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SAFETY DATA SHEET

Section 1: Identification

Product name:	Tungsten (metal powder)
Product use:	For laboratory research purposes.
Supplier:	Trace Sciences International 40 Vogell Rd Suite 42 Richmond Hill, ON L4B 3N6 CANADA
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Section 2: Hazard(s) Identification

2.1 GHS Classification

Self-heating substances and mixtures (Category 2), H252

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Warning

Hazard statement(s):

H252	Self-heating in large quantities; may catch fire.

Precautionary statement(s):

P235	Keep cool.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P403 + P235	Store in a well-ventilated place. Keep cool.
P407	Maintain air gap between stacks or pallets.
P420	Store separately.

Section 3: Composition/ Information on Ingredients

Formula : W
Molecular Weight : 183.84 g/mol

Material	CAS-No.	EC-No.	Index-No.	Concentration
Tungsten	7440-33-7	231-143-9	-	<=100%

Section 4: First-Aid Measures

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move person out of dangerous area if safe to do so.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water for at least 15 minutes. Use chemical shower if available. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Remove contacts if possible.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Section 5: Fire-Fighting Measures

5.1 Conditions of flammability
Flammable in the presence of a source of ignition, through friction or retained heat. Keep away from heat/sparks/open flame/hot surface. No smoking.

5.2 Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.3 Hazardous combustion products
Hazardous decomposition products formed under fire conditions: Tungsten oxides

5.4 Special protective equipment for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.5 Further information
Use water spray to cool unopened containers.

Section 6: Accidental Release Measures

6.1 Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.

Section 7: Handling and Storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge.

7.2 Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

Section 8: Exposure Controls/Personal Protection

8.1 Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Tungsten	7440-33-7	TWA	5 mg/m^3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		STEL	10 ppm	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		TWA	5 mg/m^3	Canada. British Columbia OEL
		STEL	10 mg/m^3	Canada. British Columbia OEL
		TWAEV	5 mg/m^3	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
		STEV	10mg/m^3	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
		TWA	3 mg/m^3	USA. ACGIH Threshold Limit Values (TLV)

Remarks
Occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required.

8.2 Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Impervious clothing, flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Specific engineering controls
Use mechanical exhaust or laboratory fume hood to avoid exposure.

Section 9: Physical and Chemical Properties

Appearance

Form	Powder
Colour	Gray

Safety Data

pH	No data available
Melting point/freezing point	3,410 °C (6,170 °F)
Boiling point	5,660 °C 10,220 °F
Flash point	Not applicable
Flammability (solid, gas)	The substance or mixture is a flammable solid with the category 1.
Ignition temperature	No data available
Auto-ignition temperature	Self-heating in large quantities; may catch fire.
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapour pressure	No data available
Density	19.3 g/cm^3 at 25 °C (77 °F)
Water solubility	No data available
Partition coefficient: n-octanol/water	Not applicable for inorganic substances
Relative vapour density	No data available
Odour	No data available
Odour Threshold	No data available
Evaporation rate	No data available

Section 10: Stability and Reactivity

10.1 Chemical stability
Stable under recommended storage conditions

10.2 Possibility of hazardous reactions
Violent reactions possible with:
Metallic oxides, halogens, halogen-halogen compounds, fluorine, oxidizing agents, peroxi compounds, nitryl compounds, hydrogen sulphide, potassium dichromate

10.3 Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.4 Materials to avoid
Strong oxidizing agents, halogens

10.5 Hazardous decomposition products
See section 5

Section 11: Toxicological Information

Acute toxicity

Oral
LD50 Oral - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 401)

Inhalation
LC50 Inhalation - Rat - male and female - 4 h - > 5.4 mg/l - aerosol
(OECD Test Guideline 403)

Dermal
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)

Other information on acute toxicity
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: No eye irritation
(OECD Test Guideline 405)

Respiratory or skin sensitization
Maximization Test - Guinea pig
Result: negative
(OECD Test Guideline 406)

Germ cell mutagenicity
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test Type: Ames test
Test system: Escherichia coli/Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: Micronucleus test
Species: Mouse
Application Route: Oral

Method: OECD Test Guideline 474
Result: negative
Remarks: The value is given in analogy to the following substances: Sodium tungstate

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
No data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
No data available

Aspiration hazard
No data available

Signs and Symptoms of Exposure
No data available

Additional Information
Repeated dose toxicity - Rat - male and female - Oral - 90 Days - NOAEL (No observed adverse effect level) - 75 mg/kg - LOAEL (Lowest observed adverse effect level) – 125 mg/kg
The value is given in analogy to the following substances: Disodium wolframate dihydrate

Repeated dose toxicity - Rat - male and female - inhalation (dust/mist/fume) - 28 Days - NOAEL (No observed adverse effect level) - > 0.65 mg/kg
Remarks: (in analogy to similar products)

RTECS: YO7175000

Section 12: Ecological Information

12.1 Toxicity

Toxicity to fish	Static test LC50 - Danio rerio (zebra fish) - > 181 mg/l - 96 h (OECD Test Guideline 203) The value is given in analogy to the following substances: Disodium wolframate dihydrate
Toxicity to daphnia and other aquatic invertebrates	Static test EC50 - Daphnia magna (Water flea) - > 163 mg/l - 48 h (OECD Test Guideline 202) The value is given in analogy to the following substances: Disodium wolframate dihydrate
Toxicity to algae	Static test ErC50 - Pseudokirchneriella subcapitata - 52.9 mg/l - 72 h (OECD Test Guideline 201) The value is given in analogy to the following substances: Sodium tungstate
Toxicity to bacteria	Static test EC50 - activated sludge - > 1,000 mg/l - 30 min (OECD Test Guideline 209)
Toxicity to fish (Chronic toxicity)	LC50 - Oncorhynchus mykiss (rainbow trout) - 15.61 mg/l - 28 d Remarks: (ECOTOX Database)

	Flow-through test NOEC - Danio rerio (zebra fish) - 10 mg/l – 38 d (OECD Test Guideline 210) The value is given in analogy to the following substances: Sodium tungstate
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	Static test EC50 - Daphnia magna (Water flea) - > 100 mg/l - 21 d (OECD Test Guideline 211)

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
Poecilia reticulata (guppy) - 0.007 mg/l (Tungsten powder)
Bioconcentration factor (BCF): 0.29
(US-EPA)

12.4 Mobility in soil
No data available

12.5 PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
No data available

Section 13: Disposal Considerations

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

Section 14: Transport Information

IATA
UN number: UN3089 Class: 4.1 Packing group: II
Proper shipping name: Metal powders, flammable, n.o.s. (Tungsten)

Section 15: Regulatory Information

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR

Section 16: Other Information

Further information
Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for his or her particular purpose(s).

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