

Revision: 000

Date: 26th July 2004

## 1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY UNDERTAKING

General Chemical Name                      Niobium carbide powder

Intended/recommended use:                Research

Supplier (Distributor):                      New Metals & Chemicals Ltd.  
Newmet House, Rue de St. Lawrence  
Waltham Abbey, Essex, EN9 1PF  
Telephone +44 (0)1992 711111

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient Name	Concentration	Classification*	CAS number	EINECS No.
Niobium carbide	100%	F: R11 Xi: R36/37/38	12069-06-3	235-117-8

\*see 16. OTHER INFORMATION for full text of R-phrases.

## 3. HAZARD IDENTIFICATION

Highly flammable.  
Irritating to eyes, respiratory system and skin.

## 4. FIRST AID MEASURES

Inhalation                      If signs/symptoms like coughing or burning occur, remove person from exposure to fresh air immediately and administer 100 percent humidified supplement oxygen with assisted ventilation as required. If breathing has ceased DO NOT use mouth-to-mouth respiration. Apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask. Seek immediate medical attention.

Skin Contact                      Flush skin with large amounts of water. Remove contaminated clothing.

If irritation persists, seek medical attention

Eye Contact DO NOT allow patient to rub or keep eyes closed. Irrigate with copious quantities of water for at least 15 minutes. Flush under eyelids by lifting lid. DO NOT use a static eye bath. Seek immediate medical attention.

Ingestion DO NOT induce vomiting. If patient is conscious and alert, wash out mouth with water. Give 2 cupfuls of milk with great care. Give nothing by mouth if patient is unconscious. Seek immediate medical attention.

## **5. FIRE FIGHTING MEASURES**

Precautions against fire and explosion

Material is highly flammable Use dry sand , dry salt, carbon dioxide or extinguishing powder. For large fires cool containers with flooding quantities of water until well after the fire is out. Do not get water inside containers.

Extinguishing media which must not be used for safety reasons

DO NOT USE water or foam, See above.

Exposure hazards arising from substance, combustion products, resulting gases

Niobium oxide particles may be formed in fire which are irritant.

Special protective equipment for fire fighters

Wear full protective clothing, including self-contained breathing apparatus.

## **6. ACCIDENTAL RELEASE MEASURES**

Personal Precautions:

Remove or extinguish all ignition sources. Evacuate all but essential authorised control personnel. Wear self-contained breathing apparatus and gloves to avoid inhalation, skin and eye contact. Provide sufficient ventilation.

Environmental Precautions

Prevent entry into drains, surface and ground water, soil and confined areas.

## Methods for Cleaning up

Only trained, authorised personnel should be involved. Fully encapsulating protective clothing and self contained breathing apparatus should be worn for spills and leaks with no fire. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Stop leak if you can do it without risk. Keep combustibles (wood, paper, oil etc) away from spilled material. Cover spills with dry sand, dry diatomaceous earth or dry salt followed with plastic sheet to minimise spreading or contact with water. Use clean non-sparking tools to collect material and place it into loosely covered plastic containers, suitably marked, and dispose of through a licensed disposal contractor.

Do not flush spill site with water after material pick up is complete.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

To be handled by qualified and trained staff only. Avoid breathing dusts and direct contact with skin and eyes. Wash hands thoroughly after handling. See section 8 for personal protective equipment.

Handle under dry protective gas. Ensure good ventilation/exhaustion at the workplace

Keep ignition sources away - do not smoke

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

### Precautions for safe storage

Keep container cool, dry and tightly closed when not in use.

Store away from oxidisers and other materials listed under incompatibility (see section 10). Do not store in metal containers without a plastic lining.

### Specific use

Research.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure limit values

Ingredient name	OES LTEL (8 hr TWA)	OES STEL (15 min)	MEL(LT)	MEL(ST)
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No exposure limits are given for this material. Comparison

is given for:

Respirable dust                      5 mg/m<sup>3</sup>

The usual precautionary measures should be adhered to in handling chemicals. Keep away from foodstuffs, beverages and food. Instantly remove any soiled and impregnated garments. Wash hands during breaks and at end of the work. Avoid contact with the eyes and skin.

#### Occupational exposure controls

Eye Protection	Wear appropriate protective eyeglasses, chemical safety goggles or full face shield to European Standard EN 166.
Hand protection	Wear appropriate gloves when handling this material. Suitable material is butyl rubber. However, due regard must be taken that heavy gloves will interfere with the wearer's sense to touch and may contribute to a dangerous situation. Thinner gloves of nitrile and PVC may be used as disposable gloves and must be discarded immediately after use. Gloves should comply with European Standard EN 465-3 class 3.
Skin Protection	Use one or more of the following personal protection items as necessary to prevent skin contact: Full chemical protective suit to EN 465 standard, PVC apron, helmet and boots.
Respiratory Protection	Avoid inhalation of dust. Select the following respirator based on airborne concentration of contaminants: Full face dust respirator. Half -mask air-supplied respirator to EN 147. Full-face high efficiency filter respirator to EN 147 or EN 12941/12942. Full-face or hood compressed air breathing apparatus to EN 139 or EN 270/271. Use appropriate local exhaust ventilation, to maintain airborne exposure below control limits.
Ingestion:	Do not eat, drink or smoke when using this product. Do not ingest. Exhibit the strictest hygiene control.

#### Environmental exposure controls

No specific environmental legislation applies, however in accordance with best practise only use in a fume cupboard or with local exhaust ventilation, ventilated to a scrubbing system. In case of fire, spillage, or leakage, prevent material from entering water courses, sewers or soil. Material will decompose or oxidise in moist air forming methane.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### General information

Appearance	Dark grey powder
Odour	Odourless

### Important health, safety and environmental information

pH	N/A
Boiling point/boiling range	Not determined
Melting point/melting range	3500 <sup>0</sup> C
Flash point	N/A
Flammability (solid, gas)	Highly flammable
Autoignition temperature	N/A
Explosive properties	N/A
Oxidising properties	Not oxidising
Vapour Pressure	N/A
Relative density	Not determined
Solubility Water	Insoluble

## 10. STABILITY AND REACTIVITY

Stability	Stable. No decomposition if used and stored according to specification.
Conditions to avoid	Avoid creating dusts.
Materials to avoid	Avoid oxidising agents.
Hazardous Decomposition Products	Carbon dioxide and carbon monoxide.

## 11. TOXICOLOGICAL INFORMATION

The systemic toxicity of niobium compounds, as well as that of metallic niobium, is low, which is probably due to its poor solubility. It does however, represent a skin, eye and respiratory hazard. ... niobium has been attributed an etiological role in hard-metal pneumoconiosis and in the skin affection caused by hard-metal dust.

Effects from eye contact	May cause severe irritation and damage to the eyes. Symptoms include irritation, redness and conjunctivitis.
Effects from skin contact	May cause skin irritation. Prolonged exposure may cause allergic dermatitis.
Effects from inhalation	May cause irritation to mucous membranes and upper respiratory tract. Symptoms include irritation of the eyes, nose and upper respiratory tract.
Effects from ingestion	Irritating to digestive tract. Symptoms include abdominal pain, nausea, vomiting soreness/redness of the mouth and throat and dysphagia
(a) Acute toxicity (oral, inhalation, dermal)	not tested/no data
(b) Corrosive/irritation (eye, skin, respiratory tract) Eye, skin and respiratory irritant	
(c) Sensitisation (skin, respiratory)	not tested/no data
(d) Repeated-dose toxicity	not tested/no data
(e) Mutagenicity	not tested/no data
(f) Carcinogenicity	not tested/no data
(g) Reproductive toxicity	not tested/no data

To the best of our knowledge, the acute and chronic toxicity of this substance is not fully known. No classification data on the carcinogenic properties of this material is available from the EPR, IARC, NTP, OSHA, or ACGIH.

## 12. ECOLOGICAL INFORMATION

(1) Ecotoxicity

(a) Aquatic toxicity

- |       |  |                    |
|-------|--|--------------------|
| (i)   | acute and chronic for fish                 | not tested/no data |
| (ii)  | acute and chronic for daphnia              | not tested/no data |
| (iii) | acute and chronic for algae                | not tested/no data |
| (iv)  | acute and chronic for other aquatic plants | not tested/no data |

(b) Soil toxicity

- |       |                 |                    |
|-------|-----------------|--------------------|
| (i)   | macro organisms | not tested/no data |
| (ii)  | micro organisms | not tested/no data |
| (iii) | birds           | not tested/no data |
| (iv)  | bees            | not tested/no data |
| (v)   | plants          | not tested/no data |
| (vi)  | fauna           | not tested/no data |

(2) Mobility

Niobium compounds will not volatilize from dry or moist soil surfaces due to their ionic character(SRC).

Niobium compounds will not volatilize from water due to their ionic character(SRC).

Niobium compounds would be expected to be non volatile due to their ionic nature, and will exist solely in the particulate phase in the ambient atmosphere. Particulate-phase niobium compounds will be removed from the atmosphere by wet and dry deposition. (SRC)

There is very little geographical variability or environmental mobilization of niobium, possibly due to its very low solubility

(3) Persistence and degradability

as above .

(4) Bioaccumulation potential

No specific data available, but see data for tantalum.

(5) Other adverse effects

No other effects are known.

Do not allow material to be released to the environment without proper control.

### 13. DISPOSAL CONSIDERATIONS

All waste material to be contained in a plastic sealed bin, duly marked, and disposed of as special waste through a licensed waste contractor in accordance with “The Special Waste Regulations 1996”. See sections 6 and 7.

### 14. TRANSPORT INFORMATION

(a)	UN number	3178
(b)	class	4.1
(c)	proper shipping name:	Flammable solid, inorganic, n.o.s. (niobium carbide)
(d)	packing group	III
(e)	marine pollutant (if applicable)	N/A
(f)	other applicable information	N/A

### 15. REGULATORY INFORMATION

EC Supply: Chip-3 regulations 2002

F: Highly Flammable

Xi: Irritant

Risk Phrases:

11: Highly Flammable.

36/37/38: Irritating to eyes, respiratory system and skin.

Safety Phrases:

26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

43: In case of fire use dry sand, salt, carbon dioxide or extinguishing powder. Never use water.

This material is subject to the COSHH regulations 2002. See COSHH Essentials for further information.

## 16. OTHER INFORMATION

R Phrases Full Text:

- 11: Highly Flammable.  
36/37/38: Irritating to eyes, respiratory system and skin.

Abbreviations used:

CAS	Chemical Abstracts Service Registry Numbers
EINECS	European Inventory of Existing Commercial Chemical Substances
MSDS	Material Safety Data Sheet
HSE	Health and Safety Executive
TWA	Time Weighted Average
OES	Occupational Exposure Standards

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This material should only be handled by qualified, trained chemists, fully familiar with its dangerous properties. During use or handling, a minimum of two persons should always be available.

*References:*

*Chemicals (Hazard Information and Packaging for Supply) Regulations 2002*

*Approved classification and labelling guide. Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 Guidance on Regulations L131*

*Approved Supply List. Information Approved for the Classification and labelling of Substances and Preparations Dangerous for Supply. Chemicals (Hazard Information and Packaging for Supply) Regulations 2002. Approved List L129*

*Control of Substances Hazardous to Health Regulations 2002*

*Health and Safety at Work Act 1974*

*COSHH Essentials: Easy Steps to Control Chemicals. Control of Substances Hazardous to Health Regulations*

*Occupational Exposure Limits 2001/2002 EH40*

European Inventory of Existing Commercial Substances (EINECS) available on the European Chemicals Bureau website at [www.ecb.jrc.it/existing-chemicals](http://www.ecb.jrc.it/existing-chemicals)

*First Aid at Work. The Health and Safety (First Aid) Regulations 1981. Approved Code of Practice and Guidance L74*

*Personal Protective Equipment (EC Directive) Regulations 1992*

*The Selection, Use and Maintenance of Respiratory Protective Equipment: A Practical Guide HSG53*

*Cost and Effectiveness of Chemical Protective Gloves for the Workplace.*

*Guidance for Employers and Health and Safety Specialists. HSG206*

*Environmental Protection Act 1990 c43*

*Environmental Act 1995 c25*

*The Special Waste Regulations 1996*

*The Dangerous Substances and Explosive Atmospheres Regulations 2002*