Material Safety Data Sheet
(MSDS)

Printing date 07/17/2015 Version - No. 1 Reviewed on 07/17/2015

1: Identification

- **1.1 Product identifier**
- **Trade name: VITROPERM® 712**
- **Article number:**

® registered trademark of VACUUMSCHMELZE GmbH & Co. KG

- **Material Safety Data Sheet - no.:** IB129
- **1.2 Relevant identified uses of the substance or mixture and uses advised against** Not applicable
- **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: Inhalative.
Suspected of damaging 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.
In case of inadequate ventilation wear respiratory protection.
Use personal protective equipment as required.
Avoid release to the environment.
Do not eat, drink or smoke when using this product.
Get medical advice/attention if you feel unwell.

- **2.3 Other hazards**

Danger of accident!
Always wear protective clothing, protective glasses and safety gloves when handling the bands.
- The bands have sharp edges. There is a danger of (serious) injury from cuts.
- The bands can split and cause (serious) cuts when bent excessively

- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.

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• **vPvB:** Not applicable.

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 (eg TRGS 905, toxicological studies) for health hazards and / or physical hazards are available.

CAS: 7439-89-6 EINECS: 231-096-4	iron	rest%
CAS: 7440-21-3 EINECS: 231-130-8	silicon	< 10%
CAS: 7440-03-1 EINECS: 231-113-5	niobium	ca. 5%
CAS: 7440-48-4 EINECS: 231-158-0 Index number: 027-001-00-9	cobalt Resp. Sens. 1, H334; Carc. 1B, H350; Repr. 2, H361; Acute Tox. 4, H302; Skin Sens. 1, H317; Aquatic Chronic 4, H413	< 2%
CAS: 7440-42-8 EINECS: 231-151-2	boron Acute Tox. 4, H302	< 2%
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	< 2%
CAS: 7440-50-8 EINECS: 231-159-6	copper	ca. 1%

• **Additional information:**
For the wording of the listed risk 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:**
Foreign bodies must be removed, consult a doctor if necessary.
Beware of metal splinters - Consult a doctor immediately.

• **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.
- **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**

Danger of accident!
Always wear protective clothing, protective glasses and safety gloves when handling the bands.
- The bands have sharp edges. There is a danger of (serious) injury from cuts.
- The bands can split and cause (serious) cuts when bent excessively.

No more 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:**
Suction and filtering and good ventilation of the working area must be provided for processes where dust is formed.
Approved industrial vacuum cleaners of at least dust class M must be used (DIN EN 60335-2-69).
Recommended: dust class H

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Suitable breathing apparatus must be used during repair and maintenance work on suction systems (see personal safety equipment).

• **8.1 Control parameters**

• **Components with limit values that require monitoring at the workplace:**	
7439-89-6 iron	
EV (Canada)	Long-term value: 1* 5** mg/m³ as iron;*salts, water-soluble;**welding fume
7440-21-3 silicon	
EL (Canada)	Long-term value: 10* 3** mg/m³ *total dust;**respirable fraction
EV (Canada)	Long-term value: 10 mg/m³ total dust
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
7440-48-4 cobalt	
EL (Canada)	Long-term value: 0.02 mg/m³ as Co; IARC 2B
EV (Canada)	Long-term value: 0.1 mg/m³
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 BEI; *hard metals:thoracic ;NIC-A2,RSEN;as W
7440-02-0 nickel	
EL (Canada)	Long-term value: 0.05 mg/m³ ACGIH A1, IARC 2B
EV (Canada)	Long-term value: 1 mg/m³ Inhalable fraction
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
7440-50-8 copper	
EL (Canada)	Long-term value: 1* 0.2** mg/m³ *dusts and mists; **fume, as Cu
EV (Canada)	Long-term value: 0.2* 1** mg/m³ as copper, *fume;**dust and mists
PEL (USA)	Long-term value: 1* 0.1** mg/m³ as Cu *dusts and mists **fume
REL (USA)	Long-term value: 1* 0.1** mg/m³ as Cu *dusts and mists **fume
TLV (USA)	Long-term value: 1* 0.2** mg/m³ *dusts and mists; **fume; as Cu

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• **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

• **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.
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, 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!

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9: Physical and chemical properties

• **9.1 Information on basic physical and chemical properties**	
• **General Information**	
• **Appearance:**	
Form:	Strip
Color:	Metallic
• **Odor:**	Odourless
• **pH-value:**	Not applicable.
• **Change in condition**	
Melting point/Melting range (approx):	1100 °C
• **Auto igniting:**	Not applicable
• **Danger of explosion:**	Not applicable
• **Vapor pressure:**	Not determined.
• **Density (approx) at 20 °C:**	7.3 g/cm³
• **Relative density**	Not determined.
• **Solubility in / Miscibility with**	
Water:	Insoluble.
• **9.2 Other information**	No further relevant information available.

10: Stability and reactivity

- **10.1 Reactivity**
- **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:**
- **LD/LC50 values:**

The following applies for the pure substances (here: nickel and cobalt):

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
7440-42-8 boron		
Oral	LD50	650 mg/kg (rat)
7440-02-0 nickel		
Oral	LD50	> 9000 mg/kg (rat)

- **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.

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• **Sensitization:**
In the case of repeated and prolonged contact with the skin with metallic nickel there is a possibility of sensitization (Skin Sens. 1).
In the case of repeated and prolonged contact with the skin with metallic cobalt there is a possibility of sensitization (Skin Sens. 1).
Cobalt in the form of inhalable dust can lead to hypersensitisation when inhaled (Resp. Sens. 1)

• **Subacute to chronic toxicity:**
Nickel in the form of a respirable dust is under suspicion as a possible cause of cancer in humans (Carc.2)

Additional Information for Cobalt:

Currently in the EU cobalt metal is not classified as carcinogenic according to Annex VI of the CLP regulation (EC No. 1272/2008). German law classified cobalt metal in the form of respirable dusts/aerosols within Category 3 (DSD; RL 67/548/EWG). At the time of EU regulations becoming effective the positive results of the cobalt metal study carried out by the NTP 1* were not available.
A new classification within EU regulations based on the results of that study is deemed necessary by German authorities. Since this will be a time consuming process cobalt metal in the form of respirable dusts/aerosols has been classified within German national regulations (TRGS 905) as category 2 (DSD) and category 1B (CLP) in the meanwhile.

* http://ntp.niehs.nih.gov/ntp/about ntp/trpanel/2013/october/draft tr-581.pdf

• **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
7440-02-0	nickel	1

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

• **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:** Not known to be hazardous to water.
• **12.5 Results of PBT and vPvB assessment**
• **PBT:** Not applicable.
• **vPvB:** Not applicable.
• **12.6 Other adverse effects** No further relevant information available.

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13: Disposal considerations

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

14: Transport information

- **Transport/Additional information:**
- **Land transport DOT / TDG**
- **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**
- **Sara**

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

None of the ingredient is listed.

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

7440-48-4	cobalt
7440-02-0	nickel
7440-50-8	copper

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

All ingredients are listed.

- **Proposition 65**
- **Chemicals known to cause cancer:**

7440-48-4	cobalt
7440-02-0	nickel

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

None of the ingredients is listed.

- **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.

- **Cancerogenity categories**
- **EPA (Environmental Protection Agency)**

7440-42-8	boron	I (oral)
7440-50-8	copper	D

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

7440-48-4	cobalt	A3
7440-02-0	nickel	A5

- **MAK (German Maximum Workplace Concentration)**

7440-48-4	cobalt	2
7440-02-0	nickel	1

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• **NIOSH-Ca (National Institute for Occupational Safety and Health)**	
7440-02-0	nickel

• **National regulations:**

• **Other regulations, limitations and prohibitive regulations**
e.g.
- guidelines 67/548/ECC, 1999/45/EC
- 1272/2008/EG (CLP)
- 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: Inhalative.
H351 Suspected of causing cancer. Route of exposure: Inhalative.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H413 May cause long lasting harmful effects to aquatic life.

• **Department issuing MSDS:**
Department HT-F
Tel. 06181/38-2045

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

• **Date of preparation / last revision** 07/17/2015 / -

• **Abbreviations and acronyms:**
IMDG: International Maritime Code for Dangerous Goods
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)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Acute Tox. 4: Acute toxicity, Hazard Category 4
Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Carc. 1B: Carcinogenicity, Hazard Category 1B
Carc. 2: Carcinogenicity, Hazard Category 2
Repr. 2: Reproductive toxicity, Hazard Category 2
STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1
Aquatic Chronic 4: Hazardous to the aquatic environment - Chronic Hazard, Category 4

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