



SAFETY DATA SHEET
(Copper-Molybdenum Composites)

Date: April 10, 2015

1: Identification of the article and of the company

1.1: Product identifier

Product Name	Copper-Molybdenum Composites (Cu-Mo), Scrap
Chemical Name	Molybdenum (Mo) with Copper (Cu)
CAS No.	Not applicable for articles
EINECS No.	Not applicable for articles
Molecular weight	Not applicable for articles
REACH Registration number	Not applicable for articles

1.2: Relevant identified uses of the article and uses advised against

Identified Uses	Electrical Contacts, Heat Sinks.
Uses advised against	Not applicable

1.3: Details of the supplier of the article information data sheet

Name	Mi-Tech Metals, Incorporated
Address	4701 Massachusetts Avenue, Indianapolis, Indiana 46218
Phone	(317) 549-4290, 1-800-624-1895
Fax	(317) 549-4295
E-mail of competent person responsible for the Article Information Data	rstahl@mi-techmetals.com

1.4 : Emergency telephone number

Emergency No.	1-800-624-1895
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2: Hazards Identification

Fragmentation hazard: Always wear safety equipment and keep machine guards in place.

Breathing hazard: Wet or dry grinding may produce hazardous dust or mist. Use ventilation control and/or respiratory protection.

Skin: May cause skin irritation after prolonged or repeated exposure to particulates or dust.

Ingestion: Not normally a hazard due to the physical form of the article. Large amounts of particulates or dust may cause gastrointestinal effects.

2.1: Classification of the article

According to OSHA 29 CFR 1910.1200 HCS	Not applicable for articles
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2.2: Label elements

Hazard pictogram(s):	Not applicable for articles
Signal word:	Not applicable for articles
Hazard Statement(s):	Not applicable for articles
Precautionary statement(s):	Not applicable for articles.

2.3: Other Hazards

PBT or vPvB	Not applicable for articles
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3: Article Composition

3.1: Information on article constituents

Substance Name	EINECS Number	CAS Number	Concentration range, % by weight	Classification DSD/CLP
Molybdenum	231-107-2	7439-98-7	65-80	Molybdenum metal is not classified under DSD/CLP.
Copper	231-159-6	7440-50-8	20-35	Copper is not classified under DSD/CLP.

4: First aid measures

4.1: Description of first aid measures

Cu-Mo articles, exposure to high volumes of powder/dust is not anticipated under normal conditions and use. If article is ground may produce exposure to dusts of hazardous substances, which may be inhaled, ingested or come in contact with eyes and skin.

Eyes	Rinse opened eye for at least 15 minutes under running water. Consult a doctor if required.
Inhalation	Remove to fresh air. Seek medical attention if required.
Ingestion	Rinse mouth with water and drink plenty of water afterwards. Seek medical advice if required.
Skin	Remove contaminated clothing. Immediately wash with soap and water and rinse thoroughly. Seek medical attention if required.
General advise	After first aid, get appropriate medical attention.

4.2: Most important symptoms and effects, both acute and delayed

Cu-Mo articles, exposure to high volumes of powder/dust is not anticipated under normal conditions and use. Inhalation of powder or dust may cause mechanical eye and skin irritation or mild respiratory tract irritation.

4.3: Indication of any immediate medical attention and special treatment needed

None known

5: Firefighting measures

5.1: Extinguishing media

Cu-Mo articles as provided are not a fire hazard. Use suitable extinguishing media for surrounding material and type of fire.

5.2: Special hazards arising from the article use

During normal operation and usage Cu-Mo articles are not a fire hazards. Fine dust generated during machining or grinding may ignite if allowed to accumulate and are exposed to an ignition source. Cover burning material with an inert powder such as sand or limestone. Class D dry type for dry powder. May emit metal oxide fumes under fire conditions.

5.3: Advice for firefighters

Will oxidize above 1300 degrees F.

6: Accidental release measures

6.1: Personal precautions, protective equipment and emergency procedures

Cu-Mo articles do not present hazards that require accidental release measures. However, wet or dry grinding of Cu-Mo articles may produce hazardous dust or mists. Avoid inhalation and contact with skin and eyes. Use personal protective equipment (i.e. gloves, safety goggles, dust respirator) as specified in Section 8 of this article information data sheet. Ventilate area if necessary.

6.2: Environmental precautions

In the case of generation of dust/mist, avoid release into the environment.

6.3: Methods and material for containment and cleaning up

Cu-Mo articles should be recycled. Recycler must comply with Federal, State, and Local regulations.

6.4: Reference to other sections

See sections 8 and 13 for exposure controls and disposal considerations.

7: Handling and storage

Cu-Mo articles as provided do not present hazards requiring precautions for safe handling and storage. However, operations such as grinding may generate dusts or mists which may require special handling procedures. The procedures described below relate to these operations.

7.1: Precautions for safe handling

Under normal operating conditions, the use of Cu-Mo articles do not require special safety precautions beyond normal safety procedures such as safety glasses and gloves. Wash hands thoroughly after handling. Minimize generation of powder/dust and avoid dispersion of dust in air.

7.2: Conditions for safe storage, including any incompatibilities

Cu-Mo articles as provided do not present hazards requiring precautions for safe storage. Avoid storage near strong acids.

7.3: Specific end use(s)

Electrical Contacts, Heat Sinks.

8: Exposure control / Personal protection

The exposure control parameters listed below are for operations with Cu-Mo articles that generate dusts or fumes from grinding.

8.1 : Control Parameters

Material	OSHA TWA (mg/m ³)	ACGIH TWA (mg/m ³)	ACGIH STEL (mg/m ³)	NIOSH-IDLH (mg/m ³)
Molybdenum	15 (insoluble) 5 (soluble)	10 (insoluble) 3 (soluble)		
Copper	0.1 (fume), 1 (dusts & mists)	0.2(fume), 1 (dusts & mists)		1

8.2: Exposure controls

Appropriate engineering controls:

In the case of dust generation during wet or dry grinding of Cu-Mo articles, engineering controls may include local ventilation systems with dust filters depending on degree of process automation and containment (e.g. closed vs. open processes).

Individual protection measures:

Eye/face protection Use of safety glasses as appropriate and reasonably necessary.

Skin protection Use of butyl rubber, neoprene or PVC gloves and work clothes as appropriate and reasonably necessary.

Respiratory protection In the case of dust generation, use of respiratory protection as appropriate and reasonably necessary (e.g. P-Series particulate respirators suitable for protection against particulates that may contain oil).

Ventilation Use local exhaust ventilation which is adequate to limit personal exposure to airborne dust to levels which do not exceed the appropriate PEL or TLV. If such equipment is not available, use respiratory protection as specified above.

9: Physical and chemical properties

Appearance	Copper Colored
Odor	Odorless
Odor threshold	Not applicable as substances are odorless
pH	Not relevant due to physical form
Melting/freezing point	2616 °C (Mo) 1083 °C (Cu)
Initial boiling point/boiling range	4639 °C (Mo) 2562 °C (Cu)
Flash point	Not applicable
Evaporation rate	Not applicable
Flammability	Non-Flammable
Upper/lower flammability or explosive limits	Not applicable

Vapor pressure	Not applicable
Vapor density	Not applicable
Relative density	9.50-9.93 g/cm ³
Solubility in water	Insoluble
Partition coefficient (n-octanol/water)	Not relevant as the substances are inorganic
Auto-ignition temperature	Molybdenum metal is not a self-heating substance at particle sizes >0.9 um.
Decomposition temperature	Greater than 2616°C (Mo melting point) 1083 °C (Cu melting point)
Viscosity	Not relevant due to physical form
Explosive properties	Not explosive
Oxidizing properties	Not oxidizing

10: Stability and reactivity

10.1: Reactivity

Cu-Mo articles are not reactive.

10.2: Chemical stability

Cu-Mo articles are chemically stable.

10.3: Possibility of hazardous reactions

Not applicable.

10.4: Conditions to avoid

Avoid creating or accumulating fine dust. High temperatures in air (strong oxidation beginning around 600 °C, sublimation of MoO₃ beginning around 700°C)..

10.5: Incompatible materials

Avoid other strong acids. Avoid strong oxidizers.

10.6: Hazardous decomposition products

Heat may produce trioxide or hex carbonyl hydroxide.

11: Toxicological information

Cu-Mo articles as provided to do not present a human hazard. However, during grinding of Cu-Mo articles, some dust containing hazardous substances are produced which may be inhaled, swallowed or come into contact with the skin or the eyes. The toxicity section described below relate to these operations.

STOT- Repeated Exposure:

Chronic exposure to copper dust can irritate the respiratory tract, nose, mouth, and eyes, and can cause headaches, dizziness, nausea, and diarrhea. Ingestion of excessive amounts of copper may cause gastrointestinal distress. Chronic ingestion may cause damage to the liver and kidneys.

Ingestion of excessive amounts of molybdenum may cause iron or copper deficiency leading to anemia or skeletal ossification.

Carcinogenicity: Molybdenum and Copper are not classified as carcinogenic.

12: Ecological information

Cu-Mo articles as provided to do not present an environmental hazard.

12.1: Persistence and degradability

Not applicable.

12.2: Bioaccumulative potential

Not applicable.

12.3: Mobility in soil

Not applicable.

12.4: Results of PBT and vPvB assessment

Molybdenum and Copper are inorganic substances, and therefore the PBT and vPvB assessment is not required.

12.5: Other adverse effects

None known

13: Disposal considerations

Responsibility for proper waste disposal of Cu-Mo articles with the owner of the waste.

Owners are encouraged to take advantage of recycling programs. Cu-Mo articles are valuable articles that should be sent to an appropriate reclamation facility, if available. If material cannot be sent to a reclaim facility, dispose of all waste product and containers in accordance with local, state/provincial, federal, and national regulations.

14: Transport information

Cu-Mo articles are not classified or regulated.

15: Regulatory information

15.1: Safety, health and environmental regulations/legislation specific for the article

National Regulations: See 40 CFR 372 for reporting requirements.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III:

SARA (311/312) HAZARD CATEGORIES:

SARA 313: This product contains the following SARA 313 Toxic Release Chemicals.

Chemical Name	CAS Number	Concentration
Copper (metallic)	7440-50-8	>1%

TSCA: This components in this material are registered under the regulation of the Toxic Substance Control Act.

15.2: Chemical safety assessment

Chemical safety reports (CSR)/chemical safety assessments (CSA) are not required for articles.

16: Other information

Revision (s): April 10, 2015	New SDS
References:	

End of Product Data Sheet

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