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SAFETY DATA SHEET

Section 1- IDENTIFICATION

COMPOSITION		PRODUCT NAME
MoS2		**Molybdenum Sulfide**
SUPPLIER: **Plasmaterials, Inc.** **2268 Research Drive** **Livermore, CA 94550** **Ph: 925-447-4030**	RECOMMENDED USE: **Laboratory Chemicals** **Scientific Research**	EMERGENCY TELEPHONE NUMBERS **US: 001-800-424-9300** **Europe: 001-703-527-3887**

Section 2- HAZARD(S) IDENTIFICATION

Physical Hazards: Not Classified	**Health Hazards:** Not Classified
Environmental Hazards: Not Classified	**OSHA Defined Hazards:** Not Classified
LABEL ELEMENTS:	
Hazard Symbol: None	**Signal Word:** None

HAZARD STATEMENTS

-The substance does not meet the criteria for classification

PRECAUTIONARY STATEMENTS

-P264: Wash face, hands and any exposed skin thoroughly after handling
-P270: Do not eat, drink or smoke when using this product
-P420: Store away from other materials
-P501: Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC):

-None identified.

Section 3- COMPOSITION/INFORMATION ON INGREDIANTS

COMPONENT	CAS-No	Molecular Weight
Molybdenum Sulfide	**1317-33-5**	**160.07 g/mol**

Section 4- FIRST AID MEASURES

Inhalation: Remove victim from exposure to fresh air. Give oxygen if breathing is difficult. If not breathing, give artificial respiration. Consult a physician if symptoms develop or persist.

Skin Contact: Wash off with soap and plenty of water while removing all contaminated clothes and shoes. Consult a physician if irritation develops or persists.

Eye Contact: Do not rub eyes. Flush eyes with lukewarm water, lifting upper and lower lids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Consult a physician if irritation develops or persists.

Ingestion: Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Consult a physician if irritation develops or persists.

Most Important Symptoms/Effects: The most important known symptoms and effects are described in the labeling (see section 2) and/or in section 11. Dusts may irritate the respiratory tract, skin and eyes.

Indication of any Immediate Medical Attention and Special Treatment Needed: No data available

Section 5- FIREFIGHTING MEASURES

Suitable Extinguishing Media:	**Unsuitable Extinguishing Media:**
Water Fog, Foam, Dry Chemical Powder, Carbon Dioxide (CO2)	Do not use water jet as an extinguisher, as this will spread the fire.

Specific Hazards Arising from the Chemical:
Gases hazardous to health may be formed.

General Fire Hazards:
No unusual fire or explosion hazards noted.

Protective Equipment & Precautions for Firefighters:
As in any fire, Firefighters must wear full face, self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective clothing to prevent contact with skin and eyes.

Specific Methods:
Use water spray to cool unopened containers. Use standard firefighting procedures and consider the hazards of other involved materials.

Section 6- ACCIDENTAL RELEASE MEASURES

Personal Precautions: Keep unnecessary personnel away. Avoid dust formation. Avoid breathing vapors, mist or gas. Wear appropriate protective equipment and clothing during clean-up. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. For personnel protection see Section 8.

Environmental Precautions: Avoid discharge into drains, water courses or onto the ground.

Methods for Containment & Clean Up: Avoid the generation of dusts during clean-up. Collect dust using a vacuum cleaner equipped with HEPA filter. Stop the flow of material, if this is without risk.
Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water.
Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal according to local regulations. Never return spills to original containers for re-use.
For waste disposal see Section 13.

Section 7- HANDLING AND STORAGE

Handling:
Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed. Avoid prolonged exposure. Observe good industrial hygiene practices. Use care in handling and storage.

Storage: Store in original tightly closed container. Store in a dry and well-ventilated place. Store away from incompatible materials.

Section 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:
Occupational Exposure Limits/Components with Workplace Control Parameters:

Component	CAS-No.	Value	Control Parameters	Basis
Molybdenum Sulfide	1317-33-5	TWA	10.000000 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		TWA	15.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) Table Z-1 Limits for Air Contaminants
		TWA	3.000000 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		PEL	10 mg/m3	California permissible exposure limits for chemical contaminants (Title 8,Article 107)
		PEL	3 mg/m3	California permissible exposure limits for chemical contaminants (Title 8,Article 107)

Biological Limit Values: No biological exposure limits noted for the ingredient(s)

Engineering Controls: Follow standard monitoring procedures. Good industrial hygiene practice.

Personal Protective Equipment:

Eye/Face Protection: Wear safety glasses with side shields. Use equipment for eye protection tested and approved under appropriate standards such as NIOSH (US) or EN 166 (EU).

Skin and Body Protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Wear suitable protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection: Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday. Routinely wash work clothing and protective equipment to remove contaminants.

Section 9- PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid
Odor: No information available
Odor Threshold: No information available
pH: No information available
Melting Point/Range: 2,375°C (4,307°F)
Boiling Point/Range: 450°C (842°F)
Flash Point: No information available
Evaporation Rate: No information available
Flammability (solid,gas): No information available
Flammability or Explosive Limits:
Upper: No data available
Lower: No data available
Vapor Pressure: No information available
Vapor Density: No information available
Relative Density: 5.060 g/cm3
Solubility: No information available
Partition coefficient; n-octanol/water: No information available
Auto Ignition Temperature: No information available
Decomposition Temperature: No information available
Viscosity: No information available
Explosive Properties: No information available
Oxidizing Properties: No information available

Section 10- STABILITY AND REACTIVITY

Reactive Hazard: No information available

Stability: Stable under recommended storage conditions.

Conditions to Avoid: Contact with incompatible materials

Incompatible Materials: Strong oxidizing agents, hydrogen peroxide

Hazardous Decomposition Products:
Hazardous decomposition products formed under fire conditions – Sulphur Oxides, Molybdenum Oxides
Other decomposition products - No data available

Hazardous Polymerization: No information available

Hazardous Reactions: No information available

Section 11- TOXICOLOGICAL INFORMATION

Information on likely Routes of Exposure:

Inhalation: Dust may irritate respiratory system. Prolonged inhalation may be harmful.

Skin Contact: Dust or powder may irritate the skin
Eye Contact: Dust may irritate the eyes.
Ingestion: Expected to be a low ingestion hazard

Information on Toxicological Effects:

Acute Toxicity: No information available
Inhalation:
LC50 Inhalation – Rat – 4h - >2,820 mg/m3
Remarks: Lungs, Thorax or Respiratory: Other Changes
Dermal: No information available
Skin Corrosion/Irritation: Prolonged skin contact may cause temporary irritation.
Serious eye damage/irritation: Direct contact with eyes may cause temporary irritation
Respiratory or Skin Sensitization: No information available
Carcinogenicity: This product is not considered to be a carcinogen by IARC, ACGIH, NTP or OSHA
-**IARC**: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen.
-**NTP**: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen.
-**OSHA**: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen.
Germ Cell Mutagenicity: No information available
Reproductive Effects: No information available
Development Effects: No information available
Specific Target Organ Toxicity – single exposure: No information available
Specific Target Organ Toxicity – repeated exposure: No information available
Aspiration Hazard: No information available
Additional Information: RTECS: QA4697000
Chronic Effects: Prolonged inhalation may be harmful
-To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

Section 12- ECOLOGICAL INFORMATION

Toxicity: 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 information available
Bioaccumulation/Accumulation: No information available
Mobility in Soil: No information available
Results of PBT & vPvB assessment: PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.
Other Adverse Effects: No information available.

Section 13- DISPOSAL CONSIDERATIONS

Waste Disposal Methods: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dispose of contaminated packaging as unused product. Dispose in accordance with all applicable regulations.

Section 14- TRANSPORT INFORMATION

DOT: Not regulated as dangerous goods
IATA: Not regulated as dangerous goods
IMDG/IMO: Not regulated as dangerous goods

Section 15- REGULATORY INFORMATION

US Federal Regulations: This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt.D): Not regulated
U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not Listed
SARA 302 Extremely Hazardous Substance: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302
SARA 304 Emergency Release Notification: Not regulated
SARA 313 (TRI Reporting): This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313
SARA 311/312 Hazardous Chemical: No
SARA Hazard Categories:

- **Immediate Hazard:** No
- **Delayed Hazard:** No
- **Fire Hazard:** No
- **Pressure Hazard:** No
- **Reactive Hazard:** No

CERCLA Hazardous Substance List (40 CFR 302.4): Not Listed
Safe Drinking Water Act (SWDA): Contaminate candidate list
US California Proposition 65: This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.
US New Jersey Right-to-Know Components:

Component	CAS No.	Revision Date
Molybdenum Sulfide	1317-33-5	1993-04-24

US Pennsylvania Right-to-Know Components:

Component	CAS No.	Revision Date
Molybdenum Sulfide	1317-33-5	1993-04-24

US Massachusetts Right-to-Know Components:

Component	CAS No.	Revision Date
Molybdenum Sulfide	1317-33-5	1993-04-24

Section 16- OTHER INFORMATION

The above information is accurate to the best of our knowledge. However, since data, safety standards and government regulations are subject to change, the conditions of handling and use, or misuse are beyond our control, Plasmaterials, Inc. makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Users should satisfy themselves that they have all current data relevant to their particular use.

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