

## MATERIAL SAFETY DATA SHEET

### PRODUCT NAME : ZIRCONIUM SPUTTER TARGETS

#### 1. Product and Company Identification

Product name: Zirconium sputter targets  
Synonyms: None  
Item Numbers: E40010613

#### European Contact Details

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Chemtrec: 1-800-424-9300

#### 2. Hazards Identification

##### EMERGENCY OVERVIEW

These products when properly handled according to good working and hygienic practices are not dangerous to human health and the environment.

For short and long term exposure effects see Section 11 Toxicological Information.

Eye Effects: None anticipated for intact targets.

Skin Effects: None anticipated for intact targets.

Ingestion/Oral Effects: None anticipated for intact targets.

Inhalation Effects: None anticipated for intact targets.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known for intact targets.

NFPA Hazard codes		HMIS Hazard codes		Rating System
Health	0	Health	0	0 = No Hazard
Flammability	0	Flammability	0	1 = Slight Hazard
Instability	0	Reactivity	0	2 = Moderate Hazard
				3 = Serious Hazard
				4 = Severe Hazard

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### 3. Composition/Information on Ingredients

Ingredient	% Weight	CAS No	Hazard class*	Risk phrase*
Zirconium (Zr)	99.7	7440-67-7	Not applicable	None

\*Hazard class & Risk phrase. These columns are only completed for ingredients which are classified as hazardous under EU Directive No 1272/2008 (as amended) and are present in sufficient concentration to make the overall substance hazardous. In all other situations, the column will be completed as "Not applicable".

### 4. First Aid Measures

Eyes: None necessary for intact targets.  
Skin: None necessary for intact targets.  
Ingestion/Oral: None necessary for intact targets.  
Inhalation: None necessary for intact targets.  
Other Information: None.

### 5. Fire Fighting Measures

Extinguishing Media: Solid metal is not ignitable: use extinguishing media suitable for the surrounding fire.

Fire and Explosion Hazard: At temperatures above 200 °C (392 °F) zirconium reacts exothermically with the following: fluorine, chlorine, bromine, iodine, halocarbons, carbon tetrachloride, carbon tetrafluoride and Freons.

Special Protective Equipment for Fire Fighters: Wear protective clothing suitable for the surrounding fire and use respiratory equipment where necessary.

For Flammability Properties - see Section 9

### 6. Accidental Release Measures

Collect the spilled targets and reuse or dispose of as required.

### 7. Handling and Storage

Handling: No special requirements.  
Storage: No special requirements.

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#### 8. Exposure Controls/Personal Protection

##### Exposure Limits:

Ingredient	ACGIH - TLV -	OSHA - PEL	Occupational Exposure Limits EH40 (UK)
Zirconium	5 mg/m <sup>3</sup> - TWA	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup> - STEL

##### Personal Protection:

Engineering Measures:	No special requirements necessary for intact targets.
Respiratory Protection:	No special requirements necessary for intact targets.
Hand/Skin Protection:	No special requirements necessary for intact targets. If required, wear gloves to prevent cuts.
Eye/Face Protection:	No special requirements necessary for intact targets.
Hygiene Measures:	No special requirements necessary for intact targets.
Other/General Protection:	None.

#### 9. Physical and Chemical Properties

Appearance and Odour	Similar to stainless steel	Boiling point	4377 / 7910	°C/°F
pH (as supplied)	Not applicable	Freezing Point	1852 / 3365	°C/°F
Solubility in Water	Insoluble	Auto Ignition	Not applicable	°C/°F
Volatile Content by Volume	None	Flash Point	Not applicable	°C/°F
Specific Gravity	6.49			
Vapour Pressure (mbar)	0 at 2 °C	Vapour Pressure (Torr)	0 at 35 °F	

#### 10. Stability and Reactivity

Stability:	Stable under normal conditions.
Material/Conditions to Avoid:	Hydrofluoric acid and hydrofluoric-nitric acid mixtures rapidly dissolve zirconium. Avoid temperatures above 200 °C (392 °F): see Section 5 - Fire Fighting Measures. Nitrite fluoride (FNO <sub>2</sub> ) reacts with zirconium at room temperature, to produce a glowing or white incandescence.
Hazardous Decomposition:	Reactions with incompatible materials generate hazardous reaction products such as flammable hydrogen, toxic fumes of nitrogen oxides, or corrosive zirconium halide vapours.
Hazardous Polymerisation:	Will not occur.

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### 11. Toxicological Information

For a comprehensive description for the various toxicological (health) effects which may arise if the user comes into contact with the substance or preparation refer to Section 2 Hazards Identification.

#### Animal Data:

LD50 value: No data available

LC50 value: No data available

#### Carcinogenicity:

Zirconium is not a carcinogen.

### 12. Ecological Information

Zirconium is considered to be non-toxic.

### 13. Disposal Considerations

Recycle (reuse) targets if possible. Alternatively, dispose of used targets in accordance with local and national requirements.

### 14. Transport Information

This product is not classified as dangerous under transport regulations.

PARAMETER	EUROPEAN	CANADIAN TDG	UNITED STATES DOT
Proper Shipping Name	Not applicable	Not applicable	Not applicable
Hazard Class	Not applicable	Not applicable	Not applicable
Identification Number	Not applicable	Not applicable	Not applicable
Shipping Label	Not applicable	Not applicable	Not applicable

### 15. Regulatory Information

#### European Regulatory Information

This product has been classified in accordance with EU Regulation No 1272/2008 (as amended) on the Classification, Labelling and Packaging of Substances and Mixtures.

Classified as dangerous to supply : No

Risk Phrases : None.

Safety Phrases : None.

Symbols : None

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#### United States Regulatory Information

Product is a manufactured article not subject to TSCA listing.

##### SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product constitutes an "article" and, as such is exempt from SARA 313 reporting requirements (40 CFR Part 372.38, Paragraph B).

California Proposition 65: This product does not contain chemicals known to the State of California to cause cancer or reproductive toxicity.

#### Canadian Regulatory Information

WHMIS Classification: Product is a manufactured article not subject to WHMIS regulations.

Product is a manufactured item not subject to DSL listing.

#### 16. Other Information

This MSDS is compiled in accordance with ANSI Z400.1 and Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Sources of information for this data sheet:

- Allegheny Technologies "ZIRCONIUM METAL" Material Safety Data Sheet. Revised: 6/11/03. Product Number: 301.

#### Glossary:

ACGIH - American Conference of Governmental Industrial Hygienists; **Canadian TDG** - Canadian Transportation of Dangerous Goods; **CAS** - Chemical Abstracts Service; **CFR** - Code of Federal Regulations; **Chemtrec** - Chemical Transportation Emergency Center (US); **DSL** - Domestic Substances List; **EH40 (UK)** - HSE Guidance Note EH40 Occupational Exposure Limits; **EU** - European Union; **HMIS** - Hazardous Material Information Service; **LC** - Lethal Concentration; **LD** - Lethal Dose; **NFPA** - National Fire Protection Association; **OSHA** - Occupational Safety and Health Administration, US Department of Labour; **PEL** - Permissible Exposure Limit; **SARA (Title III)** - Superfund Amendments and Reauthorization Act; **SARA 313** - Superfund Amendments and Reauthorization Act, Section 313; **STEL** - Short Term Exposure Limit; **TLV** - Threshold Limit Value; **TSCA** - Toxic Substances Control Act Public Law 94-469; **TWA** - Time-Weighted Average; **US DOT** - US Department of Transportation; **WHMIS** - Workplace Hazardous Materials Information System.

#### Revisions:

January 2011 - Data Sheet updated to reflect the latest regulatory and supplier safety information.

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