Material Safety Data Sheet
(MSDS)

Printing date 02/04/2019 Version - No. 3 Reviewed on 02/04/2019

1 Identification

- **1.1 Product identifier**
- **Trade name: VACOMINUS®, VACNISIL**
- **Article number:**

® registered trademark of VACUUMSCHMELZE GmbH & Co. KG

- **Material Safety Data Sheet - no.:** IB35
- **Application of the substance / the mixture** semi-finished products and parts
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
VACUUMSCHMELZE GmbH & Co.KG
Grüner Weg 37
D-63450 Hanau

datasheet@vacuumschmelze.com

- **Information department:** Environmental Protection Department
- **1.4 Emergency telephone number:**
Tel. no.: (**49) 6181/38-0
Emergency tel. no.: via (**49) 6181/38-0

2 Hazard(s) identification

- **2.2 Classification (substance or mixture)**
Classification according to Regulation (EC) No 1272/2008 (CLP-Regulation):
Not applicable
Our semi-finished and finished products constitute manufactured articles under the terms of the REACH Regulation (EC) No. 1907/2006.
For articles there is no obligation to classify acc. to CLP -Regulation.
- **2.2 Labelling according to Regulation (EC) No 1272/2008**
Labelling according to Regulation (EC) No 1272/2008 (CLP-Regulation):
Not applicable
- **Additional VAC information:**
In the case of dust-producing processing, we recommend observance of the following warnings :
- **Hazard statements**
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause cancer. Route of exposure: Inhalation.
May damage fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure.
- **Precautionary statements**
Do not breathe dust/fume/gas/mist/vapors/spray.
Do not eat, drink or smoke when using this product.
Avoid release to the environment.
Use personal protective equipment as required.
In case of inadequate ventilation wear respiratory protection.
Get medical advice/attention if you feel unwell.
- **2.3 Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

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3 Composition/information on ingredients

- **3.2 Chemical characterization:**
- **Description:** Metal in compact form

- **Dangerous components:**
The classifications given below reflect the classification of each pure substance respectively and are intended for information only
The legal classifications of the pure substances (harmonized classification according to substance list of the Annex VI of the CLP Regulation) got complemented, insofar as additional substance-specific information from accessible data sources (e.g. TRGS 905, toxicological studies) for health hazards and / or physical hazards are available.

CAS: 7440-02-0 EINECS: 231-111-4 Index number: 028-002-00-7	nickel Carc. 2, H351; STOT RE 1, H372; Skin Sens. 1, H317	rest%
CAS: 7440-21-3 EINECS: 231-130-8	silicon	<5%
CAS: 7439-96-5 EINECS: 231-105-1	manganese	<2*%
CAS: 7429-90-5 EINECS: 231-072-3 Index number: 013-001-00-6	aluminium	<1.5*%
CAS: 7440-48-4 EINECS: 231-158-0 Index number: 027-001-00-9	cobalt Resp. Sens. 1, H334; Carc. 1B, H350; Repr. 1B, H360; Acute Tox. 4, H302; Skin Sens. 1, H317	<1%

- **Remark to the composition:** * applies only to VACOMINUS

- **Additional information:**
For the wording of the listed hazard phrases refer to section 16.

Additional information for Cobalt:
See also Chapter 11

4 First-aid measures

- **4.1 Description of first aid measures**

- **After inhalation:**
If metal vapours or solid dusts have been inhaled:
Get the affected person out in the fresh air and call a doctor.

- **After skin contact:**
Foreign bodies which have penetrated the skin must be removed and the wound cleaned thoroughly.

- **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

- **After swallowing:** Consult a doctor if the symptoms persist.
- **4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

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5 Fire-fighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**
Non-combustible.
Extinguishing agents must be adapted to the environment.
- **5.2 Special hazards arising from the substance or mixture**
Formation of toxic smoke / fumes (metal / metal oxides) is possible during heating or in case of fire. Do not inhale fumes.
- **5.3 Advice for firefighters**
- **Protective equipment:** No special measures required.

6 Accidental release measures

Accidental release of dusts and vapours which are damaging to health can be ruled out.

- **6.1 Personal precautions, protective equipment and emergency procedures** No special measures required.
- **6.2 Environmental precautions:** No special measures required.
- **6.3 Methods and material for containment and cleaning up:** No special measures required.
- **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **7.1 Precautions for safe handling**
No safety precautions are necessary in the delivered form.
The appropriate industrial and environmental safety measures must be taken for processing steps which cause dust (see also section 8):
Prevent formation of dust.
Ensure good ventilation/exhaustion at the workplace.
Take note of emission threshold.
- **Information about protection against explosions and fires:** No special measures required.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** None.
- **Storage class:** Not applicable
- **7.3 Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:**
Provide suction with filtering for good airing and ventilation of the work area during processing steps which cause dust. Air return is only permitted in exceptional cases.
If industrial vacuum cleaners are used, these must have dust class H (DIN EN 60335-2-69).
Suitable breathing apparatus must be used during repair and maintenance work to suction systems, especially when changing filters (see personal safety equipment).

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• **8.1 Control parameters**

• **Components with limit values that require monitoring at the workplace:**

7440-02-0 nickel	
PEL (USA)	Long-term value: 1 mg/m³
REL (USA)	Long-term value: 0.015 mg/m³ as Ni; See Pocket Guide App. A
TLV (USA)	Long-term value: 1.5* mg/m³ elemental, *inhalable fraction
EL (Canada)	Long-term value: 0.05 mg/m³ ACGIH A1, IARC 2B
EV (Canada)	Long-term value: 1 mg/m³ Inhalable fraction
7440-21-3 silicon	
PEL (USA)	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV (USA)	TLV withdrawn
EL (Canada)	Long-term value: 10* 3** mg/m³ *total dust;**respirable fraction
EV (Canada)	Long-term value: 10 mg/m³ total dust
7439-96-5 manganese	
PEL (USA)	Ceiling limit value: 5 mg/m³ as Mn
REL (USA)	Short-term value: 3 mg/m³ Long-term value: 1 mg/m³ fume, as Mn
TLV (USA)	Long-term value: 0.02* 0.1** mg/m³ as Mn; *respirable **inhalable fraction
IOELV (EU)	Long-term value: 0.2* 0.05** mg/m³ as Mn; *inhalable, **respirable fraction
EL (Canada)	Long-term value: 0.2; 0.02* mg/m³ as Mn; R, *respirable
EV (Canada)	Long-term value: 0.2 mg/m³ as manganese
7429-90-5 aluminium	
PEL (USA)	Long-term value: 15*; 5** mg/m³ *Total dust; ** Respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m³ as Al*Total dust**Respirable/pyro powd./welding f.
TLV (USA)	Long-term value: 1* mg/m³ as Al; *as respirable fraction
EL (Canada)	Long-term value: 1.0 mg/m³ respirable, as Al
EV (Canada)	Long-term value: 5 mg/m³ aluminium-containing (as aluminium)

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7440-48-4 cobalt	
PEL (USA)	Long-term value: 0.1* mg/m³ as Co; *for metal dust and fume
REL (USA)	Long-term value: 0.05 mg/m³ as Co; metal dust & fume
TLV (USA)	Long-term value: (0.02) NIC-0.02* mg/m³ *inh. fraction; NIC-Skin, DSEN, RSEN, BEI
EL (Canada)	Long-term value: 0.02 mg/m³ as Co; IARC 2B
EV (Canada)	Long-term value: 0.1 mg/m³

• **DNELs**
DNELs for OSH purposes
In Germany, occupational exposure limits (AGW) of the Technical Rules on Hazardous Substances (TRGS) 900 continue to constitute workplace atmospheric limit values that are binding upon employers. Should no AGW and for example no maximum workplace concentration (MAK value) of the German Research Foundation (DFG) be available, the employer must also consider the DNEL during risk assessment.
(Source: Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA))
current values are available: http://www.dguv.de/ifa/gestis/gestis-dnel-liste/index.jsp.

7440-02-0 nickel		
Inhalative	Langzeitexposition - Inhalation - lokale Wirkung	0.05 mg/m³ (Ind)
	Langzeitexposition - Inhalation - system. Wirkung	0.05 mg/m³ (Ind)
7440-48-4 cobalt		
Inhalative	Langzeitexposition - Inhalation - lokale Wirkung	0.04 mg/m³ (Ind) 0.0063 mg/m³ (Consumer)

• **Ingredients with biological limit values:**

7440-48-4 cobalt	
BEI (USA)	15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (background) 1 µg/L Medium: blood Time: end of shift at end of workweek Parameter: Cobalt (background, semi-quantitative)

• **Additional Occupational Exposure Limit Values for possible hazards during processing:**
For thermal processes in the presence of atmospheric oxygen, oxidic nickel compounds must always be assumed.

• **Additional information:**
The lists that were valid during the creation were used as basis.
GESTIS International Limit Values:
http://www.dguv.de/ifa/Gefahrstoffdatenbanken/GESTIS-Internationale-Grenzwerte-für-chemische-Substanzen-limit-values-for-chemical-agents/index.jsp

• **8.2 Exposure controls**
• **Personal protective equipment:**
• **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.

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• **Breathing equipment:**

In the case of dust formation (limit value exceeded), breathing apparatus must be worn.
Time limits for wearing must be observed.

Breathing mask, apparatus with particle filter P2 or P3, for example:
- Full face mask (EN 136)
- Breathing mask (EN 149) FFP2 or FFP3
  10 times the limit value (FFP2)
  30 times the limit value (FFP3)
  Recommendation: P3

• **Protection of hands:**

Avoid repeated and prolonged contact with the skin, use protective gloves.

Preventive skin protection by use of skin-protecting agents is recommended.

• **Material of gloves**
Experience has shown glove materials polychloroprene, nitrile caoutchouc, butyl caoutchouc, fluoride caoutchouc and polyvinylchloride to offer sufficient protection.
• **Penetration time of glove material** -

• **Eye protection:**

In the event of larger quantities of dust:
Wear protective glasses / EN 166, poss. with side protection.

• **Limitation and supervision of exposure into the environment**
The legal issue values and limitations are to be paid attention!

9 Physical and chemical properties

• **9.1 Information on basic physical and chemical properties**	
• **General Information**	
• **Appearance:**	
Form:	Semi-finished products/parts: e.g. strip, wire and parts
Color:	Metallic
• **Odor:**	Odourless
• **pH-value:**	Not applicable.
• **Change in condition**	
Melting point/Melting range (approx):	1,400-1,450 °C
• **Auto igniting:**	Not applicable
• **Danger of explosion:**	Not applicable
• **Vapor pressure:**	Not determined.
• **Density (approx) at 20 °C:**	8.5-8.8 g/cm³
• **Relative density**	Not determined.
• **Solubility in / Miscibility with**	
Water:	Insoluble.
• **Partition coefficient (n-octanol/water):**	Not determined.

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• **9.2 Other information** No further relevant information available.

10 Stability and reactivity

• **10.1 Reactivity** No further relevant information available.
• **10.2 Chemical stability**
• **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
• **10.3 Possibility of hazardous reactions**
Hydrogen is released in contact with acid which can cause explosive gas mixtures.
• **10.4 Conditions to avoid** No further relevant information available.
• **10.5 Incompatible materials:** No further relevant information available.
• **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

• **11.1 Information on toxicological effects**
• **Acute toxicity:** Based on available data, the classification criteria are not met.
• **LD/LC50 values:**

The following applies for the pure substances:

7440-02-0 nickel		
Oral	LD50	>9,000 mg/kg (rat)
7440-48-4 cobalt		
Oral	LD50	550 mg/kg (rat)
Inhalative	LC50/4 h	mg/l (rat) siehe zusätzlicher toxikologischer Hinweis / see additional toxicological information

• **Primary irritant effect:**

• **on the skin:** see sensitization
• **on the eye:**
Irritation of the eyes in the case of massive direct contact will be mainly due to mechanical effects depending on the grain size.
• **Sensitization:**
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.

• **Additional toxicological information:**

Subsequent users should be aware of the fact that Co-metal fine powder are classified as “acute toxic if inhaled, Category 1” (no legal classification); LC50 4hr ≤0,05 mg/l.
In case the subsequent use of product generates fine Co-metal particles (e.g. dust), protection measures such as described in Chapter 7 and 8 of this information sheet must be applied.

• **Carcinogenic categories**

• **IARC (International Agency for Research on Cancer)**		
7440-02-0	nickel	2B
7440-48-4	cobalt	2B

• **NTP (National Toxicology Program)**		
7440-02-0	nickel	R
7440-48-4	cobalt	R

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• **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

• **12.1 Toxicity**
• **Aquatic toxicity:** No further relevant information available.
• **12.2 Persistence and degradability** No further relevant information available.
• **12.3 Bioaccumulative potential** No further relevant information available.
• **12.4 Mobility in soil** No further relevant information available.
• **Additional ecological information:**
• **General notes:** Alloys in solid form do not pose an ecological threat.
• **12.5 Results of PBT and vPvB assessment**
• **PBT:** Not applicable.
• **vPvB:** Not applicable.
• **12.6 Other adverse effects** No further relevant information available.

13 Disposal considerations

• **13.1 Waste treatment methods**
• **Recommendation:** Observe offical regulations.

• **Uncleaned packagings:** Not applicable

14 Transport information

• **Transport/Additional information:**

• **ADR**
• **Remarks:** Non-hazardous goods from the standpoint of the specified regulations

• **Maritime transport IMDG:**
• **Remarks:** Non-hazardous goods from the standpoint of the specified regulations

• **Air transport ICAO-TI and IATA-DGR**
• **Remarks:** Non-hazardous goods from the standpoint of the specified regulations

15 Regulatory information

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

• **National regulations:**

• **Information about limitation of use:**
Employment restrictions concerning young persons must be observed.
Employment restrictions concerning pregnant and lactating women must be observed.
--

• **Technical instructions (air):** The emission values and limitations must be observed!

• **Water hazard class:** Alloys in solid form do not pose an ecological threat.

• **Other regulations, limitations and prohibitive regulations**
e.g.
- 1272/2008/EG (CLP)

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- 1907/2006/EG (REACH)
- German Hazardous Substances

• **15.2 Chemical safety assessment:** Void (for articles)

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

• **Relevant phrases**
Wording of the hazard warnings mentioned (Chapter 3) for pure substances:
H302 Harmful if swallowed.
H317 May cause an allergic skin reaction.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H350 May cause cancer. Route of exposure: Inhalation.
H351 Suspected of causing cancer. Route of exposure: Inhalation.
H360 May damage fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.

• **Department issuing SDS:**
Department OPS-C SE
Tel. 06181/38-2045

• **Contact:**
Environmental Protection Department
Tel. 06181/38-2359

• **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Acute Tox. 4: Acute toxicity – Category 4
Resp. Sens. 1: Respiratory sensitisation – Category 1
Skin Sens. 1: Skin sensitisation – Category 1
Carc. 1B: Carcinogenicity – Category 1B
Carc. 2: Carcinogenicity – Category 2
Repr. 1A: Reproductive toxicity – Category 1A
Repr. 1B: Reproductive toxicity – Category 1B
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

• **Sources**
- KÜHN-BIRETT-Merkblätter gefährlicher Arbeitsstoffe
- Technische Regeln für Gefahrstoffe