

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

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

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
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
SPILL OR LEAK PROCUDRES 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).

The above information is accurate to the best of our knowledge. However, since data, safety standards and government regulations are subject to change the conditions of handling and use, or misuse are beyond our control, Plasmaterials, Inc. makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Users should satisfy themselves that they have all current data relevant to their particular use.

The information in this MSDS was obtained from sources, which we believe are reliable. However, the information is provided without any representation or warranty, express or implied, regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.