

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

Name of chemical (Product name) **Zirconium Copper Targets**

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 G54

2. Hazards identification**GHS classification**

The product is not classified according to GHS.

GHS label elements

Pictograms None.

Signal words None.

Hazard statement 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.

Precautionary statement

Prevention Observe good industrial hygiene practices.

Response Wash hands after handling.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

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 Direct contact with eyes may cause temporary irritation.

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.

3. Composition/information on ingredients

Substance or mixture Mixture

Chemical name or generic name	CAS Number	Gazette notification		Concentration (%)
		ENCS no.	ISHL no.	
Zirconium	7440-67-7			50 - 75
Copper	7440-50-8			25 - 50

Chemical formula Zr (7440-67-7), Cu (7440-50-8)

4. First aid measures

If inhaled Move to fresh air. Call a physician if symptoms develop or persist.

If on skin Wash off with soap and water. Get medical attention if irritation develops and persists.

If in eyes 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.

If swallowed Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed Under normal conditions of intended use, this material does not pose a risk to health.

Protection of first-aid responders 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.

5. Fire-fighting measures

Extinguishing media Powder. Dry sand.

Extinguishing media to avoid Carbon dioxide (CO2).

Specific hazards Non-combustible, substance itself does not burn.

Special fire fighting procedures Move containers from fire area if you can do so without risk.

Protection of fire-fighters Wear suitable protective equipment.

General fire hazards No unusual fire or explosion hazards noted.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.

Environmental precautions No special environmental precautions required.

Methods and materials for containment and cleaning up Stop the flow of material, if this is without risk. Collect and dispose of spillage as indicated in section 13 of the SDS.

7. Handling and storage

Handling

Technical measures (e.g. Local and general ventilation) Provide adequate ventilation.

Safe handling advice Avoid contact with eyes. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Observe good industrial hygiene practices. Use personal protection recommended in Section 8 of the SDS.

Contact avoidance measures Chlorine. Fluorine. For further information, please refer to section 10 of the SDS.

Hygiene measures 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
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Zirconium (CAS 7440-67-7)	STEL	10 mg/m3	
	TWA	5 mg/m3	

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	Not available.
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	Not applicable.
Boiling point, initial boiling point, and boiling range	Not applicable.
Combustibility	Not applicable.
Lower and upper explosion limit / flammability limit	
Flammability limit - lower (%)	Not applicable.
Flammability limit - lower (%) temperature	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 available.
Solubility(ies)	
Solubility (water)	Insoluble.
Partition coefficient (n-octanol/water) (log value)	Not applicable.
Vapor pressure	Not applicable.
Density and/or relative density	
Density	Not applicable.
Relative density	Not applicable.
Vapor density	Not applicable.
Particle characteristics	Not available.
Other information	
Evaporation rate	Not applicable.
Explosive properties	Not explosive.
Flammability	Not flammable.
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. Alkalies.
Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information

Acute toxicity None known.
Skin corrosion/irritation Not likely, due to the form of the product.
Serious eye damage/eye irritation None known.
Respiratory or skin sensitization
Japan Society for Occupational Health: Skin sensitizer
Copper (CAS 7440-50-8) 2 Probable skin sensitizer.
Respiratory sensitization Not a respiratory sensitizer.
Skin sensitization Not a skin sensitizer.
Germ cell mutagenicity Not classified.
Carcinogenicity Not classifiable as to carcinogenicity to humans.
ACGIH Carcinogens
Zirconium (CAS 7440-67-7) A4 Not classifiable as a human carcinogen.
Reproductive toxicity Not classified.
Specific target organ toxicity - single exposure Not classified.
Specific target organ toxicity - repeated exposure Not classified.
Aspiration hazard Not an aspiration hazard.

12. Ecological information

Ecotoxicological data

Components		Species	Test Results
Copper (CAS 7440-50-8)			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Blue crab (<i>Callinectes sapidus</i>)	0.0031 mg/l
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>)	0.0219 - 0.0446 mg/l, 96 hours

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability No data is available on the degradability of any ingredients in the mixture.
Bioaccumulation No data available.
Mobility in soil No data available for this product.
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

Residual waste	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).
Contaminated packaging	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.
Local disposal regulations	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	
COPPER AND COPPER COMPOUNDS	Table 9 Ordinance No. 379 25 - 50 %
Labeling substances	
COPPER (POWDER)	25 - 50 %
COPPER AND COPPER COMPOUNDS	25 - 50 %
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.

Water Pollution Control Act

COPPER

Sewage Act

COPPER AND ITS COMPOUNDS (AS CU)

3 MG/L

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:
International: 703.741.5970
Spain: 900.868.538
Switzerland: 0800.564.402
Chemtrec's toll free, mobile-enabled number in Germany – 0800 1817059

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Other information

Revised information in Section 16.