



MATERION

1. Chemical and company identification

Name of chemical (Product name)	Copper Stainless Steel Modular Target (50/50)	
Supplier's company name, address and phone number		
Company name	Materion Electronic 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	394	

2. Hazards identification

GHS classification

Physical hazards	The product is not classified according to GHS.	
Health hazards	Serious eye damage/eye irritation	Category 2B
	Sensitization, respiratory	Category 1
	Sensitization, skin	Category 1
	Germ cell mutagenicity	Category 2
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 1B
	Specific target organ toxicity, single exposure	Category 1 (digestive system, kidney, respiratory system)
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity, repeated exposure	Category 1 (respiratory system)
Environmental hazards	Short-term (acute) hazardous to the aquatic environment	Category 1
	Long-term (chronic) hazardous to the aquatic environment	Category 4

GHS label elements

Pictograms



Signal words

Danger

Hazard statement

May cause an allergic skin reaction. Suspected of causing cancer. Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

Precautionary statement

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection.

Response

Rinse mouth. If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Take off contaminated clothing and wash it before reuse. If exposed or concerned: Call a poison center/doctor/.

Storage

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	May cause respiratory irritation. May cause an allergic skin reaction. Prolonged exposure may cause chronic effects.
Emergency overview	Causes damage to organs. Suspected of causing cancer.

3. Composition/information on ingredients

Substance or mixture	Mixture	Gazette notification		
Components	CAS Number	ENCS no.	ISHL no.	Concentration (%)
Copper	7440-50-8			50
Iron	7439-89-6			35
Chromium	7440-47-3			9.5
Nickel	7440-02-0			4.5
Manganese	7439-96-5			0.5

Chemical formula Cu (7440-50-8), Fe (7439-89-6), Cr (7440-47-3), Ni (7440-02-0), Mn (7439-96-5)

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	Rinse with water. Get medical attention if irritation develops and persists.
If swallowed	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Exposure may cause temporary irritation, redness, or discomfort.
Protection of first-aid responders	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
Notes to physician	Treat symptomatically.

5. Fire-fighting measures

Extinguishing media	Powder. Dry sand.
Extinguishing media to avoid	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards	None known.
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.
Environmental precautions	Collect spillage. Prevent further leakage or spillage if safe to do so.
Methods and materials for containment and cleaning up	Stop the flow of material, if this is without risk. Following product recovery, flush area with water.

7. Handling and storage

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

Safe handling advice Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with eyes. Avoid prolonged exposure. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Hygiene measures Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking.

Storage

Safe storage conditions Store locked up. Keep container tightly closed.

Safe packaging materials Store in original tightly closed container.

8. Exposure controls/personal protection

Control parameters Follow standard monitoring procedures.

Occupational exposure limits

Japan. OELs - ISHL. (Workplace Environment Assessment Standards)

Components	Type	Value
Manganese (CAS 7439-96-5)	TLV	0.2 mg/m ³
Nickel (CAS 7440-02-0)	TLV	0.1 mg/m ³

Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits)

Components	Type	Value
Chromium (CAS 7440-47-3)	TWA	0.5 mg/m ³
Manganese (CAS 7439-96-5)	TWA	0.2 mg/m ³
Nickel (CAS 7440-02-0)	TWA	1 mg/m ³

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Chromium (CAS 7440-47-3)	TWA	0.5 mg/m ³	Inhalable fraction.
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Dust and mist.
		0.2 mg/m ³	Fume.
Manganese (CAS 7439-96-5)	TWA	0.1 mg/m ³	Inhalable fraction.
		0.02 mg/m ³	Respirable fraction.
Nickel (CAS 7440-02-0)	TWA	1.5 mg/m ³	Inhalable fraction.

Engineering measures Good general ventilation (typically 10 air changes per hour) 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 Wear positive pressure self-contained breathing apparatus (SCBA).

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 Copper. Grey metallic.

Odor None.

Odor threshold Not applicable.

Melting point/freezing point 1981.4 °F (1083 °C) estimated / Not applicable.

Boiling point, initial boiling point, and boiling range	Not applicable.
Combustibility	None known.
Lower and upper explosion limit / flammability limit	
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	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	8.66 g/cm ³ estimated
Relative density	Not applicable.
Vapor density	Not applicable.
Particle characteristics	Not applicable.
Other information	
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	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Acute toxicity	Not known.
Skin corrosion/irritation	Not relevant, due to the form of the product.
Serious eye damage/eye irritation	Not likely, due to the form of the product.

Respiratory or skin sensitization

Japan Society for Occupational Health: Respiratory sensitizer

Chromium (CAS 7440-47-3) 2 Probable respiratory sensitizer.

Nickel (CAS 7440-02-0) 2 Probable respiratory sensitizer.

Japan Society for Occupational Health: Skin sensitizer

Chromium (CAS 7440-47-3) 1 Known skin sensitizer.

Copper (CAS 7440-50-8) 2 Probable skin sensitizer.

Nickel (CAS 7440-02-0) 1 Known 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

Manganese (CAS 7439-96-5) A4 Not classifiable as a human carcinogen.

Nickel (CAS 7440-02-0) A5 Not suspected as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Chromium (CAS 7440-47-3) 3 Not classifiable as to carcinogenicity to humans.

Nickel (CAS 7440-02-0) 2B Possibly carcinogenic to humans.

Japan Society for Occupational Health: Carcinogen

Nickel (CAS 7440-02-0) 1 Carcinogenic to humans.

NTP Report on Carcinogens

Nickel (CAS 7440-02-0) Known To Be Human Carcinogen.
Reasonably Anticipated to be a Human Carcinogen.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

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

Product	Species	Test Results
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Copper Stainless Steel Modular Target (50/50)

Aquatic

Acute

Crustacea	EC50	Daphnia	200 mg/l, 48 hours estimated
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Fish	LC50	Fish	0.0326 mg/l, 96 hours estimated
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Components	Species	Test Results
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Copper (CAS 7440-50-8)

Aquatic

Acute

Crustacea	EC50	Blue crab (<i>Callinectes sapidus</i>)	0.0031 mg/l
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Fish	LC50	Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	0.02 mg/l, 96 hours
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Ecotoxicity Not available.

Persistence and degradability No data is available on the degradability of this product.

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.
Emergency Response Guide Number	134

15. Regulatory information

Industrial Safety and Health Act

Specified substances regulation

Class 2 designated chemical substances

MANGANESE AND ITS COMPOUNDS (EXCEPT MANGANESE OXIDE, BASIC)
NICKEL COMPOUNDS (POWDER, EXCLUDING NICKEL CARBONYL (ITEM NO. 24))

Notifiable substances

CHROMIUM AND CHROMIUM COMPOUNDS (EXCLUDING CHROMIC ACID AND CHROMIC ACID SALTS AND DICHROMIC ACID AND DICHROMATE)	Table 9 Ordinance No. 142	9.5 %
COPPER AND COPPER COMPOUNDS	Table 9 Ordinance No. 379	50 %
MANGANESE	Table 9 Ordinance No. 550	0 %
NICKEL	Table 9 Ordinance No. 418	4.5 %

Labeling substances

CHROMIUM (POWDER)	9.5 %
CHROMIUM AND CHROMIUM COMPOUNDS (EXCLUDING CHROMIC ACID AND CHROMIC ACID SALTS AND DICHROMIC ACID AND DICHROMATE)	9.5 %
COPPER (POWDER)	50 %
COPPER AND COPPER COMPOUNDS	50 %
MANGANESE (POWDER)	0 %

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)**

NICKEL COMPOUNDS (AS NI) Ordinance No. 309 4.5 % (Nickel)

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

CHROMIUM AND CHROMIUM(III) Ordinance No. 87 9.5 % (Chromium)

COMPOUNDS (AS CR)

Manganese and its compounds (as Mn) Ordinance No. 412 0.50 % (Manganese)

NICKEL Ordinance No. 308 4.5 % (Nickel)

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

CHROMIUM

COPPER

Sewage Act

CHROMIUM AND ITS COMPOUNDS, EXCEPT 2 MG/L

HEXAVALENT CHROMIUM COMPOUNDS (AS CR)

COPPER AND ITS COMPOUNDS (AS CU) 3 MG/L

IRON AND ITS SOLUBLE COMPOUNDS (AS FE) 10 MG/L

MANGANESE AND ITS SOLUBLE COMPOUNDS (AS MN) 10 MG/L

16. Other information**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 16.