

Material Safety Data Sheet

(MSDS)

Printing date 09/04/2020

Version - No. 2

Reviewed on 09/04/2020

1 Identification

- **Product identifier**
- **Trade name: VACOMAX®**
- **Article number:**
VACOMAX 145, - 170, - 200
(all qualities)
- **® registered trademark of VACUUMSCHMELZE GmbH & Co. KG**
- **Material Safety Data Sheet - no.:** SDB60
- **Application of the substance / the mixture**
PERMANENT MAGNETS e.g. in motors, generators, sensors, E-Mobility
- **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
- **Emergency telephone number:**
Tel. no.: (**49) 6181/38-0
Emergency tel. no.: via (**49) 6181/38-0

2 Hazard(s) identification

- **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.
- **GHS label elements**
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 :
Additional information:
See also Chapter 11
- **Hazard statements**
(See also 'Other hazards' (chapter 2.3))
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
Suspected of causing genetic defects.
May cause cancer.
May damage fertility or the unborn child.
- **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.
If skin irritation occurs: Get medical advice/attention.
Store locked up.

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• **Other hazards**

Dry mechanical processing of rare earth permanent magnet alloys is only permitted under special safety precautions because dusts which are capable of self-heating or pyrophorous dusts with a tendency to explode may be produced.

In the case of wet mechanical processing the watery processing medium reacts with the magnet wear and may form hydrogen already at room temperature.

Attention: Formation of Ex-atmospheres possible!

Part of the resulting hydrogen is stored in the material.

The resulting processing sludges must be kept under a protective liquid because drying out sludges are capable of self-heating or may react pyrophorously. In this case the stored hydrogen volume burns off with flames.

Attention:

Magnetized parts generate magnetic fields and are able to attract magnetizable materials. This may result in injury during handling of magnets.

Electronic devices and measuring tools may be changed in calibration or damaged by the high magnetic field strength.

Please keep magnetized magnets away from computers, displays and magnetic storage devices. Especially people with heart pacemakers must keep away from magnetic fields.

• **Results of PBT and vPvB assessment**

• **PBT:** Not applicable.

• **vPvB:** Not applicable.

3 Composition/information on ingredients

• **Chemical characterization:**

• **Description:** Permanent-magnet

• **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.

Note on cobalt classification:

The classification corresponds to Annex VI of the CLP Regulation - ATP14 has already been taken into account (mandatory from 10/2021)

CAS: 7440-48-4 EINECS: 231-158-0 Index number: 027-001-00-9	cobalt ⚠ Resp. Sens. 1, H334; Muta. 2, H341; Carc. 1B, H350; Repr. 1B, H360; ⚠ Skin Sens. 1, H317	~ 65%
CAS: 7440-19-9 EINECS: 231-128-7	samarium	~ 35%

• **Additional information:**

For the wording of the listed hazard phrases refer to section 16.

Additional information for rare earth:

See also Chapter 11

Additional information for Cobalt:

See also Chapter 11

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4 First-aid measures

- **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.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
Non-combustible.
Extinguishing agents must be adapted to the environment.
- **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.
- **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.

- **Personal precautions, protective equipment and emergency procedures** No special measures required.
- **Environmental precautions:** No special measures required.
- **Methods and material for containment and cleaning up:** No special measures required.
- **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

- **Handling:**
- **Precautions for safe handling**
No protective measures are required in the provided form.
Dry mechanical processing of rare earth permanent magnet alloys is only permitted under special safety precautions because dusts which are capable of self-heating or pyrophorous dusts with a tendency to explode may be produced.
In the case of wet mechanical processing the watery processing medium reacts with the magnet wear and may form hydrogen already at room temperature.
Attention: Formation of Ex-atmospheres possible!

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Part of the resulting hydrogen is stored in the material.
 The resulting processing sludges must be kept under a protective liquid because drying out sludges are capable of self-heating or may react pyrophorously. In this case the stored hydrogen volume burns off with flames.
 Also see section 8.

- **Information about protection against explosions and fires:**
 No particular measures are required in the provided form.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
 Keep magnetized magnets away from computers, displays and magnetic storage devices. Especially people with heart pacemakers must keep away from magnetic fields.
- **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
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:**
 Provide a suitable suction with filter and good ventilation of the working area for all processing steps.

 Suitable breathing apparatus must be used (see personal safety equipment) for repair and maintenance work on suction systems, especially when changing the filters.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**
 The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
 At this time, the remaining constituent has no known exposure limits.

7440-48-4 cobalt	
PEL (USA)	Long-term value: 0.1* mg/m ³ as Co; *for metal dust and fume
REL (USA)	Long-term value: 0.05 mg/m ³ as Co; metal dust & fume
TLV (USA)	Long-term value: 0.02* mg/m ³ *inh. fraction; DSEN, RSEN, BEI
EL (Canada)	Long-term value: 0.02 mg/m ³ total: IARC 2B, S(D), S(R)
EV (Canada)	Long-term value: 0.1 mg/m ³

- **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>.

7440-48-4 cobalt	
Inhalative	Langzeitexposition - Inhalation - lokale Wirkung 0.04 mg/m ³ (Ind)

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	0.0063 mg/m ³ (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 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>

• 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.
Store protective clothing separately.
Do not eat, drink, smoke or sniff while working.

• 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

According to the guideline "42 CFR Part 84 Respiratory Protective Devices" the following respiratory masks / partiel filter are recommend: N 95 or N 99

• 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:



Safety goggles / EN 166, with side shields if necessary, must be worn in dusty environments and when working with magnetised magnets (> 50 g).

• Limitation and supervision of exposure into the environment

The legal issue values and limitations are to be paid attention!

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9 Physical and chemical properties

- **Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form:	Parts
Color:	Metallic
Odor:	Odourless

- **pH-value:** Not applicable.

- **Change in condition**

Melting point/Melting range (approx): 1,220-1,320 °C

- **Auto igniting:** Omitted (in the provided form).
Also see section 2 and/or 7.

- **Danger of explosion:** Omitted (in the provided form).
Also see section 2 and/or 7.

- **Vapor pressure:** Not determined.

- **Density (approx) at 20 °C:** 8.3 g/cm³

- **Relative density:** Not determined.

- **Solubility in / Miscibility with**

Water: Insoluble.

- **Partition coefficient (n-octanol/water):** Not determined.

- **Other information:** No further relevant information available.

10 Stability and reactivity

- **Reactivity:** No further relevant information available.

- **Chemical stability**

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

- **Possibility of hazardous reactions**

Hydrogen is released in contact with acid which can cause explosive gas mixtures.

- **Conditions to avoid:** No further relevant information available.

- **Incompatible materials:** No further relevant information available.

- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**

- **Acute toxicity:**

- **LD/LC50 values:**

The following applies for the **pure substances**:

7440-48-4 cobalt

Oral	LD50	550 mg/kg (rat)
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Inhalative	LC50/4 h	mg/l (rat)
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siehe zusätzlicher toxikologischer Hinweis / see additional toxicological information

- **Primary irritant effect:**

- **on the skin:**

Rare earths (see list in Section 2) cause skin irritation depending on grain size (powder) (Skin Irrit. 2)

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- **on the eye:** Rare earths (see list in Section 2) cause eye irritation depending on grain size (powder) (Eye Irrit. 2)
- **Sensitization:** No sensitizing effects known.
- **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.

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

• **Carcinogenic categories**

• **IARC (International Agency for Research on Cancer)**

7440-48-4 cobalt	2B
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• **NTP (National Toxicology Program)**

7440-48-4 cobalt	R
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• **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:** Alloys in solid form do not pose an ecological threat.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:** Observe official regulations.
- **Uncleaned packagings:** Not applicable

14 Transport information

• DOT	Void
• DOT	
• Class	Void
• DOT	Void
• Special precautions for user	Not applicable.

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<ul style="list-style-type: none"> • Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code 	Not applicable.
<ul style="list-style-type: none"> • Transport/Additional information: 	
<ul style="list-style-type: none"> • ADR • Remarks: 	<p>Non-hazardous goods from the standpoint of the specified regulations</p> <p>Attention: Packing boxes with magnetized parts inside generate magnetic fields and are able to attract magnetizable materials.</p>
<ul style="list-style-type: none"> • Maritime transport IMDG: • Remarks: 	<p>Non-hazardous goods from the standpoint of the specified regulations</p> <p>Attention: Packing boxes with magnetized parts inside generate magnetic fields and are able to attract magnetizable materials.</p>
<ul style="list-style-type: none"> • Air transport ICAO-TI and IATA-DGR 	<p>Non-magnetised parts: Not classified as hazardous goods as understood in the ordinance given</p> <p>Magnetised parts in packaging units: Conduct test for classification as per IATA regulations (see Class 9 / Packing Instruction 953)</p> <p>If test is positive, the following apply: ICAO/IATA class: Class 9 UN/ID number: 2807 Correct technical name: Magnetised materials</p>
<ul style="list-style-type: none"> • Remarks: 	-
<ul style="list-style-type: none"> • UN "Model Regulation": 	Void

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

• **Section 355 (extremely hazardous substances):**

None of the ingredient is listed.

• **Section 313 (Specific toxic chemical listings):**

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• **TSCA (Toxic Substances Control Act):**

All components have the value ACTIVE.

• **Hazardous Air Pollutants**

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• **Proposition 65**

• **Chemicals known to cause cancer:**

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• **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

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• **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

• **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

• **TLV (Threshold Limit Value established by ACGIH)**

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A3

• **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

• **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.

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• **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)

- 1907/2006/EG (REACH)

- German Hazardous Substances

• **please note:**

Attention:

Magnetized parts generate magnetic fields and are able to attract magnetizable materials. This may result in injury during handling of magnets.

Electronic devices and measuring tools may be changed in calibration or damaged by the high magnetic field strength.

Please keep magnetized magnets away from computers, displays and magnetic storage devices. Especially people with heart pacemakers must keep away from magnetic fields.

• **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 safety instructions quoted (Section 3) concerning pure substances (powder):

H317 May cause an allergic skin reaction.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H341 Suspected of causing genetic defects.

H350 May cause cancer.

H360 May damage fertility or the unborn child.

• **Department issuing SDS:**

Department OPS-C SE

Tel. 06181/38-2045

• **Contact:**

Environmental Protection Department

Tel. 06181/38-2359

• **Date of preparation / last revision** 09/04/2020 / 1

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• 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)
 ICAO: International Civil Aviation Organisation
 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
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 ACGIH: American Conference of Governmental Industrial Hygienists
 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
 NIOSH: National Institute for Occupational Safety
 OSHA: Occupational Safety & Health
 TLV: Threshold Limit Value
 PEL: Permissible Exposure Limit
 REL: Recommended Exposure Limit
 BEI: Biological Exposure Limit
 Resp. Sens. 1: Respiratory sensitisation – Category 1
 Skin Sens. 1: Skin sensitisation – Category 1
 Muta. 2: Germ cell mutagenicity – Category 2
 Carc. 1B: Carcinogenicity – Category 1B
 Repr. 1B: Reproductive toxicity – Category 1B

• Sources

- KÜHN-BIRETT-Merkblätter gefährlicher Arbeitsstoffe
- Technische Regeln für Gefahrstoffe

• * Data compared to the previous version altered.