

SAFETY DATA SHEET

Section 1: Identification

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

2.1 GHS Classification

Pyrophoric solids (Category 1), H250

Substances and mixtures, which in contact with water, emit flammable gases (Category 1), H260

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s):

H250

Catches fire spontaneously if exposed to air.

H260

In contact with water releases flammable gases which may ignite spontaneously.

Precautionary statement(s):

P210

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P222

Do not allow contact with air.

P223

Do not allow contact with water.

P231 + P232

Handle and store contents under inert gas. Protect from moisture.

P233

Keep container tightly closed.

P280

Wear protective gloves/ protective clothing/ eye protection/ face protection.

P302 + P335 + P334

IF ON SKIN: Brush off loose particles from skin. Immerse in cool water.

P302 + P335 + P334

IF ON SKIN: Brush off loose particles from skin. Immerse in cool water or wrap in wet bandages.

P370 + P378

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P402 + P404

Store in a dry place. Store in a closed container.

P501

Dispose of contents/ container to an approved waste disposal plant.

Section 3: Composition/ Information on Ingredients

Formula : Zr
Molecular Weight : 91.22 g/mol

Material	CAS-No.	EC-No.	Index-No.	Concentration
Zirconium Pyrophoric	7440-67-7	231-176-9	040-001-00-3	<=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

No data available

5.2 Suitable extinguishing media

Class D extinguisher, Dry sand, Dry powder, Carbon dioxide

5.3 Hazardous combustion products

Hazardous decomposition products formed under fire conditions: Carbon oxides, zirconium oxides

5.4 Special protective equipment for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.5 Further information

No data available

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. Remove all sources of ignition. 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

Ensure adequate ventilation. Do not inhale substance/mixture. Keep workplace dry. Do not allow product to come into contact with water. Keep away from open flames, hot surfaces and sources of ignition.

7.2 Conditions for safe storage

Keep away from heat and sources of ignition.
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
Zirconium Pyrophoric	7440-67-7	TWAEV	5 mg/m ³	Canada. Ontario OELs
		STEV	10 mg/m ³	Canada. Ontario OELs
		TWA	5 mg/m ³	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		STEL	10 mg/m ³	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
		TWA	5 mg/m ³	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
		STEV	10 mg/m ³	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
		TWA	5 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
STEL	10 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)		

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	1,852 °C (3,366 °F)
Boiling point	3,577 °C (6,471 °F)
Flash point	Not applicable
Flammability (solid, gas)	No data available
Ignition temperature	No data available
Auto-ignition temperature	The substance or mixture is pyrophoric with the category 1.
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapour pressure	No data available
Density	6.490 g/cm ³
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Relative vapour density	No data available
Odour	Odourless
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

No data available

10.3 Conditions to avoid

Exposure to moisture. Exposure to air.

10.4 Materials to avoid

Water, strong acids, strong oxidizing agents, hydrogen fluoride, phosphorus, oxygen.

10.5 Hazardous decomposition products

See section 5

Section 11: Toxicological Information

Acute toxicity

Oral

LD50 Oral - Rat - female - > 5,000 mg/kg
(OECD Test Guideline 423)

Inhalation

LC50 Inhalation - Rat - male and female - 4 h - > 4.3 mg/l
(OECD Test Guideline 436)

The value is given in analogy to the following substances: zirconium(IV) oxide

Dermal

No data available

Other information on acute toxicity

No data available

Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation - 4 h
(OECD Test Guideline 404)

The value is given in analogy to the following substances: zirconium(IV) oxide

Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation
(OECD Test Guideline 405)

The value is given in analogy to the following substances: zirconium(IV) oxide

Respiratory or skin sensitization

Patch test: - Guinea pig

Result: negative
(OECD Test Guideline 406)

The value is given in analogy to the following substances: zirconium(IV) oxide

Germ cell mutagenicity

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

The value is given in analogy to the following substances: zirconium(IV) oxide

Test Type: Chromosome aberration test in vitro

Test system: Human lymphocytes

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

The value is given in analogy to the following substances: zirconium(IV) oxide

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

RTECS: ZH7070000

Section 12: Ecological Information

12.1 Toxicity

Toxicity to algae

NOEC - Chlorella vulgaris (Fresh water algae) - > 200 mg/l – 14 Days

Remarks: (ECHA)

The value is given in analogy to the following substances: zirconium dichloride oxide

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

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: 2008 Class: 4.2 Packing group: II
Proper shipping name: Zirconium powder, dry

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

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