

Section 1: Product and Company Identification

PRODUCT NAME: Tantalum Products
 CHEMICAL FAMILY: Metal
 CHEMICAL NAME: Ta
 MANUFACTURER: Williams Advanced Materials
 PO Box 1950
 Brewster, NY 10509-8950

EMERGENCY TELEPHONE: 845-279-0900 CHEMTREC 800-424-9300 (24 hour)

Section 2: Composition/Ingredients

MATERIAL	CAS No.	% wt.	* TLV, ACGIH	* PEL, OSHA
Tantalum	7440-25-7	100	5	5

* All concentrations are in milligram per cubic meter of air (mg/m3)

Section 3: Hazard Identification

EMERGENCY OVERVIEW:

The alloys as sold in solid form are generally not considered hazardous. However, if the process involves grinding, melting, cutting or any other process that causes a release of dust or fumes, hazardous levels of airborne particulate could be generated.

PRIMARY ROUTES OF ENTRY: Inhalation, Skin contact.

TARGET ORGANS: Lungs; Skin

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

Listed below are certain potential health hazards, which apply to the hazardous ingredients, found in the subject material

TANTALUM	Inhalation	May be moderately toxic by inhalation
	Skin	Some industrial skin irritation from tantalum has been reported.
	Chronic	Evidence suggests tantalum metal has a low toxicity potential due to poor absorption. Tantalum dust has caused transient inflammatory lesions in the lungs of animals. Systemic industrial poisoning is apparently unknown

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Individuals who may have had allergic reactions to metals or sensitivity, may encounter skin rash or dermatitis, if skin contact with this product occurs. Persons with impaired pulmonary functions, may incur further impairment if dust or fumes are inhaled

CARCINOGENIC REFERENCES:

Not recognized by OSHA as a carcinogen
 Not listed in the National Toxicology Program
 Not listed as a carcinogen by the International Agency on Research on Cancer

Section 4: First Aid Measures

- FIRST AID FOR EYES:** Dust or powder should be flushed from the eyes with running water for 15 minutes. If irritation persists obtain medical assistance.
- FIRST AID FOR SKIN:** Skin cuts and abrasions can be treated by standard first aid. Skin contamination with dust or powder can be removed with soap and water. If irritation persists obtain medical assistance.
- FIRST AID FOR INGESTION:** Obtain medical assistance at once.
- FIRST AID FOR INHALATION:** Breathing difficulty, caused by inhalation of dust or fume requires removal to fresh air. If breathing has stopped perform artificial respiration and seek medical assistance at once.

Section 5: Fire Fighting Measures

- FLAMMABILITY:**
Dust or powder may ignite spontaneously in air.
- EXTINGUISHING MEDIA:** Ordinary extinguishers are often in effective against metal fires; use Type "D" extinguishing agents Do not use water to extinguish fires around operations involving molten metal, due to the potential for steam explosion.
- SPECIAL FIRE FIGHTING PROCEDURES:** Self-contained breathing apparatus should be worn when fighting metal dust fires. High levels of dust or fine particles in the air may ignite or explode.

Section 6: Accidental Release Measures

- SPILL OR LEAK PROCEDURES:** In solid form this material poses no special clean-up problems. Use normal clean up procedures; wet sweeping or HEPA vacuum, for clean up of dust or powder. Do not use compressed air for cleaning.

Section 7: Storage and Handling

- In solid form this material poses no special problems. Store metal in a dry area. Store away from oxidizing agents and halogens

Section 8: Exposure Control/Personal Protection

- EYE PROTECTION REQUIREMENTS:** Safety glasses are recommended.
- SKIN PROTECTION REQUIREMENTS:** Protective gloves are recommended, to prevent mechanical irritation.
- RESPIRATORY PROTECTION:** Not normally required. Use an appropriate NIOSH approved respirator if airborne dust concentration exceed the OSHA, PEL or ACGIH , TLV
- OTHER PROTECTIVE EQUIPMENT:** Eye wash fountain should be readily available in areas of use or handling.
- VENTILATION REQUIREMENTS:**
- LOCAL EXHAUST:** Recommended, when cutting, grinding or melting or any other operation where dust or fumes are created
 - GENERAL:** Recommended

ENVIRONMENTAL SURVEILLANCE:

If the operation generates dust or fumes, exposure to airborne materials should be determined by having air samples taken in the employees breathing zone and work area.

Section 9: Physical and Chemical Properties

PHYSICAL FORM:	Solid metal	COLOR:	Silver/Grey
ODOR:	None	MELT POINT:	2996 °
SOLUBILITY IN WATER:	Insoluble	SPECIFIC GRAVITY:	N/A
VOLATILE BY WEIGHT:	Essentially zero	VAPOR PRESSURE:	N/A
DENSITY:	16.6 g/cm ³		

Section 10: Reactivity

STABILITY:	This is a stable material.	HAZARDOUS POLYMERIZATION:	Will not occur.
INCOMPATIBILITIES:	Oxidizing agents Halogens, Bases, Hydrogen fluoride (HF)		
DECOMPOSITION PRODUCTS:	None under proper usage conditions.		
CONDITIONS TO AVOID:	Conditions which create dust or fumes. Exposure to high heat or flame		

Section 11: Toxicological Information

Tumorigenic effects have been observed on tests with laboratory animals.
Under normal use of the solid form of this material there are few health hazards. Welding, cutting grinding or any process creating dust, fume or oxide may cause hazardous levels of certain elements, as addressed in Section 2.

Section 12: Ecological Information

In solid form this material poses no special environmental problems. Metal powder or dust may have significant impact on air and water quality. Emissions, spills and releases to the environment should be controlled immediately.

Section 13: Disposal Considerations

Because of its high intrinsic value this material should be reclaimed. Dispose of in accordance with all applicable Federal, State and Local Regulations.

Section 14: Transportation Information

D.O.T. SHIPPING NAME:	Not Regulated in Solid Form	TECHNICAL SHIPPING NAME:	Metal
D.O.T. HAZARD CLASS:	None	UN/NA NUMBER:	None
PRODUCT RQ:	None		

AIR TRANSPORT:

ICAO - IATA, Dangerous Goods Regulations: Not Regulated, in solid form

Section 15: Regulatory Information**OSHA STATUS:**

No specific regulations. The Hazard Communication Standard of the Occupational Safety and Health Administration, 29 CFR 1910.1200 considers components of this product a Hazardous Substance.

TSCA STATUS:

All components of this product are listed in the US Environmental Protection Agency on the TSCA Chemical Substance Inventory

RCRA STATUS: Not regulated, in solid form

SARA TITLE III:

The constituents of this alloy contain hazardous substances, above one (1) percent, and are subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know act of 1986 and 40CFR372.

SUBSTANCE	CAS No.	PERCENT MAXIMUM
None		

INTERNATIONAL

CANADA – WHMIS Disclosure List
N/A

EUROPEAN UNION
Risk Phrase
N/A

Section 16: Other Information

PREPARED BY: Lee Oman, CECM

DATE OF REVISION: April 2006

This MSDS has been revised following the guidelines outlined in the American National Standard for Hazardous Materials Z400.1.1393 "Material Safety Data Sheets – Preparation"

DISCLAIMER:

The information and recommendations are taken from sources believed to be accurate. Williams Advanced Materials makes no warranty with respect of the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.

**Material Safety Data Sheet
Chromium Products**

**WAMTF-061
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Section 1: Product and Company Identification

PRODUCT NAME: Chromium Products
CHEMICAL FAMILY: Metal
CHEMICAL NAME: Cr
MANUFACTURER: Williams Advanced Materials.
PO Box 1950
Brewster, NY 10509-8950

EMERGENCY TELEPHONE: 845-279-0900 CHEMTREC 800-424-9300 (24 hour)

Section 2: Composition/Ingredients

MATERIAL	CAS No.	% at.	* TLV, ACGIH	* PEL, OSHA
Chromium	7440-47-3	100	0.5	1.0

* All exposure limits are in milligram per cubic meter of air (mg/m³)

Section 3: Hazard Identification

EMERGENCY OVERVIEW:

The material as sold in solid form is generally not considered hazardous. However, if the process involves grinding, melting, cutting or any other process that causes a release of dust or fumes, hazardous levels of airborne particulate could be generated.

PRIMARY ROUTES OF ENTRY: Inhalation, Skin contact

TARGET ORGANS: Respiratory tract; Skin

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

Listed below are certain potential health hazards, which apply to the hazardous ingredients, found in the subject alloy(s).

CHROMIUM: Inhalation - Chromium dusts can cause irritation of the nose, throat and mucous membranes as well as soreness of the nose and throat.
Ingestion - Irritating with gastrointestinal effects.
Chronic - Chronic overexposure to dust or fumes may result in bronchial asthma, lung fibrosis or pneumoconiosis. To the best of our knowledge and chronic toxicity of this substance is not fully known

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Individuals who may have had allergic reactions to metal or sensitivity, may encounter skin rash or dermatitis, if skin contact with this product occurs. Persons with impaired pulmonary functions, may incur further impairment if dust or fumes are inhaled

CARCINOGENIC REFERENCES:

IARC-3: Not classifiable as to carcinogenicity to humans
ACGIH A4: Not classifiable as a human carcinogen. Inadequate data on which to classify the agent in terms of it's carcinogenicity in humans and/or animals.

Section 4: First Aid Measures

- FIRST AID FOR EYES:** Dust or powder should be flushed from the eyes with running water for 15 minutes. If irritation persists obtain medical assistance.
- FIRST AID FOR SKIN:** Skin cuts and abrasions can be treated by standard first aid. Skin contamination with dust or powder can be removed with soap and water. If irritation persists obtain medical assistance.
- FIRST AID FOR INGESTION:** Obtain medical assistance at once.
- FIRST AID FOR INHALATION:** Breathing difficulty, caused by inhalation of dust or fume requires removal to fresh air. If breathing has stopped perform artificial respiration and seek medical assistance at once.

Section 5: Fire Fighting Measures

- FLASH POINT:** Non-flammable as a solid
- EXTINGUISHING MEDIA:** This material is non-combustible, for surrounding fires use appropriate extinguishing agent. Do not use water to extinguish fires around operations involving molten metal, due to the potential for steam explosion.
- SPECIAL FIRE FIGHTING PROCEDURES:** Self-contained breathing apparatus should be worn when fighting metal dust fires. High levels of dust or fine particles in the air may ignite or explode.

Section 6: Accidental Release Measures

- SPILL OR LEAK PROCEDURES:** In solid form this material poses no special clean-up problems. Use normal cleanup procedures; wet sweeping or HEPA vacuum, for clean up of dust or powder. Do not use compressed air for cleaning.

Section 7: Storage and Handling

- In solid form this material poses no special problems. Store metal in a dry area. Do not store adjacent to acids.

Section 8: Exposure Control/Personal Protection

- EYE PROTECTION REQUIREMENTS:** Safety glasses are recommended.
- SKIN PROTECTION REQUIREMENTS:** Protective gloves are recommended, to prevent mechanical irritation.
- RESPIRATORY PROTECTION:** Not normally required. Use an appropriate NIOSH approved respirator if airborne dust concentration exceed the OSHA, PEL or ACGIH , TLV
- OTHER PROTECTIVE EQUIPMENT:** Eye wash fountain should be readily available in areas of use or handling.
- EXPOSURE LIMITS:** Not established for product as whole. Refer to Section 2.
- VENTILATION REQUIREMENTS:**
- LOCAL EXHAUST:** Recommended, when cutting, grinding or melting or any other operation where dust or fumes are created
- GENERAL:** Recommended

**Material Safety Data Sheet
Chromium Products**

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ENVIRONMENTAL SURVEILLANCE: If the operation generates dust or fumes, exposure to airborne materials should be determined by having air samples taken in the employees breathing zone and work area.

Section 9: Physical and Chemical Properties

PHYSICAL FORM:	Solid metal	COLOR:	Silver/Gray
ODOR:	None	MELT POINT:	1875°
SOLUBILITY IN WATER:	Insoluble	SPECIFIC GRAVITY:	N/A
VOLATILE BY WEIGHT:	Essentially zero	VAPOR PRESSURE:	Varies
DENSITY:	7.19 g/cm ³ @ 20 °		

Section 10: Reactivity

STABILITY: This is a stable material. **HAZARDOUS POLYMERIZATION:** Will not occur.

INCOMPATIBILITIES: Acids and Strong Oxidizers.

DECOMPOSITION PRODUCTS: None under proper usage conditions.

CONDITIONS TO AVOID: Conditions which create dust or fumes.

Section 11: Toxicological Information

Under normal use of the solid form of this material there are few health hazards. Welding, cutting grinding or any process creating dust, fume or oxide may cause hazardous levels of certain elements, as addressed in Section 2.

Section 12: Ecological Information

In solid form this material poses no special environmental problems. Metal powder or dust may have significant impact on air and water quality. Emissions, spills and releases to the environment should be controlled immediately.

Section 13: Disposal Considerations

Because of its high intrinsic value this material should be reclaimed. Dispose of in accordance with all applicable Federal, State and Local Regulations.

Section 14: Transportation Information

D.O.T. SHIPPING NAME:	Not regulated	TECHNICAL SHIPPING NAME:	Metal Alloy
D.O.T. HAZARD CLASS:	None	UN/NA NUMBER:	None
PRODUCT RQ:	None		

AIR TRANSPORT:

ICAO/IATA, Dangerous Goods Regulations: Not Regulated, in solid form

Section 15: Regulatory Information

HMIS Rating: Chromium

HMIS uses an asterisk (*) to convey the presence of chronic hazard

OSHA STATUS: No specific regulations. The Hazard Communication Standard of the Occupational Safety and Health Administration, 29 CFR 1910.1200, considers components of this product a Hazardous Substance.



**Material Safety Data Sheet
Chromium Products**

**WAMTF-061
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TSCA STATUS:

All components of this product are listed in the US Environmental Protection Agency on the TSCA Chemical Substance Inventory

RCRA STATUS:

Not regulated, in solid form

SARA TITLE III:

The constituents of this alloy contain hazardous substances, above one (1) percent, and are subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know act of 1986 and 40CFR372.

SUBSTANCE	CAS No.	PERCENT MAXIMUM
Chromium	7440-47-3	100

INTERNATIONAL REGULATIONS:

CANADA – WHMIS Disclosure List:

Chromium fall into - Subdivision A of Division 2 of Class D,
as defined by Section 54, of SOR/DORS/88-66

EUROPEAN UNION - Risk Phase

R-42/43, R-68

Section 16: Other Information

PREPARED BY: Lee Oman, CECM

DATE OF REVISION: May 2006

This MSDS has been revised following the guidelines outlined in the American National Standard for Hazardous Materials Z400.1.1393 "Material Safety Data Sheets – Preparation"

DISCLAIMER:

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Section 1: Product and Company Identification

PRODUCT NAME: SilverTech PT-1, Part A
 CHEMICAL FAMILY: Metal
 CHEMICAL NAME: Silver Filled Epoxy Resin
 MANUFACTURER: Williams Advanced Materials Inc.
 PO Box 1950
 Brewster, NY 10509-8950

EMERGENCY TELEPHONE: 845-279-0900 CHEMTREC 800-424-9300 (24 hour)

Section 2: Composition/Ingredients

MATERIAL	CAS No.	% wt.	* TLV, ACGIH	* PEL, OSHA
Silver	7440-22-4	65 - 75	0.1	0.1
Epoxy Resin	25068-38-6	20 - 30	N/A	N/A
N-Butyl Glycidyl Ether	2426-08-6	3 - 10	25	35

* All concentrations are in milligram per cubic meter of air (mg/m³)

Section 3: Hazard Identification

PRIMARY ROUTES OF ENTRY: Inhalation, Skin contact.

TARGET ORGANS: Respiratory tract; Skin

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

Listed below are certain potential health hazards, which apply to the hazardous ingredients, found in the subject Material

SILVER:	Chronic	Skin contact or inhalation, may lead to a condition called Argyrosis. A local or centralized discoloration of the eyes, skin and mucous membrane, where gray/blue patches of pigmentation are formed.
EPOXY RESIN	Skin/Eye	Strong irritant in uncured state
ETHER	Skin/Eye Inhalation Ingestion	Severe eye/skin irritant Mildly toxic by inhalation Toxic by ingestion

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Individuals who may have had allergic reactions to metals or sensitivity, may encounter skin rash or dermatitis, if skin contact with this product occurs. Persons with impaired pulmonary functions, may incur further impairment if dust or fumes are inhaled

CARCINOGENIC REFERENCES:

N-Butyl Glycidyl Ether is a suspected carcinogen. Mutation data has been reported

Section 4: First Aid Measures

- FIRST AID FOR EYES:** Flush from the eyes with running water for 15 minutes. Obtain medical assistance.
- FIRST AID FOR SKIN:** Skin contamination can be removed with soap and water. If irritation persists obtain medical assistance.
- FIRST AID FOR INGESTION:** Obtain medical assistance at once.
- FIRST AID FOR INHALATION:** Breathing difficulty, caused by inhalation of dust or fume requires removal to fresh air. If breathing has stopped perform artificial respiration and seek medical assistance at once.

Action 5: Fire Fighting Measures

- FLASH POINT:** 464⁰ F
- EXTINGUISHING MEDIA:** Use dry chemical or Foam. For surrounding fires use appropriate extinguishing agent. Do not use water to extinguish fires around operations involving molten metal, due to the potential for steam explosion.
- SPECIAL FIRE FIGHTING PROCEDURES:** Self-contained breathing apparatus should be worn when fighting metal fires. May emit acid and irritating fumes

Section 6: Accidental Release Measures

- SPILL OR LEAK PROCEDURES:** Keep liquid and vapors away from heat spark and flame. Hot surfaces may ignite liquid product even in the absence of sparks or flame

Section 7: Storage and Handling

- In solid form this material poses no special problems. Store metal in a dry area. Do not store adjacent to acids.

Section 8: Exposure Control/Personal Protection

- EYE PROTECTION REQUIREMENTS:** Safety glasses are recommended.
- SKIN PROTECTION REQUIREMENTS:** Protective gloves are recommended, to prevent mechanical irritation.
- RESPIRATORY PROTECTION:** Not normally required. Use an appropriate NIOSH approved respirator if airborne dust concentration exceed the OSHA, PEL or ACGIH , TLV
- OTHER PROTECTIVE EQUIPMENT:** Eye wash fountain should be readily available in areas of use or handling.
- EXPOSURE LIMITS:** Not established for product as whole. Refer to Section 2.
- VENTILATION REQUIREMENTS:**
- LOCAL EXHAUST:** Recommend use of Fume Hood, rated for hazardous location
- GENERAL:** Recommended

ENVIRONMENTAL SURVEILLANCE: If the operation generates dust or fumes, exposure to airborne materials should be determined by having air samples taken in the employees breathing zone and work area.

Section 9: Physical and Chemical Properties

PHYSICAL FORM:	Paste	COLOR:	Silvery
ODOR:	Slight odor	MELT POINT:	N/A
SOLUBILITY IN WATER:	Insoluble	SPECIFIC GRAVITY:	1.19
VOLATILE BY VOLUME:	0.8	VAPOR PRESSURE:	N/A
DENSITY:	Varies		

Section 10: Reactivity

STABILITY: This is a stable material. HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBILITIES: Acids, Oxidizers and Strong Bases.

DECOMPOSITION PRODUCTS: Co, Co², Aldehydes.

CONDITIONS TO AVOID: Conditions which create fumes.

Section 11: Toxicological Information

There is no information on the toxicity of these materials as a whole.
Ether: oral-rat LD50 2050 mg/kg,

Section 12: Ecological Information

Material may have significant impact on air and water quality. Emissions, spills and releases to the environment should be controlled immediately.

Section 13: Disposal Considerations

Because of its high intrinsic value this material should be reclaimed. Dispose of in accordance with all applicable Federal, State and Local Regulations.

Section 14: Transportation Information

D.O.T. SHIPPING NAME:	Not regulated	TECHNICAL SHIPPING NAME:	Metal Alloy
D.O.T. HAZARD CLASS:	None	UN/NA NUMBER:	None
PRODUCT RQ:	None		

IATA, Dangerous Goods Regulations: Not Regulated, in solid form

Section 15: Regulatory Information

OSHA STATUS: No specific regulations. The Hazard Communication Standard of the Occupational Safety and Health Administration, 29 CFR 1910.1200, considers components of this product a Hazardous Substance.

TSCA STATUS:

These products are a mixture. Components of these products are listed on the TSCA Chemical Substance Inventory of Existing Chemical Substances.

SARA TITLE III: The constituents of this alloy contain hazardous substances, above one(1) percent, and are subject to the reporting requirements under SARA Title III Section 313.

SUBSTANCE	CAS No.	PERCENT MAXIMUM
Silver	7440-22-4	75

INTERNATIONAL REGULATIONS

CANADA – WHMIS Disclosure List:

Material does not fall into any Division, as defined by any Section of,
SOR/DORS-88-66

EUROPEAN UNION

Risk Phrase:
R-36/37/38

Section 16: Other Information

PREPARED BY: Lee Oman, CECM

DATE OF REVISION: July 2004

This MSDS has been revised following the guidelines outlined in the American National Standard for Hazardous Materials Z400.1.1393 "Material Safety Data Sheets – Preparation"

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