



# Material Safety Data Sheet

**Issuing Date**  
21-April-11

**Revision Date**  
17-April-12

**Revision Number**  
2

## 1. PRODUCT AND COMPANY IDENTIFICATION

<b>Product name</b>	<b>Titanium Alloy Briquettes</b>
<b>UN-No</b>	UN3089
<b>Recommended use</b>	Production of titanium metal components.
<b>Manufactured by</b>	International Titanium Powder - a Cristal Global Company 940 South Frontage Road, Suite 2000 Woodridge, Illinois 60517 Telephone: 815-431-4340 - - Control Room
<b>Company Switchboard Number</b>	815-834-2112 (non emergency)
<b>Other Information</b>	e-mail contact: cldemille@cristalglobal.com
<b>Emergency Telephone Number</b>	Chemtrec: 1-800-424-9300

## 2. HAZARDS IDENTIFICATION

### Emergency Overview

*Briquettes are mechanically pressed powder, not sintered, and are susceptible to flaking off as powder.*

*Airborne dust is EXTREMELY sensitive to ignition. Minimum Ignition Energy (ASTM E 2019) = <3mJ.*

*In response to a spill, responders should refer to Emergency Response Guide 170 only.*

**Appearance**  
Silver metal briquette, and powder

**Physical State**  
Solid

**Odor**  
Odorless

### Potential Health Effects

#### Acute Toxicity

<b>Skin</b>	Irritating to skin.
<b>Inhalation</b>	May cause irritation of respiratory tract.
<b>Ingestion</b>	May be harmful if swallowed.
<b>Eyes</b>	Irritating to eyes.

#### Chronic Toxicity

**Chronic effects** None specifically known. Acute effects dominate.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight %
Titanium	7440-32-6	88 - 96
Aluminum	7429-90-5	2 - 7
Vanadium	7440-62-2	2 - 5

### 4. FIRST AID MEASURES

<b>General Advice</b>	Call 911 or emergency medical service. Move victim to a safe isolated area.
<b>Eye contact</b>	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
<b>Skin contact</b>	Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. In the event of skin reaction to metal powder, contact a physician.
<b>Inhalation</b>	Move to fresh air. If not breathing, give artificial respiration. Administer oxygen if breathing is difficult. Seek immediate medical attention/advice.
<b>Ingestion</b>	Immediate medical attention is required.
<b>Notes to physician</b>	None.
<b>Protection of First-aiders</b>	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

### 5. FIRE-FIGHTING MEASURES

<b>Flammable Properties</b>	Containers may explode when heated. Contact with water in a fire event will evolve flammable hydrogen gas. Most fire extinguishing media will cause hydrogen evolution. When the fire is put out, hydrogen may accumulate in poorly ventilated or confined areas and result in flash fire or explosion if ignited. Dusts or fumes may form explosive mixtures in air. May be ignited by heat, sparks or flames.
<b>Flash Point</b>	Not applicable
<b>Instructions to Firefighters</b>	Do NOT use A-B-C fire extinguisher. Do NOT use halon type fire extinguisher. Do NOT use water, carbon dioxide or dry chemical extinguisher.
<b>Suitable Extinguishing Media</b>	Dry sand. Class D extinguishing agents on fines, dust or molten metal. Sodium chloride powder.
<b>Hazardous Combustion Products</b>	Produce flammable and toxic gases on contact with water.
<b>Sensitivity to Static Discharge</b>	Powder particulates are EXTREMELY sensitive to ignition. Minimum Ignition Energy = <3mJ. Take precautionary measures against static discharge.
<b>Protective Equipment and Precautions for Firefighters</b>	As in any fire, wear self-contained breathing apparatus and full protective gear.

### 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions</b>	Use personal protective equipment (see Section 8). Ensure adequate ventilation. Remove all sources of ignition. Keep people away from spill/leak.
<b>Methods for Containment</b>	Prevent further spillage if safe to do so. Prevent material from entering water ways. Clean up as soon as practical.
<b>Methods for Cleaning Up</b>	Cover spill with inert material (i.e. dry sand or earth), then place in a metal waste container with a sealing lid. Shovel or sweep up using a natural fiber brush and non-sparking dustpan. DO NOT VACUUM. Take precautionary measures against static buildup.
<b>Other information</b>	Refer to protective measures listed in Sections 7 and 8. See Section 12 for additional information. Refer to Section 13 for disposal considerations.  In response to a spill, responders should refer to Emergency Response Guide 170 only.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Finely divided powder may ignite in the presence of a spark or flame. Airborne dust is EXTREMELY sensitive to ignition - minimize dust formation. Minimum Ignition Energy to ignite airborne dust (ASTM E 2019) = <3mJ. This is equivalent to static pick-up from walking across a floor. Take precautionary measures against static discharges. Keep away from heat, sparks and open flame. No smoking. Keep away from oxidizing materials (e.g. peroxide, bleach, acids). Humidity >50% will help prevent electrostatic buildup.
<b>Storage</b>	Keep in a dry, cool and well-ventilated place. Clean up any spilled material immediately. Keep all sources of ignition away from spill. In the event of fire, product must not be exposed to water. Be aware that building sprinkler systems may contribute to material hazard in the event of a fire.  An H-3 Occupancy rating is required for storage of flammable solids in quantities greater than 125 pounds based on the International Building Code (IBC) and the International Fire Code (IFC).

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL
Aluminum 7429-90-5		TWA: 15 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup> (vacated) TWA: 15 mg/m <sup>3</sup> (vacated) TWA: 5 mg/m <sup>3</sup>
Vanadium 7440-62-2		Ceiling: 0.1 mg/m <sup>3</sup> Ceiling: 0.5 mg/m <sup>3</sup>

<b>Engineering measures</b>	Ensure adequate ventilation, especially in confined areas. Do not use portable fans as this may create or spread dust.
<b>Personal Protective Equipment</b>	
<b>Eye/Face Protection</b>	Safety glasses with side shields or goggles or face shield.
<b>Skin and Body Protection</b>	Wear fire/flame resistant/retardant clothing. Leather gloves.
<b>Respiratory Protection</b>	If exposure limits are exceeded or irritation is experienced, MSHA/NIOSH approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
<b>Electrostatic Protection</b>	Guidance for appropriate electrostatic protection (i.e. footwear) is available in NFPA 484 and in OSHA Directive Number CPL-03-00008.

**Hygiene Measures**

Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Prevent contact with skin eyes and clothing.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Silver metal briquette, and powder	<b>Odor</b>	Odorless
<b>Physical State</b>	Solid	<b>pH</b>	Not applicable
<b>Flash Point</b>	Not applicable	<b>Autoignition Temperature</b>	(Powder cloud) 480 °C / 896 °F
<b>Minimum Ignition Energy (mJ)</b>	<3 (dust)	<b>Boiling Point/Range</b>	3287 °C / 5949 °F
<b>Melting Point/Range</b>	1640-1662 °C / 2984-3024 °F	<b>Flammability Limits in Air</b>	Powder is highly flammable
<b>Explosion Limits</b>	No information available	<b>Evaporation Rate</b>	Not applicable
<b>Water Solubility</b>	Insoluble in water	<b>Vapor Density</b>	Not applicable
<b>Vapor Pressure</b>	Not applicable	<b>Explosive Properties</b>	Kst Value = 9 bar.m/s
<b>Bulk Density</b>	2.3 - 2.9 g/cm <sup>3</sup>		
<b>VOC Content(%)</b>	Not applicable		

## 10. STABILITY AND REACTIVITY

<b>Stability</b>	Dry powder is stable in air. Will burn if ignited.
<b>Incompatible Products</b>	Acids. Halogens. Oxidizing agents. Metal oxides. Halides.
<b>Conditions to avoid</b>	Keep away from open flames, hot surfaces and sources of ignition. Avoid materials which can cause static discharge. Prior to filling or dispensing from container, ground the container liner and the container. Avoid dust formation.
<b>Hazardous decomposition products</b>	Metal oxide fumes.
<b>Hazardous Reactions</b>	May liberate hydrogen gas in contact with water in the presence of a fire.
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.

## 11. TOXICOLOGICAL INFORMATION

**Acute Toxicity**

**Product information** Powder is irritating to the skin and eyes on contact. Inhalation will cause irritation to the lungs and mucous membrane. Irritation to the eyes will cause watering and redness. Reddening, scaling and itching are characteristics of skin inflammation.

**Chronic effects**

None specifically known. Acute effects dominate.

**Carcinogenicity**

Not carcinogenic.

**Target organ effects**

Eyes. Skin. Respiratory system.

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity effects</b>	None known.
<b>Persistence and degradability</b>	Persistent and not biodegradable.
<b>Bioaccumulation/Accumulation</b>	Material may have some potential to bioaccumulate.

### 13. DISPOSAL CONSIDERATIONS

<b>Waste Disposal Methods</b>	If the product is to be disposed 'as received', it is considered to be a hazardous waste having the characteristic of ignitability. Dispose in accordance with local regulations.
<b>Contaminated packaging</b>	Empty containers should be taken for local recycling, recovery or waste disposal. Clean with water. Dispose of in accordance with local regulations. Reuse or recycle resulting washing effluents.
<b>US EPA Waste Number</b>	D001

Chemical Name	California Hazardous Waste Status
Titanium	Ignitable (powder)
Aluminum	Ignitable (powder)

### 14. TRANSPORT INFORMATION

#### DOT

<b>Proper Shipping Name</b>	Metal powder, flammable, n.o.s.
<b>Hazard Class</b>	4.1
<b>UN-No</b>	UN3089
<b>Packing Group</b>	II

<b>Proper Shipping Name</b>	Metal powder, flammable, n.o.s.
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### 15. REGULATORY INFORMATION

#### International Inventories

*Approved for use in Japan, but not listed on ENCS inventory.*

<b>USA (TSCA)</b>	Complies
<b>Canada (DSL)</b>	Complies
<b>European Union (EINECS)</b>	Complies
<b>Japan (ENCS)</b>	Does not Comply
<b>China (IECSC)</b>	Complies
<b>Korea (KECL)</b>	Complies
<b>Philippines (PICCS)</b>	Complies
<b>Australia (AICS)</b>	Complies
<b>New Zealand (NZIoC)</b>	Complies

#### Federal Regulations

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Chemical Name	CAS-No.	Weight %	SARA 313 - Threshold Values %
Aluminum	7429-90-5	2 - 7	1.0
Vanadium	7440-62-2	2 - 5	1.0

**SARA 311/312 Hazard Categories**

<b>Acute Health Hazard</b>	No
<b>Chronic Health Hazard</b>	No
<b>Fire Hazard</b>	Yes
<b>Sudden Release of Pressure Hazard</b>	Yes
<b>Reactivity Hazard</b>	Yes

**Clean Water Act**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

**Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)**

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

**CERCLA**

This product, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

**U.S. State Regulations****California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Titanium		X			
Aluminum	X	X	X		X
Vanadium	X	X	X		

**Other International Regulations**

Chemical Name	Carcinogen Status	Exposure Limits
Aluminum		Mexico: TWA= 10 mg/m <sup>3</sup>

**Canada**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

**WHMIS Hazard Class**

Division 4 - Flammable Solid



Chemical Name	NPRI
Aluminum	X

## 16. OTHER INFORMATION

### HMIS Rating

Health Hazard 1  
Flammability Hazard 3  
Physical Hazard 1

Personal Protection F

Revision Date 17-April-12

Reason for revision Added reference to Emergency Response Guide 170 in Sections 2 and 6.

### **Disclaimer**

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

**End of MSDS**