



Safety Data Sheet

6-4 Titanium Metal

Revision Date: February 20, 2015
Date of Printing: February 20, 2015

SECTION 1: PRODUCT & COMPANY INFORMATION

Chemical Family: Group 4 (IVB)
Transition Metal

Manufacturer: Global Titanium Inc.
Address: 19300 Filer Street
Detroit, MI 48234
Phone: (800)762-7602

Formula: Ti

Chemtrec Emergency Nbr: (800)424-9300

Email: www.info@globaltitanium.com Manufacturer Website: <http://www.globaltitanium.com>

SECTION 2: HAZARDS IDENTIFICATION

GHS Classification: None

NFPA 704 Rating: None

Signal Word: None

HMIS Rating: None

Precautionary Statements

- P210 – Keep away from heat/sparks/open flames/hot surfaces. – NO SMOKING
- P264: Wash hands thoroughly after handling.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P370+378: In case of fire: Use table salt, dry sand, or Class D Fire Extinguisher to contain fire.

Health Statements

Medical Condition Aggravated by Exposure

Powder or dust may aggravate preexisting respiratory conditions.

Potential Health Effects

Powder may irritate the respiratory tract, eyes, mucus membranes, or dermal surfaces.

Potential Environmental Effects

No Information Available.

Symptoms of Exposure

May cause irritation of respiratory tract, skin, or eyes.

Target Organs

Mucus Membranes

Relevant route(s) of Exposure

Inhalation	Yes	Skin Contact	Yes
Ingestion	Yes	Eye Contact	Yes

While this material is not considered hazardous by the OSHA Hazard Communication Standard, this SDS contains information critical to safe handling and proper use of this product. This SDS should be retained and made available for employees and other users of this product.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name: Titanium Metal

Trade Name: 6-4 Titanium Metal

Principal Components	C.A.S.#	% by Weight
Titanium, Ti	7440-32-6	80-95
Aluminum, Al	7429-90-5	0-8
Chromium, Cr	7440-47-3	0-18
Molybdenum, Mo	7439-98-7	0-37
Silicon, Si	7440-21-3	0-3
Tin, Sn	7440-31-5	0-8
Vanadium, V	7440-62-2	0-6
Zirconium, Zr	7440-67-7	0-5
Niobium, Nb	7440-67-8	0-5

SECTION 4: FIRST AID MEASURES

Inhalation - Remove from exposure to fresh air, restore or support breathing as needed. Seek medical assistance.

Ingestion - Do not induce vomiting. Seek medical assistance.

Skin Contact - Flush skin with soap and water for at least 15 minutes, remove contaminated clothing.

Eye Contact - Flush with water for at least 15 minutes. If irritation persists, seek medical assistance.

Note to Physician - Treat systematically and supportively as required.

SECTION 5: FIRE-FIGHTING MEASURES**Flammable Properties**

Product in itself is stable, but it will burn if introduced to fire. Fines and particulate matter are flammable and may spontaneously combust. Poisonous gases are produced in fire. Containers may explode in fire. Fire may reignite after extinguishing. Fire may produce significant heat.

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 in fire.

Suitable Extinguishing Media

Use Class D fire extinguisher; table salt; sand; dry ground dolomite; or dry powder extinguishing agents. Do NOT use water directly on fire. Do NOT use carbon dioxide. Do NOT use halogenated extinguisher. 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.



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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 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions

Use personal protective equipment recommended in Section VIII.
Remove all ignition sources.

Environmental Precautions

No information is available in regards to environmental hazards.

Dispose of in accordance to local, state, and federal regulations.

Other Information

Spills of this material do not need to be reported to the National Response Center.

Methods for Containment

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 only static-free vacuums for cleaning.

SECTION 7: 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 table salt and/or Class D fire extinguisher near the processing and storage areas.
Store in a cool, dry, well-ventilated area.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

OSHA PEL and ACGIH TLV have been set for titanium powder and dust only.
OSHA PEL is 15mg/m³ (Total Dust) and 5 mg/m³ (Respiratory Dust).
ACGIH TLV is 10 mg/m³ (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 if grinding, cutting, welding, etc.

Personal Protective Equipment

Eye/Face Protection

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

Skin Protection

Leather cut 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 NIOSH approved respirator if exposure limits listed above are exceeded or if irritation or other symptoms are experienced.

General Hygiene Considerations

Wash hands after handling.
Wear recommended PPE.

Avoid transfer of material from hands to mouth while eating, drinking, or smoking.

SECTION 9: PHYSICAL & 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
Ingot pieces will not flash. Powder or dust flash 460°C	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	1200°C (Solid Metal) 480°C (powder/dust).	N/A

SECTION 10: STABILITY & REACTIVITY

Chemical Stability.

Stable

Conditions to Avoid.

Keep away from sparks and flames, incompatible materials, extremes of temperatures and direct sunlight

Incompatible Materials.

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

Hazardous Decomposition Products.

Irritating 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.

SECTION 11: TOXICOLOGICAL INFORMATION**ACUTE EFFECTS****Oral**

May cause irritation of the digestive tract.
Poorly absorbed from the alimentary tract.

Dermal

Irritant to skin and mucous membranes.

Inhalation

May cause irritation of the respiratory tract.
May exacerbate preexisting conditions.

Eyes

Dust or fines may cause irritation.

Other

No other acute effects have been noted.

CHRONIC EFFECTS**Carcinogenicity**

Tumorigenic effects have been observed in experiments with laboratory animals.

Mutagenicity

Properties have not been thoroughly evaluated.

Reproductive Effects

Reproductive effects have been observed in experiments with laboratory animals.

Developmental Effects

Properties have not been thoroughly evaluated.

Sensitization

Sensitization is not believed to occur.

SECTION 12: 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 13: DISPOSAL CONSIDERATIONS**Disposal**

Dispose according to local, state, and federal regulations.

SECTION 14: TRANSPORT INFORMATION

6-4 Titanium Metal, not a DOT regulated material.

SECTION 15: 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



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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. 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 16: OTHER 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.