



MATERIAL SAFETY DATA SHEET
COMPLIES WITH 29 CFR 1910.1200.
OSHA HAZARD COMMUNICATION RULE

DATE OF LAST REVISION: 10-19-99

CHEMICAL IDENTITY

LABEL IDENTITY	TUNGSTEN-TITANIUM
CHEMICAL NAME/SYNONYMS	TUNGSTEN-TITANIUM
FORMULA	VARIABLE WEIGHT % W-Ti
CHEMICAL FAMILY	METAL ALLOY
HAZARDOUS INGREDIENTS	TUNGSTEN-TITANIUM
%: 100 CAS: 58397-70-9 TLV: Not set 5mg/m3 (W) OSHA/PEL: Not set 5mg/m3(w)	

PHYSICAL AND CHEMICAL PROPERTIES

COLOR, FORM AND ODOR	Gray pieces, no odor
BOILING POINT	Varies
DENSITY (gm/cc)	Varies
VAPOR PRESSURE @ 20°	NA
% VOLATILE BY VOLUME (%)	NA
REACTION WITH WATER	ND
EVAPORATION RATE (H2O=1)	NA
SOLUBILITY IN WATER	ND
MELTING POINT	Varies

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	NA
AUTOIGNITION TEMPERATURE (°C)	NA
FLAMMABILITY	Non-flammable
EXTINGUISHING MEDIA	Use dry chemical, CO₂ or graphite.
SPECIAL FIRE FIGHTING PROCEDURES	Wear a self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes.
UNUSUAL FIRE & EXPLOSION HAZARDS	Material decomposes when heated to emit toxic fumes of Cd.

HEALTH HAZARD INFORMATION

TOXICITY DATA

W-DATA:	orl-rat TDLO: 1210ug/kg (35Wpre)	ipr-rat LD50: 5000mg/kg
Ti DATA:	ims-rat TDLO: 114mg/kg/77W-I TFX:ETA	
	ims-rat TD: 360mg/kg/69W-I TFX:ETA	

HMIS RATING: HEALTH: **2*** FLAMMABILITY: **0** REACTIVITY: **0** PERSONAL PROTECTION: **E**



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ROUTES OF ENTRY

INHALATION:	Yes
SKIN:	No
INGESTION:	Yes

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: **Respiratory Disorders**

EFFECTS OF OVEREXPOSURE (acute and chronic):

INHALATION: **May cause sneezing, coughing, difficulty breathing, nausea and irritation of the respiratory tract.**

DERMAL/EYE: **Mild irritation, itching and burning/ inflammation may result**

OTHER: **Ti Compounds: This material is considered to be physiologically inert. There are no reported cases in the literature where titanium as such has caused intoxication. The dusts of titanium or titanium compounds such as titanium oxide may be place in the nuisance category.**

CARCINOGENICITY: **Experimental** NTP: **No** IARC MONOGRAPHS: **NO** OSHA REGULATE: **NO**

EMERGENCY FIRST AID PROCEDURES:

INGESTION: **Administer 1-2 cups of water and induce vomiting, seek medical attention.**

INHALATION: **Remove to fresh air, seek medical attention.**

SKIN CONTACT: **Wash affected area with soap and water, seek medical attention**

EYE CONTACT: **Flush eyes for at least 15 minutes with lukewarm water, seek medical.**

REACTIVITY DATA

STABILITY	Stable
CONDITIONS CONTRIBUTING TO UNSTABILITY	None
INCOMPATIBILITY (MATERIALS TO AVOID)	ND
HAZARDOUS DECOMPOSITION PRODUCTS	W,Ti
HAZARDOUD POLYMERZATION	Will Not Occur
CONDITIONS TO AVOID	None

SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Wear self-contained breathing apparatus and full protective clothing, vacuum spill and place in container for proper disposal. Take care not to raise dust.

WASTE DISPOSAL METHOD:

Consult federal, state and local regulations for proper disposal.



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SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION	NIOSH approved dust-mist-fume respirator
LOCAL EXHAUST	Maintain below TLV for level W
MECHANICAL (general)	Not recommended
SPECIAL	NA
OTHER	NA
PROTECTIVE GLOVES	Neoprene
EYE PROTECTION	Safety glasses
OTHER PROTECTIVE EQUIPMENT	Wear protective clothing to prevent contamination of skin and clothes

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE:

Store in tightly closed container, store away from heat and incompatible materials, wash hands and face thoroughly after handling and before meals.

TRANSPORTATION REQUIREMENTS	DOT CLASS:	Not Classified
	UN NUMBER:	NC
	IMCO CLASS:	NC
	OTHER:	---

PRECAUTIONARY LABELING NONE

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, **ANGSTROM SCIENCES** MAKE NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR THE RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.

NA= NOT APPLICABLE

ND= NO DATA FOUND



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W COMPOUNDS

Tungsten compounds are considered somewhat more toxic than those of molybdenum. However, industrially, this element does not constitute an important health hazard. There is very little published with reference to its toxicity. Recent studies have failed to indicate any serious toxic effect following the inhalation or the ingestion of various tungsten compounds, although heavy exposure to the dust or ingestion of large amounts of the soluble compounds produces a certain rate of motility in experimental animals.