



# MATERIAL SAFETY DATA SHEET

**MATERION**

## 1. Chemical product and company identification

**A. Product name** Copper Proosphorus-doped Product

**Other means of identification**

SDS number 405

**B. Recommended use and Limitations on use**

**Recommended use** Manufacture of computer, electronic and optical products, electrical equipment  
Scientific research and development  
Other: Manufacture of medical and defense equipment

**Limitations on use** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)  
Consumer uses: Private households (= general public = consumers)

**C. Supplier information**

**Company name** Materion Advanced Materials

**Address** 6070 Parkland Boulevard  
Mayfield Heights OH 44124  
United States

**Telephone** EH&S 1.216.383.4019

**Email** ehs@materion.com

**Contact person** Theodore Knudson

**Emergency telephone number** See Section 16.

**Importer**

**Company name** See above.

**MSDS number** 405

## 2. Hazards identification

**A. Hazard category/Classification**

**Physical hazards** Not classified.

**Health hazards** Not classified.

**Environmental hazards** Not classified.

**B. Warning label items including precautionary statement**

• **Pictogram** None.

• **Signal word** None.

• **Hazard statement**

H372 Causes damage to organs (respiratory system) through prolonged or repeated exposure by inhalation.

• **Precautionary statement**

**Prevention**

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P284 In case of inadequate ventilation wear respiratory protection.

**Response**

P302 + P350 If on skin: Wash with plenty of water.

P308 + P313 If exposed or concerned: Get medical advice/attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

P342 + P311 If experiencing respiratory symptoms: Call a poison center/doctor.

P363 Wash contaminated clothing before reuse.

## Storage

P405 Store locked up.

## Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**C. Other hazards not included in the hazard category criteria (e.g. dust explosion hazard)** None known.

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

## 3. Composition/information on ingredients

Chemical identity	Common and alternative names	CAS number	ID number	Content in percent (%)
Copper		7440-50-8	KE-08896	99.35 - 99
Phosphorus		7723-14-0	KE-28713	0.6 - 1

## 4. First aid measures

**A. In case of eye contact** Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally.

**B. In case of skin contact** Thoroughly wash skin cuts or wounds to remove all particulate debris from the wound. Seek medical attention for wounds that cannot be thoroughly cleansed. Treat skin cuts and wounds with standard first aid practices such as cleansing, disinfecting and covering to prevent wound infection and contamination before continuing work. Obtain medical help for persistent irritation. Material accidentally implanted or lodged under the skin must be removed.

**C. In case of inhalation** Breathing difficulty caused by inhalation of particulate requires immediate removal to fresh air. If breathing has stopped, perform artificial respiration and obtain medical help.

**D. In case of swallowing** Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

**E. Note to physician** Not applicable.

**General advice** Under normal conditions of intended use, this material does not pose a risk to health.

## 5. Fire-fighting measures

### A. Suitable (and unsuitable) extinguishing media

**Suitable extinguishing media** The product is non-combustible. Use fire-extinguishing media appropriate for surrounding materials.

**Unsuitable extinguishing media** Not applicable, non-combustible. None known.

**B. Specific hazards arising from the chemical (example: hazardous combustion products)** Product is not considered combustible.

### C. Specific methods of fire-fighting

**Special protective equipment for firefighters** Wear suitable protective equipment.

## 6. Accidental release measures

**A. Personal precautions, protective equipment and emergency measures** As supplied, this product poses no special release issues.

**B. Environmental precautions** Not relevant, due to the form of the product.

**C. Methods and materials for containment and cleaning up** Not relevant, due to the form of the product.

## 7. Handling and storage

**A. Precautions for safe handling** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.

**B. Conditions for safe storage (including any incompatibilities)** Store locked up. Keep out of the reach of children.

## 8. Exposure controls/personal protection

### A. Exposure limit values, biological limit values, etc

#### Korea. OELs. Standards for Exposure to Chemical Substances and Physically Hazardous Factors

Components	Type	Value	Form
Copper (CAS 7440-50-8)	STEL	2 mg/m <sup>3</sup>	Dust and mist.
	TWA	1 mg/m <sup>3</sup>	Dust and mist.
		0.1 mg/m <sup>3</sup>	Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m <sup>3</sup>	

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	Dust and mist.
		0.2 mg/m <sup>3</sup>	Fume.
Phosphorus (CAS 7723-14-0)	TWA	0.1 mg/m <sup>3</sup>	

### Biological limit values

No biological exposure limits noted for the ingredient(s).

### B. Appropriate engineering controls

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.

### C. Personal protective equipment

#### • Respiratory protection

When airborne exposures exceed or have the potential to exceed the occupational exposure limits, approved respirators must be used as specified by an Industrial Hygienist or other qualified professional. Respirator users must be medically evaluated to determine if they are physically capable of wearing a respirator. Quantitative and/or qualitative fit testing and respirator training must be satisfactorily completed by all personnel prior to respirator use. Users of tight fitting respirators must be clean shaven on those areas of the face where the respirator seal contacts the face. Use pressure-demand airline respirators when performing jobs with high potential exposures such as changing filters in a baghouse air cleaning device.

#### • Eye protection

Wear approved safety glasses, goggles, face shield and/or welder's helmet when risk of eye injury is present, particularly during operations that generate dust, mist or fume.

#### • Hand protection

Wear gloves to prevent contact with particulate or solutions. Wear gloves to prevent metal cuts and skin abrasions during handling.

#### • Body protection

Protective overgarments or work clothing must be worn by persons who may become contaminated with particulate during activities.

### Hygiene measures

Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Contaminated work clothing should not be allowed out of the workplace.

## 9. Physical and chemical properties

### A. Appearance

Physical state Solid.

Form Solid.

Color Copper

### B. Odor

None.

### C. Odor threshold

Not applicable.

### D. pH

Not applicable.

### E. Melting point/freezing point

Melting point 111.38 °F (44.1 °C) estimated

Freezing point Not applicable.

### F. Boiling point, initial boiling point, and boiling range

Not applicable.

### G. Flash point

Not applicable.

### H. Evaporation rate

Not applicable.

I. Flammability (solid, gas)	None known.
<b>J. Upper/lower limit on flammability or explosive limits</b>	
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.
K. Vapor pressure	Not applicable.
<b>L. Solubility</b>	
Solubility (water)	Insoluble.
M. Vapor density	Not applicable.
N. Specific gravity	8.87 estimated
O. n-octanol/water partition coefficient	Not applicable.
P. Auto-ignition temperature	Not applicable.
Q. Decomposition temperature	Not applicable.
R. Viscosity	Not applicable.
S. Molecular weight	Not applicable.

**Other data**

Density	8.87 g/cm <sup>3</sup> estimated
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Relative density	Not applicable.

**10. Stability and reactivity**

**Reactivity** The product is stable and non-reactive under normal conditions of use, storage and transport.

**A. Stability and hazardous reaction potential**

Stability	Material is stable under normal conditions.
Hazardous reaction potential	No dangerous reaction known under conditions of normal use.

**B. Conditions to avoid (e.g. static discharge, shock or vibration, etc)** Contact with incompatible materials.

**C. Incompatible materials** Strong oxidizing agents.

**D. Hazardous decomposition products** No hazardous decomposition products are known.

**11. Toxicological information**

**A. Information on likely routes of exposure**

- **Respiratory organs** Not likely, due to the form of the product.
- **Skin** Not likely, due to the form of the product.
- **Eyes** Direct contact with eyes may cause temporary irritation.
- **Mouth** Expected to be a low ingestion hazard.

## B. Information on health hazards

- **Acute toxicity (list all possible routes of exposure)** None known.
- **Corrosivity or irritation to the skin** Not classified.
- **Serious eye damage/eye irritation** Direct contact with eyes may cause temporary irritation.
- **Respiratory sensitization** Not a respiratory sensitizer.
- **Skin sensitization** Not a skin sensitizer.
- **Carcinogenic properties /Carcinogenicity** This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
- **Mutagenic properties /Mutagenicity** Not classified.
- **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

### A. Ecotoxicity

Product		Species	Test Results
Copper Phosphorus-doped Product			
<b>Aquatic</b>			
<i>Acute</i>			
Fish	LC50	Fish	0.0192 mg/l, 96 hours estimated
Components		Species	Test Results
Copper (CAS 7440-50-8)			
<b>Aquatic</b>			
<i>Acute</i>			
Crustacea	EC50	Blue crab ( <i>Callinectes sapidus</i> )	0.0031 mg/l
Fish	LC50	Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )	0.02 mg/l, 96 hours

**B. Persistence/degradability** No data is available on the degradability of this product.

**C. Bioaccumulative potential** Not available.

**D. Mobility in soil** Not available.

**E. Other adverse effects** Not available.

## 13. Disposal considerations

### A. Method of disposal

Material should be recycled if possible. Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal. When this product as supplied is to be discarded as waste, it does not meet the definition of a RCRA waste under 40 CFR 261.

### B. Disposal considerations (including disposal of contaminated containers or packaging)

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

## 14. Transport information

### IATA

- A. UN number Not applicable.
- B. UN proper shipping name Not applicable.

**C. Transport hazard class(es)**

Class Not applicable.

Subsidiary risk -

**D. Packing group** Not applicable.**E. Environmental hazards** No.**F. Special precautions for user** Not applicable.**IMDG****A. UN number** Not applicable.**B. UN proper shipping name** Not applicable.**C. Transport hazard class(es)**

Class Not applicable.

Subsidiary risk -

**D. Packing group** Not applicable.**E. Environmental hazards**

Marine pollutant No.

EmS Not applicable.

**F. Special precautions for user** Not applicable.

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

**15. Regulatory information****A. Restrictions under the Industrial Safety and Health Law****Harmful Substances Prohibited from Manufacturing**

Not regulated.

**Harmful Substances Requiring Permission for Manufacture or Use**

Not regulated.

**Controlled Hazardous Substances**

Copper (CAS 7440-50-8)

**Harmful Substances Requiring Special Medical Examination**

Copper (CAS 7440-50-8)

**Workplace Environmental Monitoring Harmful Materials**

Copper (CAS 7440-50-8)

**Occupational Exposure Limit**

Copper (CAS 7440-50-8)

Phosphorus (CAS 7723-14-0)

**B. Restrictions under the Chemicals Control Law (Previously Toxic Chemicals Control Law)****Accidental Release Prevention Substances**

Not regulated.

**Act on the Registration and Evaluation of Chemicals****Banned Toxic Chemicals**

Not regulated.

**Designated Existing Chemicals Subject to Registration (PEC) (MoE No. 2015-92)**

Phosphorus (CAS 7723-14-0)

**Restricted Chemical Substances**

Not regulated.

**Toxic Chemicals**

Phosphorus (CAS 7723-14-0)

97-1-240

**C. Restrictions under the Dangerous Substance Safety Management Act****D. Restrictions under the Wastes Control Act****Halogenated Materials in Waste Organic Solvents**

Not regulated.

## Hazardous Substances

Copper (CAS 7440-50-8)

Hazardous substances in slag, dust, waste molding sand & sand from sand blast, waste refractories & ceramic pieces, residues of incineration, materials treated for stabilization, & waste catalysts 3 MG/L

Hazardous substances in sludge, waste absorbers and absorbers 3 MG/L

### E. Restrictions under other foreign or domestic laws

#### Clean Air Conservation Act

##### Air Pollutants

Copper (CAS 7440-50-8)

Phosphorus (CAS 7723-14-0)

Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides (Rules on PIC, MoE No. 2014-252, Dec. 31, 2014; Standards for Pesticides, RDA No. 2014-26), as amended

Not listed.

##### Specific Air Pollutants

Not regulated.

#### Further information

This material safety data sheet was prepared in accordance with Article 41 of the Industrial Safety and Health Law.

#### Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Korea	Existing Chemicals List (ECL)	Yes

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

## 16. Other information

A. Source of information Not available.

B. Issue date 09-09-2021

C. Number of revisions and date of most recent revision Not applicable.

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