

**SAFETY DATA SHEET****Section 1: Identification****1.1 Product identifier:**

Zinc Metal – Special High Grade

Other means of identification:

- Zinc Metal Pure Grades
- SHG

**1.2 Recommended use and restrictions on use:**

Identified uses:

- Steel coating for corrosion protection (galvanizing, electroplating, electro-galvanizing),
- As an alloying element in bronze, brass, aluminum and other metal alloys,
- Zinc die casting alloys,
- Zinc dry cell and zinc/air batteries
- Other chemical applications.

Restrictions on use: No other uses are recommended.

**1.3 Supplier identifier:**

Hudbay Minerals Inc.  
25 York Street, Suite 800  
Toronto ON  
Canada  
M5J 2V5  
416-362-8181

**1.4 Emergency telephone number:**

CANUTEC (24-hour): 1-888-226-8832 (1-888-CAN-UTEC) or 613-996-6666 or \*666 on a cellular phone.

**Section 2: Hazards Identification****2.1 Classification:**

Not classified under any hazard class.

Classifications according to Canada's Hazardous Products Regulations (WHMIS 2015) and US Hazard Communication Standard (HCS 2012).

**2.2 Label elements:**

Not applicable - not classified

**2.3 Other hazards:**

Heating product to molten metal or welding may release metal fumes, which can cause metal fume fever.

Machining operations such as grinding or cutting may release metal particles such as filings or dust. Particulates may be abrasive to skin and eyes.

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**Section 3: Composition/Information on Ingredients**

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Wt.%</u>	<u>GHS Classification</u>
Zinc metal	7440-66-6	99.95 – 99.99	Not classified
May contain the following metals at trace levels:			
Iron	7439-89-6	<0.003	Not classified
Lead	7439-92-1	<0.003	Carc. 1; H350 Repr. 1A; H360 STOT RE 1; H372 Aquatic chronic 1; H410
Copper	7440-50-8	<0.003	Not classified
Aluminum	7429-90-5	<0.002	Not classified
Cadmium	7440-43-9	<0.002	Acute tox. 4; H302 Carc. 1B; H350 STOT RE 1; H372 Repr. 2; H361 Aquatic acute 1; H400 Aquatic chronic 1; H410

**Section 4: First-Aid Measures**

**4.1 Description of first-aid measures:**

**Inhalation:** If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if you feel unwell or are concerned.

**Eye Contact:** Rinse eyes cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not rub eyes. If irritation persists: Get medical attention.

**Skin Contact:** Wash with plenty of water and mild soap. If skin irritation occurs: Get medical advice.

**Ingestion:** Rinse mouth. Get medical attention if you feel unwell or are concerned.

**4.2 Most important symptoms and effects, both acute and delayed:**

**Inhalation:** High temperature processing of Zinc metal may release metal fumes. Inhalation of zinc oxide fumes can cause metal fume fever. Symptoms of metal fume fever may be delayed several hours after exposure. Symptoms include thirst, a metallic taste, fever, and flu-like symptoms such as muscle aches, cough and chest discomfort.

**Eye Contact:** Particulate metal may be abrasive to eyes.

**Skin Contact:** Particulate may be abrasive and irritating to skin.

**Ingestion:** Swallowing particulate metal may cause gastro-intestinal discomfort.

**4.3 Immediate medical attention and special treatment needed:**

None known.

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### Section 5: Fire-fighting Measures

**5.1 Extinguishing media:**

Use extinguishing media appropriate to the surrounding fire conditions.

**Unsuitable extinguishing media:** Do not apply water to molten metal.

**5.2 Specific hazards arising from the product:**

Product is not flammable.

Zinc metal will only ignite if heated above the boiling point (907°C). Zinc metal burns with a blue-green flame.

If involved in a fire, combustion produces Zinc oxide fumes.

**5.3 Special protective equipment and precautions for firefighters:**

As for any fire, evacuate the area and fight the fire from a safe distance.

### Section 6: Accidental Release Measures

**6.1 Personal precautions, protective equipment and emergency procedures:**

Wear personal protective equipment recommended in Section 8 of this Safety Data Sheet.

**6.2 Environmental precautions:**

Avoid releases to the environment and prevent material from entering domestic sewers, natural waterways, or storm water management systems.

**6.3 Methods and material for containment and cleaning up:**

Pick up spilled material and place into suitable containment for reuse.

**6.4 Additional Information:**

See Section 8 for information on selection of personal protective equipment.

See Section 13 for information on disposal.

### Section 7: Handling and Storage

**7.1 Precautions for safe handling:**

Wash hands and exposed skin thoroughly after handling. Wash with plenty of water and mild soap.

Wear protective gloves and boots.

**7.2 Conditions for safe storage:**

Store product in an appropriate labeled, container and provide adequate protection from weather.

Store away from incompatible materials such as inter-halogens, nitrogen compounds, nitric acid and ammonium sulfide. See Section 10.

### Section 8: Exposure Controls / Personal Protection

**8.1 Control parameters:**

**Occupational Exposure Limits:** Consult local authorities for acceptable exposure limits.

Ingredient	ACGIH® TLV®	Other Exposure Limits
Zinc oxide	2 mg/m <sup>3</sup> TWA (respirable) 10 mg/m <sup>3</sup> STEL (respirable)	NIOSH TWA: 5 mg/m <sup>3</sup> (dust), Ceiling 15 mg/m <sup>3</sup> (dust) NIOSH TWA: 5 mg/m <sup>3</sup> (fume), ST 10 mg/m <sup>3</sup> (fume) RSST VEMP (Quebec-Canada): 10 mg/m <sup>3</sup> (total dust), 5 mg/m <sup>3</sup> (fume)

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### 8.2 Exposure controls:

**Engineering Controls:** If airborne fumes are generated, monitor concentrations in air and provide local exhaust ventilation when any exposure guideline is exceeded.

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection. Have equipment available for use in emergencies such as spills.

### 8.3 Individual Protection Measures:

**Eye/Face Protection:** Wear approved safety glasses. For hot work, wear a face-shield or full-face respirator.

**Skin Protection:** Wear protective gloves, boots and clothing suitable for handling metal bricks. For hot work, wear thermal protective gloves and clothing suitable for handling hot metal.

Evaluate resistance under conditions of use and maintain protective clothing carefully. Contact safety supplier for specifications. Store work clothing separated from street clothing. Contaminated work clothing should not be allowed out of the workplace.

**Respiratory Protection:** When fume or dust concentrations in air exceed the occupational exposure guidelines, wear respiratory protection appropriate for protection from metal oxide fumes and/or dusts. Consult with respirator manufacturer to determine respirator selection, use and limitations.

A respiratory protection program that meets the regulatory requirement, such as OSHA's 29 CFR 1910.134, ANSI Z88.2 or Canadian Standards Association (CSA) Standard Z94.4, must be followed whenever workplace conditions warrant a respirator's use.

**Other Protection:** Provide employee training in how to wear and use respirators and in good personal hygiene practices. Perform regular workplace exposure monitoring and, where required, biological monitoring.

<b>Section 9:</b>	<b>Physical and Chemical Properties</b>
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<b>9.1 Information on basic physical and chemical properties:</b>	
<b>Appearance:</b>	Solid, block. White-blue metallic.
<b>Odour:</b>	Odourless.
<b>Odour threshold:</b>	Not applicable
<b>pH:</b>	Not applicable
<b>Melting point/freezing point:</b>	419°C
<b>Initial boiling point and boiling range:</b>	907°C
<b>Flash point:</b>	Not applicable
<b>Evaporation rate:</b>	Not applicable
<b>Flammability:</b>	Not flammable or combustible
<b>Upper/lower flammability or explosive limits:</b>	Not applicable
<b>Vapour pressure:</b>	1 mm Hg @ 487°C
<b>Vapour density:</b>	Not applicable
<b>Relative density:</b>	7.13 (water = 1)
<b>Solubility (ies):</b>	Insoluble in water and organic solvents
<b>Partition coefficient (n-octanol/water):</b>	Not applicable
<b>Auto-ignition temperature:</b>	Not available
<b>Decomposition temperature:</b>	Not available
<b>Viscosity:</b>	Not applicable

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### Section 10: Stability and Reactivity

**10.1 Reactivity:**

Not reactive.

**10.2 Chemical Stability:**

Stable at normal room temperatures.

**10.3 Possibility of Hazardous Reactions:**

None known.

**10.4 Conditions to Avoid:**

Use caution when immersing solid zinc into a molten zinc bath. Moisture or condensation on the solid zinc can cause molten zinc to bubble, splash or explode.

During processing, avoid accumulations of fine particulate (dust).

**10.5 Incompatible Materials:**

Strong acids, including nitric acid, sulfuric acid and hydrochloric acid – may evolve extremely flammable hydrogen gas.

Inter-halogens (e.g. bromine pentafluoride, chlorine trifluoride) – violent reaction at high temperatures, risk of explosion.

Nitrogen compounds (e.g. hydrazinium nitrate, hydroxylamine) – risk of explosion.

Ammonium sulfide – reaction with zinc releases extremely toxic and flammable hydrogen sulfide gas and hydrogen gas..

**10.6 Hazardous Decomposition Products:**

From molten processing or welding on zinc-coated surfaces: Zinc oxide fumes.

### Section 11: Toxicological Information

**11.1 Likely routes of exposure:**

Inhalation of zinc oxide fumes during molten processing or welding on zinc surfaces. Skin and eye contact.

**11.2 Acute toxicity data:**

Data not available for Zinc metal.

**Acute Toxicity Data for the component substances:**

<u>Ingredient</u>	<u>LD<sub>50</sub> Oral</u>	<u>LD<sub>50</sub> Dermal</u>	<u>LC<sub>50</sub> Inhalation (4 hrs.)</u>
Zinc oxide	>5000 mg/kg (rat)	Not available	>5700 mg/m <sup>3</sup> (rat)

**Skin corrosion / irritation:**

Zinc metal is not corrosive or irritating to skin, based on physical and chemical properties. Solid metal may be abrasive to skin during handling.

**Serious eye damage / irritation:**

Particles are expected to cause irritation as a foreign object in the eye.

**STOT (Specific Target Organ Toxicity) Single Exposure:**

Fumes containing metal oxides, including Zinc oxide, can cause metal fume fever. Symptoms include thirst, a metallic taste, fever, and flu-like symptoms such as muscle aches, cough and chest discomfort.

**Aspiration hazard:**

Does not meet criteria for classification for aspiration toxicity.

**11.3 Chronic toxicity:**

**STOT (Specific Target Organ Toxicity) Repeated Exposure:**

Data not available.

**Respiratory and / or skin sensitization:**

Not known to be a respiratory or skin sensitizer.

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**Germ cell mutagenicity:**

Data not available.

**Reproductive and Developmental effects:**

Exposures to lead may damage the unborn child. Several non-occupational studies indicate that low to moderate exposure to lead during pregnancy and in early childhood, can produce harmful effects on neurobehavioral development and IQ.

**Effects on or via lactation:**

Data not available.

**Carcinogenicity:**

Zinc metal is not known to be carcinogenic.  
IARC – has not evaluated carcinogenicity of Zinc metal.  
ACGIH® - has no carcinogen category listing for Zinc metal.  
NTP - has not listed Zinc metal in its report on carcinogens

**Interactions with other chemicals:**

Not available

<b>Section 12: Ecological Information</b>
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**12.1 Toxicity:**

Zinc metal in massive form is now known to be toxic to aquatic life.

**12.2 Persistence and degradability:**

Not readily biodegradable.

**12.3 Bioaccumulative potential:**

Not available

**12.4 Mobility in soil:**

Not applicable

<b>Section 13: Disposal Considerations</b>
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**13.1 Disposal methods:**

Recycle or dispose of waste metal in accordance with applicable federal, state/provincial and local regulations.  
Avoid generating dust during disposal. Avoid contact with skin and eyes. See Section 8 for personal protection measures.  
Prevent material from entering sewers and / or drains.

<b>Section 14: Transport Information</b>
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**14.1 UN Number:**

Not applicable

**14.2 UN proper shipping name:**

Not applicable

**14.3 Transport hazard class(es):**

Not applicable

**14.4 Packing group:**

Not applicable

**14.5 Environmental hazards:**

Not applicable

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**14.6 Special precautions for user:**

Not available

**14.7 U.S. Hazardous Materials Regulation (DOT 49CFR):**

Not regulated

**14.8 Canada Transportation of Dangerous Goods (TDG) Regulations:**

Not regulated

**14.9 IMO Classification (IMDG Code):**

Not regulated

<b>Section 15: Regulatory Information</b>
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**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:**

**USA**

**TSCA Status:** Substances are listed on the TSCA inventory or are not required to be listed.

**SARA Title III:** Zinc metal, CERCLA RQ is limited to those pieces of the metal having a diameter smaller than 100 µm.

**Canada**

**NSNR Status:** Substances are listed on the DSL or are not required to be listed.

<b>Section 16: Other Information</b>
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**Revision date:**

February 21, 2018

**References and sources for data:**

HSDB®, Hazardous Substances Data Bank, US National Library of Medicine  
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans  
NIOSH, Pocket Guide to Chemical Hazards.  
RTECS, Registry of Toxic Effects of Chemical Substances

**Methods for classification:**

USA: Haz Com Standard 29 CFR 1910.1200 (2012)  
Canada: Controlled Products Regulations.

**Legend to abbreviations:**

ACGIH® – American Conference of Governmental Industrial Hygienists  
GHS- Globally Harmonized System for Classification and Labeling, Fifth revised edition, 2013  
IARC – International Agency for Research on Cancer  
OSHA - Occupational Safety and Health Administration  
TWA – Time weighted average  
TLV® - Threshold Limit Value  
WHMIS – Canada Workplace Hazardous Materials Information System.

**Additional information:**

The information presented in the Safety Data Sheet is based on current knowledge and publications and is intended to describe the product for the purposes of health and safety. No guarantee or warranty of any kind expressed or implied is made with respect to the information contained herein.