

Cammann INC.

7105 State Route 60
P.O. Box 219
Birmingham, OH 44816-0219 USA
Phone 440-965-4051 Fax 440-965-4177

E-Mail: information@cammann.com
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SAFETY DATA SHEET

Prepared 3/28/2016

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: Molybdenum Electrodes
Product Description: Article Based on Molybdenum
Product Code: 103

COMPANY IDENTIFICATION

Supplier: Cammann Inc.
PO Box 219
7105 State Route 60
Birmingham, OH 44816

24 Hour Health Emergency 440-965-4051
Product Technical Information 440-965-4051

SECTION 2 HAZARDS IDENTIFICATION

OSHA/HCS Status: While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

CLASSIFICATION: Not classified.

GHS Label Elements

Signal Word: No signal word

Hazard Statements: No known significant effects or critical hazards.

Precautionary Statements:

Preventions: Not applicable

Response: Not applicable

Storage: Not applicable

Disposal: Not applicable

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat. Under normal conditions of use this product is non-hazardous. However, if this product is ground or otherwise processed those ingredients mentioned in section 3 could be generated.

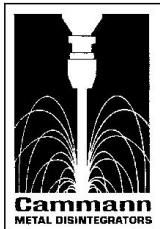
SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a substance.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*
Molybdenum	7439-98-7	99.95-99.97

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.



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As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES

Description of necessary first aid measures

Eye Contact: Get medical attention if any damage to the eye is caused by the metal.

Inhalation: Not Applicable

Skin Contact: Flush contaminated skin with plenty of water. Cuts should be treated promptly and covered.

Ingestion: Not Applicable.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye Contact: Not applicable.

Inhalation: Not applicable.

Skin Contact: No known significant effects or critical hazards.

Ingestion: Not applicable.

Over-exposure signs/symptoms

Eye Contact: No specific data.

Inhalation: No specific data.

Skin Contact: No specific data.

Ingestion: No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician: Treat symptomatically.

Specific treatments: No specific treatment.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training.

See toxicological information (section 11)

SECTION 5 FIRE FIGHTING MEASURES

Extinguishing media

Suitable Extinguishing Media: Dry powder type agents specially designed for metal powder fires.

Unsuitable Extinguishing Media: Do not use water jet. Carbon dioxide (CO₂).

Specific Hazards arising from the chemical: Dust and fumes from this product may be a fire and explosion hazard when exposed to high temperatures or ignition sources. Particle size and dispersion in air determined reactivity.

Hazardous thermal decomposition products: Decomposition products may include the following materials: metal oxide/oxides, molybdenum trioxide

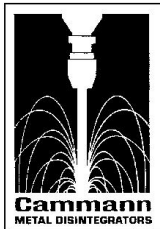
Special protective actions for fire fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire fighters: No special protection is required.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, protective equipment and emergency procedures

For Non Emergency Personnel: No action shall be taken involving risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Put on appropriate personal protective



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equipment.

For Emergency Responders: If specialized clothing is required to deal with spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "for non emergency personnel".

Environmental Precautions: No specific hazard.

Methods and materials for containment and cleaning up

Small Spill: Restack safely. Take care with items that are sharp or heavy.

Large Spill: Restack safely. Take care with items that are sharp or heavy. Note: see section 1 for emergency contact information and section 13 for waste disposal.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Protective measures: Put on appropriate personal protective equipment (see section 8). Take care with items that are sharp or heavy

Advice on general occupational hygiene: Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities: Store in accordance with local regulations.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Occupational Exposure limits/standards:

Substance Name	Limit / Standard
Molybdenum	ACGIH TLV (United States, 3/2012). TWA: 10 mg/m ³ , (as Mo) 8 hours. Form: Inhalable fraction TWA: 3 mg/m ³ , (as Mo) 8 hours. Form: Respirable fraction

Engineering Controls: No special ventilation requirements.

Environmental Exposure Controls: Not applicable.

Individual protection measures

Hygiene Measures: Wash hands thoroughly after handling.

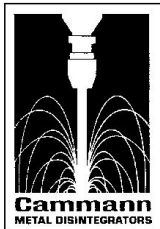
Eye/Face Protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side shields.

Hand Protection: Use strong, cut-resistant gloves suitable for handling metals.

Body Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other Skin Protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory Protection: Not applicable.



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SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Solid
Bar/ Billet/ Coil/ Disc/ Foil/ Glass Melting Electrode/ Pellets/ Plate/ Rod/ Scrap/ Sheet/
Sputtering Targets/ Tube/ Wire

Color: Gray

Odor: odorless

Odor Threshold: Not available

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density: 10.2

Flammability (Solid, Gas): Not available

Flash Point [Method]: Not applicable

Flammable Limits (Approximate volume % in air): LEL: N/A UEL: N/A

Autoignition Temperature: Not available

Boiling Point / Range: Not available

Decomposition Temperature: Not available

Vapor Density (Air = 1): Not available

Vapor Pressure: Not available

Evaporation Rate: Not available

pH: Not applicable

Solubility in Water: Not applicable

Viscosity: Not applicable

Melting Point: >2620° C (>4748°F)

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: No specific test data related to reactivity available for this product or its ingredients.

STABILITY: Material is stable under normal conditions.

POSSIBILITY OF HAZARDOUS REACTIONS: under normal conditions of storage and use, hazardous reactions will not occur.

CONDITIONS TO AVOID: Avoid the creation of dust when handling and avoid all possible sources or ignition (spark or flame). Prevent dust accumulation.

INCOMPATIBLE MATERIALS: Evolves hydrogen on contact with acids. Risk of formation of explosives hydrogen-air mixtures.

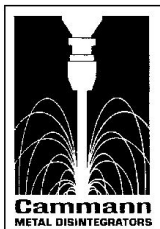
HAZARDOUS DECOMPOSITION PRODUCTS: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Acute Toxicity: There is no data available

Irritation/Corrosion: There is no data available



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Sensitization: There is no data available
Carcinogenicity: There is no data available
Specific target organ toxicity (single exposure): There is no data available
Specific target organ toxicity (repeated exposure): There is no data available
Aspiration Hazard: There is no data available
Information on likely routes of exposure: Oral, Dermal, Inhalation

Potential acute health effects

Eye contact: No known significant effects or critical hazards.
Inhalation: No known significant effects or critical hazards.
Skin contact: No known significant effects or critical hazards.
Ingestion: No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact: No known significant effects or critical hazards.
Inhalation: No known significant effects or critical hazards.
Skin contact: No known significant effects or critical hazards.
Ingestion: No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects: No known significant effects or critical hazards.
Potential delayed effects: No known significant effects or critical hazards.

Long term exposure

Potential immediate effects: No known significant effects or critical hazards.
Potential delayed effects: No known significant effects or critical hazards.

Potential chronic health effects

General: No known significant effects or critical hazards.
Carcinogenicity: No known significant effects or critical hazards.
Mutagenicity: No known significant effects or critical hazards.
Teratogenicity: No known significant effects or critical hazards.
Developmental effects: No known significant effects or critical hazards.
Fertility effects: No known significant effects or critical hazards.

SECTION 12	ECOLOGICAL INFORMATION
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The information given is based on data available for the material, the components of the material, and similar materials.

TOXICITY: There is no data available

<u>Product/ingredient name</u>	<u>Result</u>	<u>Species</u>	<u>Exposure</u>
Molybdenum	Acute LC50 200000 µg/l	Daphnia- Daphnia magna	48 hours
	Acute LC50 800 mg/l fresh water	Fish – Oncorhynchus mykiss	96 hours
	Chronic NOEC 500 mg/l marine water	Algae – Glenodinium halli	72 hours

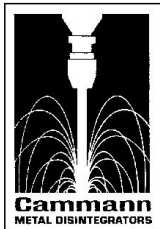
PERSISTENCE AND DEGRADABILITY: There is no data available

BIOACCUMULATIVE POTENTIAL: There is no data available

MOBILITY IN SOIL:

Soil/water partition coefficient: Not available

OTHER ADVERSE EFFECTS: No known significant effects or critical hazards



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SECTION 13

DISPOSAL CONSIDERATIONS

DISPOSAL METHODS: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any byproducts should comply with the requirements of environmental protection and waster disposal legislation and any regional local authority equipments. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues.

SECTION 14

TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15

REGULATORY INFORMATION

U.S. Federal regulations: **United States Inventory (TSCA 8b):** All components are listed or exempted.

Clean Air Act Sections 112 (b) hazardous air pollutants (HAPs): Not listed.

Clean Air Act Section 602 Class I Substances: Not listed.

Clean Air Act Section 602 Class II Substances: Not listed.

DEA List I Chemicals (Precursor Chemicals): Not listed.

DEA List II Chemicals (Essential Chemicals): Not listed.

SARA (302/304) Composition/information on ingredients: No products were found

SARA (304) RQ: Not applicable

SARA (311/312) Classification: Not applicable

State Regulations

Massachusetts: The following components are listed: Molybdenum

New York: None of the components are listed.

New Jersey: The following components are listed: Molybdenum

Pennsylvania: The following components are listed: Molybdenum

California Prop. 65 The California safe drinking water and toxic enforcement act of 1986 (proposition 65) requires that the Governor of California publish a list of chemicals known to the state to cause cancer or reproductive harm.

No proposition 65 chemicals are intentionally added to this product; however, components used in the manufacture of this product may contain minor trace amounts of inherent naturally occurring elements (such as, but not limited to, arsenic, beryllium, cadmium, cobalt, lead, mercury, nickel, and radionuclide) that are on the Governor's proposition 65 list.

International Regulations:

Chemical Weapon Convention List Schedules I, II, & III Chemicals: Not listed.

International Lists National Inventory

Australia: All components are listed or exempted.

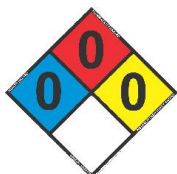


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Canada: All components are listed or exempted.
China: All components are listed or exempted.
Europe: All components are listed or exempted.
Japan: Not Determined.
Malaysia: Not Determined.
New Zealand: All components are listed or exempted.
Philippines: All components are listed or exempted.
Republic of Korea: All components are listed or exempted.
Taiwan: Not Determined.



SECTION 16

OTHER INFORMATION

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Updates made in accordance with implementation of GHS requirements.