

Plasmaterials, Inc.
 2268 Research Drive
 Livermore, CA 94550
 Ph: (925) 447-4030 Fx: (925) 447-4031
<http://plasmaterials.com>

MATERIAL SAFETY DATA SHEET

Section 1- PRODUCT IDENTIFICATION

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|--------------------------|---------------------------------|
| COMPOSITION Ti | PRODUCT NAME Titanium |
|--------------------------|---------------------------------|

Section 2- HAZARDOUS INGREDIENTS

Note: Products under normal conditions do not represent an inhalation, ingestion or contact health hazard.

| MATERIAL OR COMPONENT | CAS NUMBER | WT% | EXPOSURE LIMITS | |
|-----------------------|------------------|------------|------------------|------------------|
| | | | OSHA PEL (Mg/M3) | ACGIH TLV(MG/M3) |
| Titanium | 7440-32-6 | 100 | 10mg/M3 | 15mg/M3 |

Section 3- PHYSICAL DATA

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| MATERIAL IS (AT NORMAL CONDITIONS) <input type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Other | APPEARANCE AND ODOR Silver/Grey metallic, no odor |
| MELTING POINT (BASE METAL) 1560-1840C @ 1 atmosphere | SPECIFIC GRAVITY |

Section 4- FIRE AND EXPLOSION

| | | | |
|--|------------------|-------------------|-------------------|
| Flash Point (Method Used) No Flash, see fire & explosion data | Flammable Limits | LEL N/A | UEL N/A |
| EXTINGUISHING MEDIA Use extinguishers designed for metal fires, dry chemical powders, salts, or inert gases. Application of water can result in an explosion. | | | |
| SPECIAL FIRED FIGHTING PROCEDURES Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution. Do Not Use Water! | | | |
| UNUSUAL FIRE AND EXPLOSION HAZARDS Titanium does not burn, however grinding or polishing this material in the absence of oxygen, such as under water, can result in a finely divided waste which is easily ignited with a flash or spark. When ignited, titanium metal burns with intense heat and smoke. Titanium in the absence of moisture, burns slowly but evolves much heat. | | | |

| Section 5- REACTIVITY DATA | |
|--|---|
| STABILITY Stable | INCOMPATIBILITY (MATERIALS TO AVOID) Reducing agents, oxidizers, strong acids, halocarbons, halogens, metal carbonates, oxygen. |
| CONDITIONS TO AVOID None Reported | |
| HAZARDOUS DECOMPOSITION PRODUCTS None recorded | |

| Section 6- HEALTH HAZARD GUIDE |
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| MAJOR EXPOSURE HAZARD <input type="checkbox"/> Inhalation <input type="checkbox"/> Skin <input type="checkbox"/> Skin Absorption <input type="checkbox"/> Eye Contact <input type="checkbox"/> Ingestion |
| EFFECTS OF OVEREXPOSURE TITANIUM: This material is generally considered to be physiologically inert. There are no reported cases in the literature where titanium as such has caused human intoxication. The dusts of titanium or most titanium compounds such as titanium oxide may be placed in the nuisance category. (Sax, Dangerous Properties of Industrial Materials, eighth edition) INHALATION: Acute- Prolonged inhalation may cause mild irritation to the lungs and respiratory tract. No Chronic health effects recorded. SKIN CONTACT: Acute- May cause abrasive irritation. No Chronic health effects recorded. EYE CONTACT: Acute- May cause abrasive irritation, conjunctivitis. No Chronic health effects recorded. INGESTION: Acute- Relatively non-toxic; poorly absorbed from the alimentary tract. No Chronic health effects recorded. |
| EMERGENCY & FIRST AID PROCEDURES INHALATION: Remove victim to fresh air; keep warm and quiet. Give oxygen if breathing is difficult and seek medical attention if symptoms persist. SKIN CONTACT: Remove contaminated clothing; brush material off skin. Wash affected area with mild soap and water. Seek medical attention if symptoms persist. EYE CONTACT: Flush eyes with lukewarm water, lifting upper and lower lids, for at least 15 minutes. Seek medical attention. INGESTION: Give 1-2 glasses of milk or water and induce vomiting. Never induce vomiting or give anything by mouth to an unconscious person. Seek medical attention. |

| Section 7- SPILL OR LEAK PROCEDURES |
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| SPILL OR LEAK PROCEDURES Wear appropriate respiratory and protective equipment specified in Section 8. Isolate spill area and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust. |
| WASTE DISPOSAL METHODS Observe all federal, state and local regulations when storing or disposing of this substance. |

Section 8- SPECIAL PROTECTION

RESPIRATORY

NIOSH/MSHA approved dust-mist-vapor respirator

VENTILATION

Local Exhaust: To maintain concentration at or below low exposure levels.

Special: Handle in controlled environment **Mechanical(General):** Not Recommended

Other: None

EYE PROTECTION & PROTECTIVE CLOTHING

Use safety glasses. Wear rubber gloves. Use protective gear suitable to prevent contamination.

Section 9- SPECIAL PRECAUTIONS

WORK/HYGENIC/MAINTENANCE PRACTICES

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.

Some chemicals listed herein are research or experimental substances which may be toxic, as defined by various governmental regulations. In accordance with Environmental Protection Agency regulations and the Toxic Substance Control Act (TSCA), these materials should only be handled by, or under the direct supervision of, a "technically qualified individual", as defined in 40 CFR 710.2(aa).

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