

Revision: 000

Date: 8 February 2005

1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY UNDERTAKING

General Chemical Name Tungsten 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.
Tungsten carbide powder	100%	F: R11 Xi: R36/37/38	12070-12-1	235-123-0

*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

Tungsten oxide particles may be formed in fire which are irritant and toxic.

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. Keep away from ignition sources.

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 acidic materials 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)
Tungsten & compounds				

(as W) insoluble

5mg/m³

10mg/m³

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance Grey powder

Odour Odourless

Important health, safety and environmental information

pH N/A

Boiling point/boiling range 6000⁰C

Melting point/melting range 2867⁰C

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

Density 15.63g/cm³ at 20⁰C

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 and acids.

Hazardous Decomposition Products Carbon dioxide and carbon monoxide.
Toxic metal oxide smoke.

11. TOXICOLOGICAL INFORMATION

A specific review on the clinical effects of individuals exposed to this agent has not yet been prepared. The following pertains to the general evaluation of individuals exposed to potentially toxic chemicals.

- | | |
|---------------------------|--|
| Effects from eye contact | Dusts or fume may cause eye irritation. Symptoms include redness and watering. |
| Effects from skin contact | May cause skin irritation. No allergic reaction have been reported. There is a serious danger by skin resorption. |
| Effects from inhalation | Irritating to respiratory system. Repeated exposure may cause lung damage and disorders such as bronchitis. Symptoms include difficulty in breathing, tightness in chest, cough, and dyspnoea. |
| Effects from ingestion | Ingestion may cause nausea, congestive failure, abdominal pain & vomiting. |
-
- | | |
|--|--------------------|
| (a) Acute toxicity (oral, inhalation, dermal) | not tested/no data |
| (b) Corrosivity/irritation (eye, skin, respiratory tract)
Irritant for skin, eyes and mucous membranes | |
| (c) Sensitisation (skin, respiratory)
No sensitising effects known | |
| (d) Repeated-dose toxicity | not tested/no data |
| (e) Mutagenicity | not tested/no data |
| (f) Carcinogenicity
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH. | |
| (g) Reproductive toxicity (fertility, developmental) | not tested/no data |

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 |

Most tungsten compounds have low pressures at 25 deg C and are expected to exist solely in the particulate phase in the ambient atmosphere. Particulate-phase tungsten compounds may be removed from the air by wet and dry deposition.

Tungsten compounds are expected to exist as ions or insoluble solids in the environment and therefore volatilisation from moist soil and water surfaces is not expected to be an important fate process (SRC). Tungsten compounds are not expected to volatilise from dry soil surfaces based upon their ionic character and low vapour pressures (SRC).

(2) Mobility

see above

(3) Persistence and degradability

see above

(4) Bioaccumulation potential

No data available

(5) Other adverse effects

No other effects are known.

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. (tungsten 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

+

This material should only be handled by qualified, trained persons, 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

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