

1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY UNDERTAKING

General Chemical Name: Tungsten powder

Intended or recommended uses of substance: 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 powder	100%	F: R11 Xi: R36/37/38	7440-33-7	231-143-9

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

3. HAZARD IDENTIFICATION

Highly flammable.
Powders and dusts may irritate skin, eyes and respiratory system.

4. FIRST AID MEASURES

Inhalation If respiratory irritation or distress occurs, 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

Product is a flammable solid, which may ignite spontaneously. Keep away from all sources of ignition.

Explosive reactions may occur when tungsten is present as a concentrated airborne dust in the presence of an open flame, or when in contact with oxidising agents at high temperatures.

Suitable extinguishing media

Use dry sand or dry salt.

Extinguishing media which must not be used for safety reasons

DO NOT USE water, foam, carbon dioxide, dry powder or halocarbons directly on fire. See above.

Exposure hazards arising from substance, combustion products, resulting gases

Fire will produce toxic and respirable tungsten oxide particles.

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.

Keep combustibles (wood, paper, oil etc) away from spilled material. Cover spills with dry sand, dry diatomaceous earth or dry salt followed with a plastic sheet to minimise spreading. Use clean non-sparking tools to collect material and place it into a closed plastic container, suitably marked, and dispose of through a licensed disposal contractor.

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. Keep ignition sources away. Handle under inert gas.

Precautions for safe storage

Keep container 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. Material should be stored under inert gas in a sealed container. Keep away from other flammable substances. . Protect against electrostatic discharge. Powder can combine with air to form an explosive mixture.

Specific use

Research.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values

Odour Odourless

Important health, safety and environmental information

pH	N/A
Boiling point/boiling range	5927°C
Melting point/melting range	3410°C
Flash point	N/A
Flammability (solid, gas)	Highly flammable, may ignite spontaneously.
Autoignition temperature	N/A
Explosive properties	N/A
Oxidising properties	Not oxidising
Vapour Pressure	N/A
Relative density	19.3g/cc at 20 ⁰ C
Solubility	Water - insoluble
Partition coefficient:	N/A
Viscosity	N/A
Vapour density	N/A
Evaporation rate	N/A

10. STABILITY AND REACTIVITY

Stability Stable if used and stored according to specification.

Conditions to avoid Avoid creating dusts.

Materials to avoid Avoid acids, bases, strong oxidising materials, alkali metals, halogens, and interhalogens.
The powdered metal may ignite on contact with air or oxidants (e.g., bromine pentafluoride; bromine; chlorine

trifluoride; potassium perchlorate; potassium dichromate; nitryl fluoride; fluorine; oxygen difluoride; iodine pentafluoride; hydrogen sulphide; sodium peroxide; lead(IV)oxide).

Hazardous Decomposition Products May produce flammable/explosive hydrogen, metal oxide. Fire will produce irritating, corrosive and/or toxic gases. Inhalation of decomposition products may cause severe injury or death.

11. TOXICOLOGICAL INFORMATION

There is very limited data following human exposure to tungsten metal. Ingestion of ethanol reportedly contaminated with tungsten has been associated with the development of nausea and vomiting, seizures, metabolic acidosis, renal failure, rhabdomyolysis, and coma. Tungsten metal dust is an eye, skin, and respiratory irritant.

Effects from eye contact	May cause eye irritation.
Effects from skin contact	May cause skin irritation. Low toxicity potential due to poor skin absorption.
Effects from inhalation	May be harmful if inhaled (depending on particle size – particles smaller than 10 microns are considered to be respirable).
Effects from ingestion	Low toxicity potential due to poor absorption by the oral route. However, see above for acute exposure.
(a) Acute toxicity (oral, inhalation, dermal)	not tested/no data
(b) Corrosive/irritation (eye, skin, respiratory tract) Irritant for eye, skin and respiratory tract.	
(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

PROBABLE ORAL LETHAL DOSE (HUMAN) 0.5-5 g/kg.

No classification data on carcinogenic properties of this material is available from the EPA, 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 algaefish | 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

If released to air, most tungsten compounds have low vapour pressures and will 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. If released to soil, tungsten compounds will have moderate to low mobility based upon a sorption coefficients ranging from 10 to 50,000 at pHs 5 to 6.5. Tungsten compounds are will exist as ions or insoluble solids in the environment and therefore volatilisation from moist soil surfaces will not be an important fate process.

(3) Persistence and degradability

Tungsten is not degradable and may persist in soil or water but it is not considered to be eco-toxic.

(4) Bioaccumulation potential

No data.

(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	3089
(b)	class	4.1
(c)	proper shipping name:	Metal powder, flammable, n.o.s. (tungsten powder)
(d)	packing group	II
(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 or salt. Never use water.
36/37/39: Wear suitable protective clothing, gloves and eye/face protection.

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

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

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.

European Inventory of Existing Commercial Substances (EINECS) available on the European Chemicals Bureau website ["http://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

Respiratory Protective Equipment – A practical guide (ISBN 0-7176-1537-5)