

**SECTION I. PRODUCT AND COMPANY IDENTIFICATION**

Chemical Name	Trade Name
<b>Titanium Sponge Powder</b>	<b>CP Titanium Sponge Powder (-20 Mesh)</b>
Chemical Family	Formula
<b>Group 4 (IVB) Transition Metal</b>	<b>Ti</b>
Manufacturer	Manufacturer's Phone Number
<b>Global Titanium Inc.</b>	<b>(800) 762-7602 or (313) 366-5300</b>
Manufacturer's Address	Chemtrec Phone Number for Chemical Emergencies
<b>19300 Filer Ave Detroit, MI 48234</b>	<b>(800) 424-9300</b>
E-Mail	Company Website
<a href="mailto:info@globaltitanium.com">info@globaltitanium.com</a>	<a href="http://www.globaltitanium.com">www.globaltitanium.com</a>

**SECTION II. HAZARDS IDENTIFICATION**

<b>EMERGENCY OVERVIEW</b>			
Appearance & Odor		Warnings	
<b>Silver/Gray Granular Solid; Odorless</b>		<b>Poisonous gases may be produced in fire. Use of water on molten or burning titanium may result in explosion. Flammable.</b>	
OSHA Permissible Exposure Limit		ACGIH Threshold Limit Value	
<b>15mg/m<sup>3</sup> (Total Dust); 5mg/m<sup>3</sup> (Resp. Dust)</b>		<b>10mg/m<sup>3</sup> (Total Dust)</b>	
Carcinogens - OSHA, IARC, NTP		Medical Condition Aggravated by Exposure	
<b>Not Listed</b>		<b>Powder or dust may aggravate preexisting respiratory conditions.</b>	
Potential Health Effects		Potential Environmental Effects	
<b>Powder may irritate the respiratory tract, eyes, mucus membranes, or dermal surfaces. Flammable.</b>		<b>No Information Available.</b>	
Symptoms of Exposure		Target Organs	
<b>May cause irritation of respiratory tract, skin, or eyes.</b>		<b>Mucus Membranes</b>	
Relevant route(s) of Exposure			
Inhalation	<b>Yes</b>	Skin Contact	<b>Yes</b>
Ingestion	<b>Yes</b>	Eye Contact	<b>Yes</b>
<b>This material is considered hazardous by the OSHA Hazard Communication Standard, this MSDS contains valuable information critical to the safe handling and proper use of this product. This MSDS should be retained and made available for employees and other users of this product.</b>			

**SECTION III. COMPOSITION/INFORMATION ON INGREDIENTS**

Principal Components	C.A.S.#	% by Weight	TLV (ACGIH)	PEL (OSHA)
Titanium , Ti	7440-32-6	>98	10.00	15.0(Total) 5.0(Respiratory)
Aluminum, Al	7429-90-5	0-0.5	10.0(Total) 5.0(Respiratory)	15.0(Total) 5.0(Respiratory)
Chromium, Cr	7440-47-3	0-0.5	0.5	1.0
Molybdenum, Mo	7439-98-7	0-0.05	NA	15.0
Silicon, Si	7440-21-3	0-0.1	10.0(Total) 5.0(Respiratory)	15.0(Total) 5.0(Respiratory)
Tin, Sn	7440-31-5	0-0.1	2.0	2.0
Vanadium, V	7440-62-2	0-0.1	NA	0.5(Dust)
Zirconium, Zr	7440-67-7	0-0.1	5.0	5.0
Niobium, Nb	7440-67-8	0-0.001	NA	NA

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## SECTION IV. FIRST AID MEASURES

Inhalation	Skin Contact
Remove from exposure to fresh air, restore or support breathing as needed. Seek medical assistance.	Flush skin with soap and water for at least 15 minutes, remove contaminated clothing.
Ingestion	Eye Contact
Do not induce vomiting. Seek medical assistance.	Flush with water for at least 15 minutes. If irritation persists, seek medical assistance.
Note to Physicians	
Treat systematically and supportively as required.	

## SECTION V. FIRE FIGHTING MEASURES

Flammable Properties
Product is flammable. Poisonous gases are produced in fire. Containers may explode in fire. Fines may result in explosion if airborne levels exceed $35 \text{ g/m}^3$ (U.S. Bureau of Mines, Report 4835).
Protection of Firefighters
Titanium fires have intense heat. Wear self-contained breathing apparatus in pressure-demand, MSHA/NIOSH, and full protective gear. Irritating and highly toxic gases may be generated by thermal decomposition or combustion.
Suitable Extinguishing Media
Class D fire extinguisher; table salt; sand. Do NOT use water directly on fire. Do NOT use carbon dioxide. Water on molten or burning titanium may result in an explosion.
Special Fire Fighting Procedures
Small fires can be smothered with table salt, sand or by use of type D extinguishing material. For large fires, it is advisable to allow the material, if contained, to burn out. If containment is not possible, call 911.
Unsuitable Extinguishing Media
DO NOT SPRAY WATER ON BURNING TITANIUM. Water on molten or burning titanium may result in an explosion. Carbon Dioxide is NOT effective as an extinguisher. If moisture is present within burning metal fines an explosion may occur. Personnel should evacuate and not attempt to extinguish the fire.

## SECTION VI. ACCIDENTAL RELEASE MEASURES

Personal Precautions	
Use personal protective equipment recommended in Section VIII.	
Environmental Precautions	Methods for Containment
No information is available in regards to environmental hazards. Dispose of in accordance to local, state, and federal regulations.	Keep fines from becoming airborne. Do not use compressed air. If titanium fines become airborne, ventilate properly to reduce air density.
Methods for Cleanup	
Use non-sparking tools. Do not push powder long distances across the floor. Keep in small piles away from each other. Place material into non-sparking or anti-static containers. Use static-free vacuums for cleaning	
Other Information	
Spills of this material do not need to be reported to the National Response Center.	

## SECTION VII. HANDLING & STORAGE

Handling
Mixing, blending, milling or grinding of dry powder should be performed under argon or helium. Keep away from open flames and other sources of ignition.
Storage
Store indoors to maintain product integrity. Store away from excessive heat, welding, grinding, or torching operations. Use non-sparking/anti-static containers, tools, and equipment. Maintain a supply of coarse salt and/or Class D fire extinguisher near the processing and storage areas. Store in cool, dry, well-ventilated area.

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## SECTION VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure Guidelines

OSHA PEL and ACGIH TLV have been set for titanium powder and dust only. OSHA PEL is 15mg/m<sup>3</sup> (Total Dust) and 5 mg/m<sup>3</sup> (Respiratory Dust). ACGIH TLV is 10 mg/m<sup>3</sup> (Total Dust). Not listed by IARC, NIOSH, NTP, or OSHA.

### Engineering Controls

Facility should be equipped with an eyewash and safety shower. Use adequate ventilation.

### Personal Protective Equipment

#### Eye/Face Protection

Safety glasses with permanent side shields or goggles.  
Contact lenses may pose a hazard.

#### Skin Protection

Leather or puncture resistant gloves. Wear appropriate clothing to prevent skin exposure.

#### Respiratory Protection

Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN149. Use approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

#### General Hygiene Considerations

Wash hands after handling. Wear recommended PPE. Contact lenses may absorb irritants. Avoid transfer of material from hands to mouth while eating, drinking, or smoking.

## SECTION IX. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Odor/Odor Threshold	Physical State
Silver/gray metal; Solid	Odorless	Solid
pH	Melting Point	Boiling Point
N/A	~1660°C	>3000°C
Flash Point	Upper Explosive Limit	Lower Explosive Limit
	N/A	N/A
Evaporation Rate	Vapor Pressure	Vapor Density
N/A	Not volatile	N/A
Viscosity	Solubility	Specific Gravity
N/A	Insoluble	~4.5
Auto-Ignition Temperature	Ignition Temperature	Decomposition Temperature
N/A	480°C	N/A

## SECTION X. STABILITY AND REACTIVITY

### Chemical Stability

Stable

#### Conditions to Avoid

Keep away from sparks and flames, incompatible materials, moisture, exposure to air, and strong oxidants.

#### Incompatible Materials

Reacts with strong acids, air, moisture, aluminum, halogens, interhalogens, oxygen, chlorinated solvents, carbon dioxide, oxidizing agents, bromine trifluoride, silver fluoride, sodium chlorate, halocarbons, and metal oxides.

#### Hazardous Decomposition Products

Irritating and toxic fumes and gases, titanium oxide, metallic oxides, and dust.

#### Possibility of Hazardous Reactions

May react violently with interhalogens, oxidizing agents, strong acids or halogenated compounds. Reactions with incompatible materials may result in irritating or toxic gas.

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## SECTION XI. TOXICOLOGY INFORMATION

ACUTE EFFECTS	CHRONIC EFFECTS
Oral May cause irritation of the digestive tract. Poorly absorbed from the alimentary tract.	Carcinogenicity Tumorigenic effects have been observed in experiments with laboratory animals.
Dermal Irritant to skin and mucous membranes.	Mutagenicity Properties have not been thoroughly evaluated.
Inhalation May cause irritation of the respiratory tract. May exacerbate preexisting conditions.	Reproductive Effects Reproductive effects have been observed in experiments with laboratory animals.
Eyes Dust or fines may cause irritation.	Developmental Effects Properties have not been thoroughly evaluated.
Other No other acute effects have been noted.	Sensitization Sensitization is not believed to occur.

## SECTION XII. ECOLOGICAL INFORMATION

Ecotoxicity No information was available regarding the toxicological effects on the environment.	Persistence/Degradability No information was available regarding the environmental degradation of this product.
Bioaccumulation/Accumulation No information was available regarding the ability of this product to bioaccumulate.	Mobility in Environmental Media No information was available regarding the mobility of this product in the environment.
Other Adverse Effects No information available.	

## SECTION XIII. DISPOSAL CONSIDERATIONS

Disposal Dispose according to local, state, and federal regulations.
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## SECTION XIV. TRANSPORTATION INFORMATION

Proper Shipping Description Titanium Powder, Dry, 4.1, UN2878, III
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## SECTION XV. REGULATORY INFORMATION

Section 313 Supplier Notification: This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (40 CFR 372): Aluminum (dust/fume) C.A.S. 7429-90-5, Chromium C.A.S. 7440-47-3, and Vanadium (exempt when contained in alloy) C.A.S. 7440-62-2.

In addition to the ingredients listed II, this product contains the following chemicals considered by the State of California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) as causing cancer or reproductive toxicity and for which warnings are now required: To the best of our knowledge, this product does not contain materials listed under Proposition 65.

The Comprehensive Environmental Response, Compensation, and Liability Act of 1990, Sec102 (CERCLA) requires that any "release" into the "environment" of these hazardous substances contained in a product in excess of the "reportable quantity" in any 24-hour period must be immediately reported to the National Response Center (800-424-8802). Reporting is not required under certain circumstances such as a federally permitted release or the release of certain metal solid particles with a diameter larger than 100 micrometers: Chromium and Compounds, 0-18% by weight, Reportable Quantity: 5,000lb.

The Superfund Amendments and Reauthorization Act of 1986 (SARA) specifies certain emergency planning and notification requirements if these extremely hazardous substances are present in concentrations of greater than 1% at a facility in amounts greater than the threshold planning quantity: To the best of our knowledge, this product does not contain materials listed as EHS under SARA

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**SECTION XV. REGULATORY INFORMATION CONTINUED**

If this product is discarded as a waste, it would be identified with the following hazardous waste classification under the Resource Conservation and Recovery Act (RCRA). The act specifies requirements for the management and disposal of hazardous wastes: To the best of our knowledge, this product is not a RCRA regulated material.

Canada - Components on Canadian "Ingredient Disclosure List": Aluminum, elemental; Chromium, elemental; Molybdenum, elemental; Tin, elemental; Vanadium, elemental; and Zirconium, elemental.

DSL/NDSL: Titanium is listed on Canada's DSL List.

WHMIS: Classification B4, B6

Toxic Substances Control Act (TSCA): Components of this product listed on the TSCA Inventory are: Aluminum (C.A.S.# 7429-90-5); Chromium (C.A.S.# 7440-47-3); Molybdenum (CAS#7439-98-7); Silicon (C.A.S.# 7440-21-3); Tin (C.A.S.# 7440-31-5); Titanium (C.A.S.# 7440-32-6); Vanadium (C.A.S.# 7440-62-2); Zirconium (C.A.S.# 7440-67-7); Niobium (C.A.S.# 7440-03-1).

Clean Water Act (CWA): To the best of our knowledge, this product does not contain hazardous substances, priority pollutants, or toxic pollutants as defined by the CWA.

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**SECTION XVI. ADDITIONAL INFORMATION**

The information provided in this document is believed to be accurate, but does not purport to be all inclusive and shall be used for reference purposes only. We make no warranty of merchantability or any other warranty, expressed or implied, with respect to such information and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Global Titanium be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages, howsoever arising, even if Global Titanium has been advised of the possibility of such damages.