

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Titanium Alloys:** CP, 3 - 2 . 5, 6 . 4

Synonyms : **None**

TW Metals Company, Inc. The Arboretum, 760 Constitution Drive, Exton PA 19341

Emergency Phone Number: Chemtrec (24 hrs) 1-800-424-9300 or **Contact Your Nearest TW Metals Office**

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS #	% Weight	Occupational Exposure Limits (mg / m3)	
			OSHA PEL	ACGIH TLV
Titanium (Ti)	7440 - 32 -6	40-99	15 (TiO2)	10 (TiO2)
Molybdenum (Mo)	7439 - 98 -7	0- 37	15 (total dust)	15 (insoluble)
**Vanadium (V)	7440 - 62 -2	0- 37	0 . 5 (oxide dust) 0 . 1 (oxide fume)	0 . 5 (fume, dust)
*Chromium (Cr)	7440 - 47 -3	0- 18	1 (Cr)	0 . 5 (Cr)
Zirconium (Zr)	7440 - 67 -7	0- 15	5 (Zr)	5 (Zr)
Columbium (Cb)	7440 - 03 -1	0- 15		
**Aluminum (Al)	7429 - 90 -5	0- 8	15 (total dust)	5 (welding fumes)
Tin (Sn)	7440 - 31 -5	0-8	2 (Sn)	2 (Sn)
Silicon (Si)	7440 - 21 -3	0- 3	15 (dust)	10 (inhaled dust)

Note: Those elements identified by an * and those elements capable of generating highly toxic fumes or dusts (identified by a **) are classified as toxic by EPA in 40 CFR 372.65 and subject to reporting requirements of SARA Title III Section 313 and 40 CFR 372

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Titanium alloys in their solid state present no inhalation, ingestion or contact health hazard. However, inhaling dusts, fumes or mists which may be generated during certain manufacturing procedures (burning, melting, welding, sawing, brazing, grinding and machining) may be hazardous to your health. Dusts may also be irritating to the unprotected skin or eyes.

ACUTE EFFECTS: Excessive exposure to dusts / fumes may cause irritation of eyes, nose or throat. Inhalation of dusts / fumes may result in metal fume fever (metallic taste in mouth, dryness and irritation of throat, chills and fever).

CHRONIC EFFECTS: Prolonged inhalation of fumes or dusts may cause a variety of adverse health effects to the respiratory system, including (but not necessarily limited to) lesions of the mucous membrane, bronchitis, pneumonia and cancers fo the nasal cavity and respiratory tract.

POTENTIAL HEALTH EFFECTS/MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Any pre-existing chronic respiratory condition (asthma, chronic bronchitis, emphysema).

ROUTES OF ENTRY: Inhalation (dusts / fumes / mists), Contact with Skin and Eyes (dusts / mists), Ingestion (dusts).

SECTION 4 - FIRST AID MEASURES

INHALATION: Immediately remove victim to fresh air. If condition persists, consult physician.

EYE CONTACT: Immediately flush with running water to remove particulates, consult physician.

SKIN CONTACT: If irritation develops, remove clothing and wash with soap and water. If condition persists, consult physician.

INGESTION: Consult physician.

NOTE TO PHYSICIAN: None.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: Nonflammable at low temperatures, but will burn at high temperatures.

SPECIAL FIRE FIGHTING INSTRUCTIONS AND EQUIPMENT: None required.

AUTOIGNITION TEMPERATURE: NA

FLAMMABLE LIMITS: Nonflammable.

EXTINGUISHING MEDIA: Do not use water. Use carbon dioxide or dry chemical extinguishing agents.

HAZARDOUS COMBUSTION PRODUCTS: Titanium oxide, Hydrogen gas.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Water applied to hot titanium may evolve hydrogen gas causing an explosion.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: No special procedures needed.

SPECIALIZED EQUIPMENT: None.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Minimize activities which may generate dusts, mists or fumes. Keep areas well ventilated. Use suitable equipment to move materials.

PRECAUTIONS TO BE TAKEN IN STORAGE: None required.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

RESPIRATORY PROTECTION: Wear NIOSH approved dust / mist / fume respirator when welding or burning this metal.

EYE/FACE PROTECTION: Face shields (welding or burning), Safety glasses (cutting or grinding).

OTHER PROTECTIVE EQUIPMENT: Use appropriate protective clothing such as welding aprons and gloves when welding or burning.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Metal **VAPOR PRESSURE:** NA

ODOR: Odorless **BOILING POINT (C) :** NA

PHYSICAL STATE: Solid **SOLUBILITY IN WATER :** Insoluble

VAPOR PRESSURE: NA **SPECIFIC GRAVITY(H2O=1):** 4 . 46 - 4 . 54

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: None.

HAZARDOUS DECOMPOSITION PRODUCTS (when heated): Titanium oxides, Hydrogen.

MATERIALS TO AVOID: Acids, Oxidizing Agents, Halogens.

SECTION 11 - TOXICOLOGY INFORMATION

LETHAL CONCENTRATION (LC50) : None established.

REPRODUCTIVE EFFECTS: NA

LETHAL DOSE (LD50) : NA

MUTAGENICITY: NA

TERATOGENICITY: NA

CARCINOGENIC BY NTP, IARC OR OSHA: No (Note: Fumes / dusts / mists from this material may be carcinogenic if inhaled over long periods of time).

SECTION 12 - ECOLOGICAL INFORMATION

No Adverse ecological effects are expected.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Recycle scrap materials through scrap dealers and brokers. Dispose of used non-cyclable materials in accordance with local, state and federal regulations.

SECTION 14 - TRANSPORT INFORMATION

No special DOT regulations pertaining to this material.

SECTION 15 - REGULATORY INFORMATION

SARA: Some components of this product are classified as toxic by the EPA in 40 CFR 372 . 65 and subject to reporting requirements of SARA Title III Section 313 and 40 CFR 372 . 45

SECTION 16 - OTHER INFORMATION

OTHER PRECAUTIONS: Take appropriate precautions when moving or shipping this material to prevent injury to personnel handling it.

DISCLAIMER:

Information included in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, expressed or implied regarding its accuracy or correctness. The conditions or methods of handling, storage, use and/or disposal of this product are beyond the control and knowledge of the manufacturer. Therefore, the manufacturer cannot assume responsibility for adverse events which may occur in the use and/or misuse of this product and expressly disclaims liability for loss, damage and/or expense arising out of or in any way connected with the handling, storage, use and/or disposal of this product.