emissions are controlled by use of bag-house filters and/or other air emission abatement devices e.g. fabric (or bag) filters (up to 99% efficiency), wet scrubbers (50-99% efficiency). This may create a general negative pressure in the building. Air emissions are continuously monitored.

#### Organizational measures to prevent/limit release from site

- In general emissions are controlled and prevented by implementing an integrated management system e.g. ISO 9000, ISO 1400X series, or alike, and, when applicable, by being IPPC-compliant.
  - Such management system should include general industrial hygiene practice e.g.:
    - information and training of workers,
    - regular cleaning of equipment and floors,
    - procedures for process control and maintenance...
- Treatment and monitoring of releases to outside air, and exhaust gas streams (process & hygiene), according to national regulation.
- SEVESO 2 compliance.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

Overview of physico-chemical properties (from CSR).

Property	Results
a) Appearance at 20°C and 1013 hPa	The physical state of the substance is either 1) solid massive metal, its colour is shiny silver
2) odour	odourless
3) odour threshold	Not applicable
4) pH	Not applicable
5) Melting / freezing point	In air zinc powder starts melting at 409°C; In air, cast zinc particles start melting 416°C;
6) Boiling point	Not applicable to solids with melting point >300°C (Column 2 of Annex VII of REACH regulation)
7) Flash point	Not applicable to inorganic substances (Column 2 of Annex VII of REACH regulation)

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8) Evaporation rate	Not applicable to solids
9) Flammability	All grades of zinc powder were not to be considered as flammable.
10) Upper/lower flammability or explosive limits	Not applicable - To be checked and specified if needed
11) Vapour pressure	Not applicable if the melting point is above 300°C (Column 2 of Annex VII REACH regulation)
12) Vapour density	Not applicable
13) Relative density	The density of the substance is 6.9 g/cm <sup>3</sup> in powder form, 7.1 g/cm <sup>3</sup> in particulate form.
14) Water solubility	The solubility of Zn powder was 0.1 mg/l. Zinc in massive form has very limited solubility
15) Partition coefficient: n-octanol-water	Not applicable to metals; not applicable if the substance is inorganic (column 2 of Annex VII of the REACH regulation)
16) Auto-ignition temperature	The substance is not auto-flammable
17) Decomposition temperature	Not applicable
18) Viscosity	Viscosity of the substance was determined on molten liquid substance. The results show that the viscosity of liquid metal zinc is increasing slowly as a function of decreasing temperature (between 417 -521°C) until the melting point is reached. Here, the melting point seems to be at 417.4 °C. At the melting point, the rapid increase of the viscosity ended the measurement automatically.
19) Explosive properties	In general, based on the TG/DSC measurements and mineral composition, zinc has no flammability, explosive or self-flammability properties. However, hydrogen gas is formed in reaction with water, and thereby zinc has in certain powder forms also flammability and explosive properties. (Outotec 2010) This is reflected by the specific classification of "zinc powder, stabilised" and "zinc powder, pyrophoric".
20) Explosive properties	In general, based on the TG/DSC measurements and mineral composition, zinc has no flammability, explosive or self-flammability properties. However, hydrogen gas is formed in reaction with water, and thereby zinc has in certain powder forms also flammability and explosive properties (Outotec 2010). This is reflected by the specific classification of "zinc powder, stabilised" and "zinc powder, pyrophoric".
Granulometry	The D50 of the tested zinc powder is 71 µm, the D80 is 148 µm

#### SECTION 10: STABILITY AND REACTIVITY

The product is stable in normal circumstances.

#### Conditions to avoid

Contact with water or incompatible materials.

#### Materials to avoid

Acids, oxidizing agents.

#### Hazardous decomposition products

Upon heating, a toxic fume of lead and zinc compounds may occur.

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Printing date: 24<sup>th</sup> July 2020**SECTION 11: TOXICOLOGICAL INFORMATION****Acute toxicity****Inhalation**

Pb: an excessive exposure (inhalation/ingestion) to fumes or dust containing lead may lead to : reduced appetite, anaemia, nausea, insomnia, headache, excitedness, myalgia and arthralgia, muscle weakening, gastritis and liver affections.

Zn:

Product/ingredient name	Result	Species	Dose	Exposure	Refs
Zinc powder	LC50 Inhalation Dusts and mists	Rat	>5.4 mg/L	4 hours	Arts (1996)
Zinc powder	LD50 Oral	Rat	>2000 mg/kg	NA	Prinsen (1996)

With LD<sub>50</sub> values consistently exceeding 2,000 mg/kg bw, slightly soluble compounds such as, zinc (LD<sub>50</sub> >2,000mg/kg bw) show low level of acute oral toxicity, not leading to classification for acute oral toxicity

Zinc metal is shown to be of low acute inhalation toxicity (i.e., LC50 values of > 5.41 mg/L/4hrs), not leading to classification for acute inhalation toxicity

**Skin**

No skin irritation or sensitivity was reported.

**Eyes**

Zinc fumes may cause local eye irritation.

**Irritation/Corrosion**

Skin: not irritant (based on cross-reading from slightly soluble Zn compound, Zinc oxide, (Löser, 1977; Lansdown, 1991))

Eye: not irritant (Van Huygevoort, 1999 c, d)

Respiratory tract: not irritant (based on cross-reading from slightly soluble Zn compound, Zinc oxide, (Klimish et al, 1982)

**Sensitization**

No sensitizing effects known (based on cross-reading from slightly soluble Zn compound, Zinc oxide (Van Huygevoort, 1999 g, h)

**Germ cell mutagenicity**

No biologically relevant genotoxic activity (based on cross-reading between Zn compounds; no classification for mutagenicity required) (Chemical Safety report (CSR) zinc. 2010)

**Carcinogenicity**

No experimental or epidemiological evidence exists to justify classification of zinc compounds for carcinogenic activity (based on cross-reading between Zn compounds; no classification for carcinogenicity required) (Chemical Safety report (CSR) zinc. 2010)

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Printing date: 24<sup>th</sup> July 2020**Reproductive toxicity**

No experimental or epidemiological evidence exists to justify classification of zinc compounds for reproductive or developmental toxicity (based on cross-reading between Zn compounds; no classification for reproductive toxicity required) (Chemical Safety report (CSR) zinc. 2010)

**Specific target organ toxicity (single exposure)**

No experimental or epidemiological sufficient evidence for specific target organ toxicity (single exposure) (based on cross-reading from ZnO; no classification for target organ toxicity (single exposure: STOT-SE) required) (Heydon and Kagan, 1990; Gordon et al., 1992; Mueller and Seger, 1985 [Cited in Chemical Safety report (CSR) zinc. 2010])).

**Specific target organ toxicity (repeated exposure)**

Zn:

No experimental or epidemiological sufficient evidence for specific target organ toxicity (repeated exposure) (based on cross-reading from ZnO; no classification for specific target organ toxicity (repeated exposure: STOT-RE) required) (Lam et al, 1985, 1988; Conner et al., 1988 [Cited in Chemical Safety report (CSR) zinc. 2010])).

Pb:

Long term inhalation of lead containing dust or fume may weaken and/or damage the nerve system and the immunosystem, as well as an increase of systolic blood pressure and risk of kidney damage.

Zn is relatively non-toxic and chronic effects were not reported.

**Aspiration hazard**

Not available

**Irritation/sensitization**

Sensitivity of the skin was not reported. Zinc fumes are irritating for the eyes.

**SECTION 12: ECOLOGICAL INFORMATION****12.1. Toxicity****12.1.1 Acute aquatic toxicity**

The Acute aquatic toxicity database on zinc contains data on 11 standard species obtained under standard testing conditions at different pH and hardness. Since the transformation/dissolution of zinc metal is dependent on pH, the available acute aquatic toxicity dataset has also been considered for 2 different pH ranges separately. The full analysis of these data is given in the CSR.

The reference values for acute aquatic toxicity, based on the lowest observed EC50 values of the corresponding databases at different pH and expressed as Zn<sup>++</sup> ion concentration are:

- for pH <7: 0.413 mg Zn<sup>++</sup>/l (48 hr - Ceriodaphnia dubia test according to US EPA 821-R-02-012 standard test protocol; reference: Hyne et al 2005)
- for pH >7-8.5: 0.136 mg Zn<sup>++</sup>/l (72 hr - Selenastrum capricornutum (=Pseudokirchneriella subcapitata) test according to OECD 201 standard protocol; reference: Van Ginneken, 1994)

As demonstrated by transformation/dissolution (T/D) testing according to OECD guidelines, zinc metal has limited solubility, as



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compared to soluble zinc compounds. Especially the solubilisation of Zn<sup>++</sup> ions of the massive forms of zinc is very limited. Applying the results of the T/D testing (CSR), the specific reference values for acute aquatic toxicity of zinc metal powder and massive forms, respectively, are:

For metallic zinc powders (based on 46% solubilisation capacity on finest powders and at most conservative loading of 1 mg/l at pH 8 (RA zinc, ECB 2008)):

- **for pH <7: 0.9 mg Zn/l** (based on 48 hr Ceriodaphnia dubia test cfr. above)
- **for pH >7-8.5: 0.3 mg Zn/l** (based on 72 hr Selenastrum capricornutum test cfr above)

M-factor: 1

For zinc in massive form (≥1mm diameter particle; based on a conservative estimate (for small particles) of 3.6% and 0.9% solubilisation capacity at pH 6 and pH 8, respectively. Solubilisation of zinc from the (larger size-) massive forms of zinc put on the EU market is much less than indicated by figures below):

- **for pH <7: 11.5 mg Zn/l** (based on 48 hr Ceriodaphnia dubia test cfr above)
- **for pH >7-8.5: 15.1 mg Zn/l** (based on 72 hr Selenastrum capricornutum test cfr above)

The classification of zinc metal in massive form is further based on the following elements:

- zinc is an essential element which is actively regulated throughout the food chain and does not bio-accumulate or bio-magnify (see also section 12.3.),
- zinc is rapidly removed from the water column and the removal rate under environmentally relevant conditions is >70% within 8 days. Moreover, zinc is actually sequestered in the sulphide fraction of sediments which will limit strongly its remobilisation to the water column (see also section 12.2.)

#### **12.1.2 Chronic aquatic toxicity: freshwater**

The chronic aquatic toxicity database on zinc contains high quality chronic NOEC/EC10 values on 23 species (8 taxonomic groups) obtained under a variety of conditions. These data, outlined in the CSR, were compiled in a species sensitivity distribution, from which the PNEC was derived (expressed as Zn<sup>++</sup>ion concentration). This PNEC is an added value, i.e. it is to be added to the zinc background in water, see section 8.1.4 of SDS.

#### **12.1.3 Chronic aquatic toxicity: marine waters**

The chronic aquatic toxicity database on zinc contains high quality chronic NOEC/EC10 values on 39 species (9 taxonomic groups) obtained under a variety of conditions. These data, outlined in the CSR, were compiled in a species sensitivity distribution, from which the PNEC was derived (expressed as Zn<sup>++</sup>ion concentration). This PNEC is an added value, to be added on the zinc background in water, see section 8.1.4 of SDS.

#### **12.1.4 Sediment toxicity**

The chronic toxicity of zinc to sediment organisms in the freshwater was assessed based on a database containing high quality chronic NOEC/EC10 values on 7 benthic species obtained under a variety of conditions. These data, outlined in the CSR, were compiled in a species sensitivity distribution, from which the PNEC was derived (expressed as total Zn contained in the sediment). This PNEC is an added value, to be added on the zinc background in the sediment, see table below. For the marine sediments, a PNEC was derived using the equilibrium partitioning approach, see section 8.1.4 of SDS.

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#### **12.1.5 Soil toxicity**

The chronic toxicity of zinc to soil organisms was assessed based on a database containing high quality chronic NOEC/EC10 values on 18 plant species, 8 invertebrate species and 17 microbial processes, obtained under a variety of conditions. These data, outlined in the CSR, were compiled in a species sensitivity distribution, from which the PNEC was derived (expressed as total Zn contained in the soil). This PNEC is an added value, to be added on the zinc background in the soil, see section 8.1.4 of SDS.

#### **12.1.6 Toxicity to micro-organisms in STP**

The PNEC for STP was derived by applying an assessment factor to the lowest relevant toxicity value: 5,2mg Zn/l (Dutka et al., 1983)

#### **12.2. Persistence and degradability**

Zinc is an element, and as such the criterion "persistence" is not relevant for the metal and its inorganic compounds in a way as it is applied to organic substances.

An analysis on the removal of zinc from the water column has been presented as a surrogate for persistence. According to the EU guidance on classification and labelling, a substance is not classified for chronic aquatic toxicity if it is rapidly removed from the water column. The rapid removal of zinc (>70% removal within 28 days) from the water column under environmentally relevant conditions is documented in the CSR. The insolubility of ZnS formed in sediment prevents the re-mobilisation of zinc into the water column. As a result, zinc does not meet the "persistence" criterion.

#### **12.3. Bioaccumulative potential**

Zinc is a natural, essential element, which is needed for the optimal growth and development of all living organisms, including man. All living organisms have homeostasis mechanisms that actively regulate zinc uptake and absorption/excretion from the body; due to this regulation, zinc and zinc compounds do not bioaccumulate or biomagnify, so zinc has no bioaccumulation potential.

#### **12.4. Mobility in soil**

For zinc (like for other metals) the transport and distribution over the different environmental compartments e.g. the water (dissolved fraction, fraction bound to suspended matter), soil (fraction bound or complexed to the soil particles, fraction in the soil pore water,...) is described and quantified by the metal partition coefficients between these different fractions. In the CSR, a solids-water partitioning coefficient of 158.5 l/kg (log value 2.2) was applied for zinc in soils (CSR zinc 2010).

#### **12.5. Results of PBT and vPvB assessment**

Considering the items 12.2 and 12.3 above, zinc and zinc compounds are not PBT or vPvB.

#### **Other adverse effects**

- Ozone depletion potential: this material does not contain ozone depleting substances
- Photochemical ozone creation potential: not applicable
- Global warming potential: not applicable
- Effects on waste water treatment plants: not known

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#### SECTION 13: DISPOSAL CONSIDERATIONS

Waste disposal methods must comply with national and local disposal or discharge laws.  
This product should be recycled.

#### SECTION 14: TRANSPORT INFORMATION

**Pacing:** ingots bound together in packets, jumbos

**UN-nr:** not applicable

**Code IMDG:** not applicable

**ICAO/IATA:** not applicable

**RID/ADR:** not applicable

#### SECTION 15: REGULATORY INFORMATION

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

Safety, health and environmental regulations/Legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annexe XIV – List of substances subject to authorization

Substances of very high concern

None of the components are listed.

Annex XVII – Restrictions : Restricted to professional users on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

##### Other EU Regulations

Europe inventory: All components are listed or exempted

Black List Chemicals: Not listed

Priority List Chemicals: Listed

Integrated pollution  
prevention and control

list (IPPC) – Air: Listed

Integrated pollution  
prevention and control

list (IPPC) – Water: Listed

Product/ingredient name	List name	Name on list	Classification	Notes
Lead	Belgium Carcinogen chemicals	Blei	Carc.	-

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Chemical weapons

Convention List Schedule I

Chemicals: Not listed

Chemical weapons

Convention List Schedule II

Chemicals: Not listed

Chemical weapons

Convention List Schedule III

Chemicals: Not listed

**15.2. Chemical Safety Assessment**

This product contains substances for which Chemical Safety Assessments are still required.

**SECTION 16: OTHER INFORMATION****16.1. List of uses for which a Generic Exposure Scenario (GES) is provided as annex**

Numerous uses were identified for ZnSO<sub>4</sub>. These are listed in table in annex, with the indication of the Generic Exposure Scenario (GES) that is relevant to these identified uses.

**16.2. References**

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Safety Data Sheet according to Regulation No. EC 1907/2006

Remelted Zinc

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**Revision information:**

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In all sections.

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