



**SAFETY DATA SHEET**  
**MOLY, MOLA, & TZM**

**SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION**

**Product Name:** Molybdenum (Moly)  
Molybdenum-Lanthanum Oxide (Mola)  
Titanium-Zirconium-Molybdenum (TZM)  
\* Fasteners, Rods, Sheets, Wires, Targets, and other machined parts

**Other Names:** Moly All-Thread & Hex Nuts  
Moly Rods  
Moly Washers  
Moly Wire  
TZM All-Thread & Hex Nuts

**Primary Use:** Product is typically used in a variety of user applications such as high-temperature furnace hot zones, lighting, coating, and medical technology. Additional use in electronics, kiln engineering, and glass manufacturing.

**CAS Number:** 7439-98-7

**Chemical Family:**  
Refractory Metal

**Distributor/Manufacturer:**  
CeraMaterials  
525 Silver Lake Rd  
Dingmans Ferry, PA 18328  
Emergency Contact: Jerry Weinstein  
Product Stewardship: 518.701.6722  
www.ceramaterials.com

**24hr Emergency Contact Info:**

Poison Control Center: 877.671.4608  
CHEMTREC US Transportation: 800.424.9300  
CHEMTREC International Transportation: 703.741.5500

**SECTION 2 - HAZARDS IDENTIFICATION****Classification:**

Material is not hazardous pursuant to regulation (EC) no. 1272/2008 EC or EC Directive 67/548/EEC \*Compact Metal / Alloy with no Risk to Human Health or the Environment.

**GHS Classification (29 CFR 1910.1200):**

Not classified as Hazardous

**Signal word, symbols, hazard and precautionary statements:**

Not applicable as material is not classified as hazardous.

**SECTION 3 - COMPOSITION**

<u>Chemical &amp; Common Name</u>	<u>CAS#</u>	<u>EC#</u>	<u>% By Weight</u>
Molybdenum	7439-98-7	231-107-2	99 -100
Addition of Ti, Zr, La, Y oxides			< 1% Mass Fraction
*Hazardous Components: None			

**SECTION 4 - FIRST AID MEASURES**

Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin, and eye contact, and ingestion.

**General:**

No special requirements.

**Inhalation:**

No exposure when used as directed. Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult and seek medical attention.

**Ingestion:**

Rinse mouth with water. Do not induce vomiting. Seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person.

**Skin:**

Remove contaminated clothing, brush material off skin, wash affected area with soap and water. If symptoms develop or persist, seek medical attention.



**Eyes:**

Flush eyes, including under upper and lower eyelids, with lukewarm water for at least 15 minutes. If symptoms develop or persist, seek medical attention.

**Most important symptoms/effects, acute and delayed.**

May cause irritation. See section 11 for more information.

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

No other relevant information available. Consult a physician after prolonged exposure to dust.

**Notes to Physicians:**

Treatment is symptomatic and supportive.

**SECTION 5 - FIRE FIGHTING MEASURES**

**Suitable (and unsuitable) extinguishing media.**

The product itself is not flammable (Solid form). Use extinguishing agent suitable for surrounding combustible materials. For powder form, use special powder for metal fires. Do not use water.

**Specific hazards arising from the chemical  
(e.g., nature of any hazardous combustion products).**

Non-combustible products, class of reaction to fire is zero. Packaging and surrounding materials may be combustible.

**Special protective equipment and precautions for fire-fighters.**

None. If in powder form, Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes.

**Flash Point:** N/A

**Flammability:** Flammable in powder form

**Autoignition Temp:** N/A

**Unusual Fire and Explosion Hazards.**

Flammable in the form of dust or powder (< 9 microns), which may ignite during intensive mechanical treatment. When heated to decomposition, molybdenum may emit toxic metal oxide fumes. May have a violent reaction with oxidizing agents. Molybdenum oxidizes rapidly above 1000°F in air at sea level. Dust-air mixtures may be explosive. Combines with oxygen on heating to form MoO<sub>3</sub>.



## SECTION 6 - ACCIDENTAL RELEASE MEASURES

### **Personal precautions, protective equipment, and emergency procedures.**

Minimize airborne dust. If dust present, wear appropriate respiratory and protective equipment specified in section 8 "Exposure Controls / Personal Protection". Avoid breathing dust and contact with skin/eyes. Remove all sources of ignition. Compressed air or dry sweeping should not be used for cleaning.

### **Environmental protection measures.**

Avoid contamination of agricultural soils (see section 12).

### **Methods and materials for containment and cleaning up.**

Frequently clean the work area to minimize the accumulation of debris. Avoid dust formation. Dust should be suction cleaned (HEPA Filter), wet dust mop, or wet-clean up directly at source. Do not use compressed air for clean-up. Place in properly labeled closed container for further handling and disposal.

### **Empty containers.**

Product packaging may contain residue. Do not reuse.

## SECTION 7 - HANDLING AND STORAGE

### **Precautions for safe handling.**

Avoid dust creation and formation. Provide adequate ventilation if dusts present. Avoid breathing dust / fumes. Avoid contact with skin and eyes. Wash thoroughly after handling and before eating or smoking. See section 8 for information on personal protection equipment. Use suction cleaning if unavoidable and when processing at high temperatures (sublimate formation, see section 10).

### **Conditions for safe storage, including any incompatibilities.**

Store in a cool, dry area in a manner to minimize dust. See section 10 for more information on incompatible materials.

## SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

**OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.**



**COMPONENTS**

Molybdenum (as Mo)  
(Insoluble compounds, total dust)

**OSHA PEL**

TWA 10 mg/m<sup>3</sup>

**ACGIH TLV**

None established

**Engineering Controls.**

Ensure adequate ventilation to maintain exposures below occupational limits. Whenever possible the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust and fume to meet established occupational exposure limits. Install suction cleaning when working with dust and sublimate and use at least one FFP2 respirator. Use good housekeeping and sanitation practices. Do not allow dusts to accumulate as they may present a fire hazard. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air. Do not empty into drains.

**Individual protection measures, such as personal protective equipment.**

**Respiratory Protection:**

If permissible levels are exceeded, use NIOSH approved dust respirator. The evaluation of workplace hazards and the identification of appropriate respiratory protection is best performed, on a case by case basis, by a qualified Industrial Hygienist.

**Eye Protection:**

As necessary, wear goggles or safety glasses with side shields.

**Skin Protection:**

Wear impermeable gloves, protective work clothing as necessary.

**SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance:</b>	Gray / Silver Solid Black / Gray Powder	<b>Partition coefficient (n-octanol/water):</b>	Not determined
<b>Odor:</b>	Odorless	<b>Solubility in H<sub>2</sub>O:</b>	Insoluble
<b>Odor threshold:</b>	Not determined	<b>Flash point:</b>	Not applicable
<b>Melting point:</b>	4730°F   2610°C	<b>Evaporation rate:</b>	Not applicable
<b>Initial boiling point / range:</b>	10040°F   5560°C	<b>Flammability:</b>	Not applicable
<b>pH:</b>	Not applicable	<b>LEL / UEL:</b>	No data
<b>Vapor pressure:</b>	1mm @ 3102°C	<b>Auto-ignition temperature:</b>	No data
<b>Vapor density:</b>	Not applicable	<b>Decomposition temperature:</b>	No data
<b>Relative density:</b>	10.2 g/cm <sup>3</sup>	<b>Viscosity:</b>	Not applicable



**SECTION 10 - STABILITY AND REACTIVITY**

<b>Reactivity:</b>	No data
<b>Chemical stability:</b>	Stable under recommended storage conditions.
<b>Possibility of hazardous reactions:</b>	None known.
<b>Conditions to avoid:</b>	High temperatures in air; strong oxidation starting around 1112°F   600°C, sublimation of MoO <sub>3</sub> starting around 1292°F   700°C.
<b>Incompatible materials:</b>	Strong oxidizing agents, sulfuric acid, phosphoric acid.
<b>Hazardous polymerization:</b>	Will not occur.
<b>Hazardous decomposition products:</b>	Molybdenum oxide fume.

**SECTION 11 - TOXICOLOGICAL INFORMATION**

**No known toxic effects.**

**Likely Routes of Exposure.**

Inhalation, skin, eyes.

**Symptoms of Exposure.**

May cause irritation if dusts is inhaled or swallowed. Fine dust may irritate skin and eyes.

**Acute and Chronic Effects:**

No data

**Carcinogenicity:**

NTP: Not identified as carcinogenic

IARC: Not identified as carcinogenic

**SECTION 12 - ECOLOGICAL INFORMATION**

<b>Ecotoxicity</b>	Molybdenosis - copper deficiency disease caused by Mo in ruminants.
<b>Persistence and degradability:</b>	Stable and inorganic material
<b>Bioaccumulative potential:</b>	No evidence of bioaccumulation potential.
<b>Mobility in soil:</b>	Decreased mobility on account of low solubility.
<b>Other adverse effects (such as hazardous to the ozone layer)</b>	No adverse effects of this material on the environment are anticipated.

