



# SAFETY DATA SHEET

Ferroniobium



## Section 1. Identification

- Product identifier** : Ferroniobium
- Other means of identification** : Ferrocolumbium  
FeNb (111, 112, 113, 114, 115, 116, 117, 118, Vaccum Grade (VG), High Purity (HP))
- Product use** : Industrial use.
- Supplier's details** :  Manufacturer  
Companhia Brasileira de Metalurgia e Mineração (CBMM)  
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38183-903 Brazil  
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cbmm@cbmm.com
- Supplier  
CBMM Asia Pte. Ltd.  
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#26-10 Ocean Financial Centre  
Singapore 049315  
Tel: +65 6303-0290  
Fax: +65 6303-0299  
www.cbmm.sg
- e-mail address of person responsible for this SDS** : sds@cbmm.com
- Emergency telephone number (with hours of operation)** :  44 1865 407333 (NCEC, English)

## Section 2. Hazards identification

- Classification of the substance or mixture** : Not classified.

### GHS label elements, including precautionary statements

- Signal word** : No signal word.
- Hazard statements** : No known significant effects or critical hazards.
- Precautionary statements**
- Prevention** : Not applicable.
- Response** : Not applicable.
- Storage** : Not applicable.
- Disposal** : Not applicable.

- Other hazards which do not result in classification** : None known.

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### Section 3. Composition/information on ingredients

**Substance/mixture** : Mixture  
**Other means of identification** : Ferrocolumbium  
 FeNb (111, 112, 113, 114, 115, 116, 117, 118, Vaccum Grade (VG), High Purity (HP))

Ingredient name	%	CAS number
niobium	60 - 69	7440-03-1
iron	22 - 37	7439-89-6
silicon	0.5 - 6	7440-21-3
aluminium	0.2 - 2	7429-90-5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

### Section 4. First aid measures

#### Description of necessary first aid measures

**Eye contact** : Get medical attention if any damage to the eye is caused by the metal.  
**Inhalation** : Not applicable.  
**Skin contact** : Wash contaminated skin with soap and water. Cuts should be treated promptly and covered.  
**Ingestion** : Not applicable.

#### Most important symptoms/effects, acute and delayed

##### Potential acute health effects

**Eye contact** : Not applicable.  
**Inhalation** : Not applicable.  
**Skin contact** : No known significant effects or critical hazards.  
**Ingestion** : Not applicable.

##### Over-exposure signs/symptoms

**Eye contact** : No specific data.  
**Inhalation** : No specific data.  
**Skin contact** : No specific data.  
**Ingestion** : No specific data.

#### Indication of immediate medical attention and special treatment needed, if necessary

**Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.  
**Specific treatments** : No specific treatment.  
**Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

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## Section 5. Fire-fighting measures

### Extinguishing media

- Suitable extinguishing media** : Use approved Class D extinguisher or smother with dry sand, dry clay or dry ground limestone. Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : Do not use water jet.

**Specific hazards arising from the chemical** : No specific fire or explosion hazard.

**Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
metal oxide/oxides

**Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Special protective equipment for fire-fighters** : No special protection is required.

**Remark (Explosibility)** : Not considered to be a product presenting a risk of explosion.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**Environmental precautions** : No specific hazard.

### Methods and materials for containment and cleaning up

- Small spill** : Restack safely. Take care with items that are sharp or heavy.
- Large spill** : Restack safely. Take care with items that are sharp or heavy. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Take care with items that are sharp or heavy.
- Advice on general occupational hygiene** : Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

**Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. See Section 10 for incompatible materials before handling or use.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

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## Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
silicon	<b>Workplace Safety and Health Act (Singapore, 2/2006).</b> PEL (long term): 10 mg/m <sup>3</sup> 8 hours.
aluminium	<b>Workplace Safety and Health Act (Singapore, 2/2006).</b> PEL (long term): 10 mg/m <sup>3</sup> 8 hours. Form: Dust PEL (long term): 5 mg/m <sup>3</sup> , (Al) 8 hours. Form: Fume PEL (long term): 5 mg/m <sup>3</sup> , (Al) 8 hours. Form: powder

**Appropriate engineering controls** : No special ventilation requirements.

**Environmental exposure controls** : Not applicable.

### Individual protection measures

**Hygiene measures** : Wash thoroughly after handling.

**Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

### Skin protection

**Hand protection** : Use strong, cut-resistant gloves suitable for handling metals. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

**Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection** : Not applicable.

## Section 9. Physical and chemical properties

### Appearance

<b>Physical state</b>	: Solid. [Alloying.]
<b>Color</b>	: Silver. Gray. Metallic.
<b>Odor</b>	: Odorless.
<b>Odor threshold</b>	: Not available.
<b>pH</b>	: Not applicable.
<b>Melting point</b>	: 1530°C (2786°F)
<b>Boiling point</b>	: Not available.
<b>Flash point</b>	: Not applicable.
<b>Evaporation rate</b>	: Not applicable.
<b>Flammability (solid, gas)</b>	: Non-flammable.

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## Section 9. Physical and chemical properties

<b>Lower and upper explosive (flammable) limits</b>	: Not available.
<b>Vapor pressure</b>	: Not applicable.
<b>Vapor density</b>	: Not applicable.
<b>Relative density</b>	: Not available.
<b>Density</b>	: 8.1997 g/cm <sup>3</sup> [20°C (68°F)]
<b>Solubility</b>	: Not available.
<b>Solubility in water</b>	: 0.000001 g/l
<b>Partition coefficient: n-octanol/water</b>	: Not applicable.
<b>Auto-ignition temperature</b>	: Not available.
<b>Decomposition temperature</b>	: Not available.
<b>Viscosity</b>	: Not applicable.
<b>Explosive properties</b>	: Not considered to be a product presenting a risk of explosion.
<b>Oxidizing properties</b>	: None.

## Section 10. Stability and reactivity

<b>Reactivity</b>	: No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	: The product is stable.
<b>Possibility of hazardous reactions</b>	: powders: Flammable. Under normal conditions of storage and use, hazardous reactions will not occur.
<b>Conditions to avoid</b>	: Avoid dust generation.
<b>Incompatible materials</b>	: Reactive or incompatible with the following materials: Strong oxidizing materials, acids, alkalis.
<b>Hazardous decomposition products</b>	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ferroniobium	LC50 Inhalation Dusts and mists	Rat - Male, Female	>2.07 mg/l	14 days
	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Oral	Rat - Female	5000 mg/kg	-

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

#### Irritation/Corrosion

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## Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
Ferroniobium	Eyes - Non-irritating to the eyes.	Rabbit	0	1 hours	72 hours
	Skin - Non-irritating to the skin.	Human	0	60 minutes	-
	Skin - Non-irritating to the skin.	Rabbit	0	4 hours	72 hours

### Conclusion/Summary

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

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

### Sensitization

Product/ingredient name	Route of exposure	Species	Result
Ferroniobium	skin	Mouse	Not sensitizing

### Conclusion/Summary

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

### Mutagenicity

Product/ingredient name	Test	Experiment	Result
Ferroniobium	OECD 471	Experiment: In vitro Subject: Bacteria	Negative
	OECD 476	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic	Negative
	OECD 473	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic	Negative

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

### Carcinogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Specific target organ toxicity (single exposure)

Not available.

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

**Information on the likely routes of exposure** : Not available.

### Potential acute health effects

**Eye contact** : Not applicable.

**Inhalation** : Not applicable.

**Skin contact** : No known significant effects or critical hazards.

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## Section 11. Toxicological information

**Ingestion** : Not applicable.

### Symptoms related to the physical, chemical and toxicological characteristics

**Eye contact** : No specific data.

**Inhalation** : No specific data.

**Skin contact** : No specific data.

**Ingestion** : No specific data.

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
Ferroniobium	Chronic NOAEL Oral	Rat - Male	1000 mg/kg	29 days; 1 days per week

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

**General** : No known significant effects or critical hazards.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.

**Teratogenicity** : No known significant effects or critical hazards.

**Developmental effects** : No known significant effects or critical hazards.

**Fertility effects** : No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

Not available.

## Section 12. Ecological information

### Toxicity

Product/ingredient name	Result	Species	Exposure
Ferroniobium	Acute EC50 >100 mg/l	Micro-organism	3 hours

**Conclusion/Summary** : Based on available data, the classification criteria are not met.

### Persistence/degradability

**Conclusion/Summary** : Not applicable.

### Bioaccumulative potential

Not available.

### Mobility in soil

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## Section 12. Ecological information

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Mobility** : Not available.

**Other adverse effects** : No known significant effects or critical hazards.

## Section 13. Disposal considerations

**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues.

## Section 14. Transport information

	UN	ADR/RID	ADN	IMDG	IATA
<b>UN number</b>	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
<b>UN proper shipping name</b>	-	-	-	-	-
<b>Transport hazard class (es)</b>	-	-	-	-	-
<b>Label</b>					
<b>Packing group</b>	-	-	-	-	-
<b>Environmental hazards</b>	No.	No.	No.	Marine Pollutant: No	No.

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of MARPOL and the IBC Code** : Not available.

## Section 15. Regulatory information

Singapore - hazardous chemicals under government control

None.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants



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## Section 15. Regulatory information

Not listed.

### Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

### Inventory list

<b>Australia</b>	: All components are listed or exempted.
<b>Canada</b>	: All components are listed or exempted.
<b>China</b>	: All components are listed or exempted.
<b>Europe</b>	: All components are listed or exempted.
<b>Japan</b>	: <b>Japan inventory (ENCS):</b> All components are listed or exempted. <b>Japan inventory (ISHL):</b> All components are listed or exempted.
<b>New Zealand</b>	: All components are listed or exempted.
<b>Republic of Korea</b>	: All components are listed or exempted.
<b>Taiwan</b>	: All components are listed or exempted.
<b>Turkey</b>	: All components are listed or exempted.
<b>United States</b>	: All components are listed or exempted.

## Section 16. Other information

### History

<b>Date of printing</b>	: 11/06/2018
<b>Date of issue/Date of revision</b>	: 11/06/2018
<b>Date of previous issue</b>	: 12/12/2017
<b>Version</b>	: 12

<b>Key to abbreviations</b>	: ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail UN = United Nations
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### Procedure used to derive the classification

Classification	Justification
Not classified.	

**References** : Not available.

Indicates information that has changed from previously issued version.

### Notice to reader

*Ferroniobium*

## Section 16. Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.