

**MATERION****1. Chemical and company identification**

Name of chemical (Product name) Tungsten Titanium Target

Supplier's company name, address and phone number

Company name Materion Advanced Materials

Address 6070 Parkland Boulevard  
Mayfield Heights, OH 44124 United States

Contact person Theodore Knudson

Telephone EH&S 1.216.383.4019

e-mail address ehs@materion.com

Emergency telephone number See Section 16.

Reference number G02

**2. Hazards identification****GHS classification**

Physical hazards The product is not classified according to GHS.

Health hazards Serious eye damage/eye irritation Category 2B  
Specific target organ toxicity, single exposure Category 3 respiratory tract irritation

Environmental hazards The product is not classified according to GHS.

**GHS label elements****Pictograms**

Signal words Warning

Hazard statement Causes eye irritation. May cause respiratory irritation.

**Precautionary statement**

Prevention Avoid breathing dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Observe good industrial hygiene practices.

Response IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER/doctor if you feel unwell. If eye irritation persists: Get medical advice/attention. Wash hands after handling.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards which do not result in classification None known.

Supplemental information For further information, please contact the Product Stewardship Department at +1.216.383.4019.

**Main symptoms and emergency overview**

Main symptoms Irritation of eyes. May cause respiratory irritation.

Emergency overview Causes eye irritation. May cause irritation to the respiratory system.

**3. Composition/information on ingredients**

Substance or mixture Mixture

**Gazette notification**

Components	CAS Number	ENCS no.	ISHL no.	Concentration (%)
Tungsten	7440-33-7			70 - 95
Titanium	7440-32-6			5 - 30

Chemical formula W (7440-33-7), Ti (7440-32-6)

## 4. First aid measures

<b>If inhaled</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
<b>If on skin</b>	Wash off with soap and water. Get medical attention if irritation develops and persists.
<b>If in eyes</b>	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
<b>If swallowed</b>	Rinse mouth. Drink plenty of water. Get medical attention if symptoms occur.
<b>Most important symptoms/effects, acute and delayed</b>	Nausea. Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort. May cause respiratory irritation. Coughing. None known.
<b>Protection of first-aid responders</b>	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
<b>Notes to physician</b>	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

## 5. Fire-fighting measures

<b>Extinguishing media</b>	Dry sand, sodium chloride powder, graphite powder or Met-L-X powder.
<b>Extinguishing media to avoid</b>	Water. Carbon dioxide (CO <sub>2</sub> ).
<b>Specific hazards</b>	This product is not flammable.
<b>Special fire fighting procedures</b>	Move containers from fire area if you can do so without risk.
<b>Protection of fire-fighters</b>	Wear suitable protective equipment.
<b>General fire hazards</b>	No unusual fire or explosion hazards noted.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.

## 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
<b>Environmental precautions</b>	Avoid discharge into drains, water courses or onto the ground.
<b>Methods and materials for containment and cleaning up</b>	<p>The product is immiscible with water and will spread on the water surface. Clean up in accordance with all applicable regulations.</p> <p>Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.</p> <p>Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.</p> <p>Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.</p>

## 7. Handling and storage

<b>Handling</b>	
<b>Technical measures (e.g. Local and general ventilation)</b>	Provide adequate ventilation.
<b>Safe handling advice</b>	Avoid contact with eyes. Avoid prolonged exposure. Observe good industrial hygiene practices. Use personal protection recommended in Section 8 of the SDS.
<b>Contact avoidance measures</b>	Acids. Caustics. Chlorine. Fluorine. For further information, please refer to section 10 of the SDS.
<b>Hygiene measures</b>	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

## Storage

**Safe storage conditions** Store locked up. Keep container tightly closed. Store away from incompatible materials (see Section 10 of the SDS).

**Safe packaging materials** Store in original tightly closed container.

## 8. Exposure controls/personal protection

**Control parameters** Follow standard monitoring procedures.

### Occupational exposure limits

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Tungsten (CAS 7440-33-7)	TWA	3 mg/m <sup>3</sup>	Respirable fraction.

**Engineering measures** Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

### Personal protective equipment

**Respiratory protection** In case of insufficient ventilation, wear suitable respiratory equipment.

**Hand protection** Wear gloves to prevent metal cuts and skin abrasions during handling.

**Eye protection** Wear safety glasses with side shields (or goggles).

**Skin and body protection** Wear suitable protective clothing.

## 9. Physical and chemical properties

**Physical state** Solid.

**Form** Solid.

**Color** Grey.

**Odor** None.

**Odor threshold** Not applicable.

**Melting point/freezing point** 3632 - 4532 °F (2000 - 2500 °C) estimated / Not applicable.

**Boiling point, initial boiling point, and boiling range** 7232 °F (4000 °C) estimated

**Combustibility** Not applicable.

### Lower and upper explosion limit / flammability limit

**Flammability limit - lower (%)** Not applicable.

**Flammability limit - upper (%)** Not applicable.

**Flammability limit - upper (%) temperature** Not applicable.

**Explosive limit - lower (%)** Not applicable.

**Explosive limit - lower (%) temperature** Not applicable.

**Explosive limit - upper (%)** Not applicable.

**Explosive limit - upper (%) temperature** Not applicable.

**Flash point** Not applicable.

**Auto-ignition temperature** Not applicable.

**Decomposition temperature** Not applicable.

**pH** Not applicable.

**Kinematic viscosity** Not applicable.

### Solubility(ies)

**Solubility (water)** Insoluble.

**Partition coefficient (n-octanol/water) (log value)** Not applicable.

Vapor pressure	0.00001 hPa estimated
<b>Density and/or relative density</b>	
Density	18.00 g/cm <sup>3</sup>
Relative density	Not applicable.
Vapor density	Not applicable.
Particle characteristics	Not applicable.
<b>Other information</b>	
Evaporation rate	Not applicable.
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Viscosity (Coefficient of viscosity)	Not applicable.

## 10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Acids. Caustics. Chlorine. Fluorine.
Hazardous decomposition products	Not applicable.

## 11. Toxicological information

Acute toxicity	Not known.
Skin corrosion/irritation	Not relevant, due to the form of the product.
Serious eye damage/eye irritation	Causes eye irritation.
<b>Respiratory or skin sensitization</b>	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	Not a skin sensitizer.
Germ cell mutagenicity	Not classified.
Carcinogenicity	Not available.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

## 12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous.
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.
Bioaccumulation	No data available.
Mobility in soil	The product is insoluble in water.
Hazardous to the ozone layer	No data available.
Other hazardous effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

### 13. Disposal considerations

<b>Residual waste</b>	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options.
<b>Contaminated packaging</b>	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
<b>Local disposal regulations</b>	Contract with a disposal operator licensed by the Law on Disposal and Cleaning. Dispose of contents/container in accordance with local/regional/national/international regulations. When your own wastewater treatment plant is not available, collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste.

### 14. Transport information

#### IATA

Not regulated as dangerous goods.

#### IMDG

Not regulated as dangerous goods.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable.

**National regulations** Follow regulation in section 15 for domestic transportation.

### 15. Regulatory information

#### Industrial Safety and Health Act

##### Notifiable substances

TUNGSTEN AND TUNGSTEN COMPOUNDS, WATER-SOLUBLE Table 9 Ordinance No. 337 70 - 95 %

##### Labeling substances

TUNGSTEN (POWDER) 70 - 95 %  
TUNGSTEN AND TUNGSTEN COMPOUNDS, WATER-SOLUBLE 70 - 95 %

#### Poisonous and Deleterious Substances Control Act

##### Specified poisonous substances

Not regulated.

##### Poisonous substances

Not regulated.

##### Deleterious substances

Not regulated.

#### Act on the Regulation of Manufacture and Evaluation of Chemical Substances

##### Class I specified chemical substances

Not regulated.

##### Class II specified chemical substances

Not regulated.

##### Monitoring chemical substances

Not regulated.

##### Priority Assessment Chemical Substances (PACs)

Not regulated.

##### Reporting Exempted Substances

Not regulated.

#### Law concerning Pollutant Release and Transfer Register

##### Specified class 1 substances (substance name, ordinance number and content)

Not regulated.

##### Class 1 substances (substance name, ordinance number and content)

Not regulated.

##### Class 2 substances (substance name, ordinance number and content)

Not regulated.

**Ship Safety Law, Dangerous Goods Marine Transport and Storage Rule**

Not regulated.

**Air Law, Enforcement Rule**

Not regulated.

**Explosives Control Act**

Not regulated.

## 16. Other information

### Bibliography

ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices  
HSDB® - Hazardous Substances Data Bank  
IARC Monographs. Overall Evaluation of Carcinogenicity  
National Toxicology Program (NTP) Report on Carcinogens  
Japan Society for Occupational Health, Recommendation of Occupational Exposure Limits  
Japan Chemical Industry Association (JCIA) GHS Guideline, June 2012  
JIS Z 7252:2014 Classification of chemicals based on "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)"  
JIS Z 7253:2012 Hazard communication of chemicals based on GHS - Labelling and Safety Data Sheet (SDS)

### Further information

Transportation Emergency  
Call Chemtrec at:  
US: 800.424.9300  
International: 703.741.5970  
Spain: 900.868.538  
Switzerland: 0800.564.402  
Chemtrec's toll free, mobile-enabled number in Germany – 0800 1817059  
South Korea Toll-free Number – 080-880-0468

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### Other information

Revised information in Section 1.  
Revised information in Section 2.  
Revised information in Section 3.  
Revised information in Section 8.