

Material Safety Data Sheet

(MSDS)

Printing date 08/17/2015

Version - No. 2

Reviewed on 08/17/2015

1: Identification

- **1.1 Product identifier**
- **Trade name: VITROBRAZE®**
- **Article number:**
VITROBRAZE® 2188, 2120, 2111, 2133, 2150, 2135, 2190, 2152, 2154

® registered trademark of VACUUMSCHMELZE GmbH & Co. KG
- **Material Safety Data Sheet - no.:** IB80
- **1.2 Relevant identified uses of the substance or mixture and uses advised against** Not applicable
- **Application of the substance / the mixture** Brazing foil
- **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 an allergic skin reaction.
Suspected of causing cancer.
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.
- **vPvB:** Not applicable.

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3: Composition/information on ingredients

• 3.2 Chemical characterization:

• **Description:** Brazing foil

• 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	60-92%
CAS: 7439-89-6 EINECS: 231-096-4	iron	0-28%
CAS: 7440-47-3 EINECS: 231-157-5	chromium	7-20**%
CAS: 7440-21-3 EINECS: 231-130-8	silicon	5-8***%
CAS: 7440-42-8 EINECS: 231-151-2	boron ⚠ Acute Tox. 4, H302	< 4%
CAS: 7439-98-7 EINECS: 231-107-2	molybdenum	~ 3***%

• Remark to the composition:

* VITROBRAZE 2133 and 2135 don't contain any chromium.

** The molybdenum concentration mentioned only applies for the alloy VITROBRAZE 2188.

*** VITROBRAZE 2190 doesn't contain any silicium.

• **Additional information:** For the wording of the listed risk phrases refer to section 16.

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.

5: Fire-fighting measures

• 5.1 Extinguishing media

• Suitable extinguishing agents:

Non-combustible.
Extinguishing agents must be adapted to the environment.

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- **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:** Wear self-contained respiratory protective device.

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 protective measures are required in the provided form.

The appropriate industrial and environmental safety measures must be taken for processing steps which cause dust or fumes (see also section 8):

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:** Store in dry conditions and in the dark.
- **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 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.

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• **8.1 Control parameters**

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

7440-02-0 nickel	
EL (Canada)	Long-term value: 0.05 mg/m ³ ACGIH A1, IARC 2B
EV (Canada)	Long-term value: 1 mg/m ³ Inhalable fraction
PEL (USA)	Long-term value: 1 mg/m ³
REL (USA)	Long-term value: 0.015 mg/m ³ as Ni; See Pocket Guide App. A
TLV (USA)	Long-term value: 1.5* mg/m ³ elemental, *inhalable fraction
7439-89-6 iron	
EV (Canada)	Long-term value: 1* 5** mg/m ³ as iron; *salts, water-soluble; **welding fume
7440-47-3 chromium	
EL (Canada)	Long-term value: 0.5 mg/m ³ as metal
EV (Canada)	Long-term value: 0.05 mg/m ³
PEL (USA)	Long-term value: 1* 0.5** mg/m ³ *metal; **inorganic compds., as Cr
REL (USA)	Long-term value: 0.5* mg/m ³ *metal+inorg.compds.as Cr; See Pocket Guide App. C
TLV (USA)	Long-term value: 0.5 mg/m ³
IOELV (EU)	Long-term value: 2 mg/m ³ as Cr
7440-21-3 silicon	
EL (Canada)	Long-term value: 10* 3** mg/m ³ *total dust; **respirable fraction
EV (Canada)	Long-term value: 10 mg/m ³ total dust
PEL (USA)	Long-term value: 15* 5** mg/m ³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m ³ *total dust **respirable fraction
TLV (USA)	TLV withdrawn
7439-98-7 molybdenum	
EL (Canada)	Long-term value: 3* 10** mg/m ³ as Mo; *respirable **inhalable
EV (Canada)	Long-term value: 10* 3** 0.5*** mg/m ³ metal, insol.compnd.: *inh; **resp; sol.compnd.: ***resp
PEL (USA)	Long-term value: 15* mg/m ³ *Total dust
TLV (USA)	Long-term value: 10* 3** mg/m ³ as Mo; *inhalable fraction ** respirable fraction

• **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))

Nickel:

Long-term exposure - inhalation - local effects
DNEL: 0,05 mg/m³

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Long-term exposure - inhalation - systemic effects
DNEL: 0,05 mg/m³

Registration entry of the manufacturer/importer on the ECHA website

Molybdenum

Long-term exposure - inhalation - systemic effects
DNEL: 11,17 mg/m³

Registration entry of the manufacturer / importer on the ECHA website

• **Additional Occupational Exposure Limit Values for possible hazards during processing:**

If the occurrence of chrome (VI) compounds cannot be ruled out, the appropriate workplace-related limit values must also be monitored!

If the occurrence of Boric acid/ Boron oxide cannot be ruled out, the appropriate workplace-related limit values must also be monitored!

• **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.

• **Breathing equipment:**



In the case of exceeding the limit values, 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:**



Wearing of gloves with a high cutting protection class is recommended for handling the bands.

The following applies due to the ingredients:

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:**



Tightly sealed goggles (EN 166)

• **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): 1000-1100 °C

• Auto igniting: Not applicable

• Danger of explosion: Not applicable

• Vapor pressure: Not determined.

• Density (approx) at 20 °C: 7.9 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 substance (here: nickel):

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

• Sensitization:

In the case of repeated and prolonged contact with the skin with metallic nickel there is a possibility of sensitization (Skin 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)

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• **Additional toxicological information:**

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)**

7440-02-0	nickel	1
7440-47-3	chromium	3

• **NTP (National Toxicology Program)**

7440-02-0	nickel	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:** 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.

13: Disposal considerations

• **13.1 Waste treatment methods**

• **Recommendation:** Observe official 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.

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• Section 313 (Specific toxic chemical listings):

7440-02-0	nickel
7440-47-3	chromium

• TSCA (Toxic Substances Control Act):

All ingredients are listed.

• Proposition 65

• Chemicals known to cause cancer:

7440-02-0	nickel
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• 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)

7440-47-3	chromium	D
7440-42-8	boron	I (oral)

• TLV (Threshold Limit Value established by ACGIH)

7440-02-0	nickel	A5
7440-47-3	chromium	A4
7439-98-7	molybdenum	A3

• MAK (German Maximum Workplace Concentration)

7440-02-0	nickel	1
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• NIOSH-Ca (National Institute for Occupational Safety and Health)

7440-02-0	nickel
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• 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.
- H351 Suspected of causing cancer.
- H372 Causes damage to organs through prolonged or repeated exposure.

• Department issuing MSDS:

Department HT-F
Tel. 06181/38-2045

• Contact:

Environmental Protection Department
Tel. 06181/38-2359

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• **Date of preparation / last revision** 08/17/2015 / 1

• **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)
DNEL: Derived No-Effect Level (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Acute Tox. 4: Acute toxicity, Hazard Category 4
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Carc. 2: Carcinogenicity, Hazard Category 2
STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1

• **Sources**

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

• * **Data compared to the previous version altered.**

USA