

## I. Product Identification

### Manufacturer/Supplier:

Midwest Tungsten Service  
540 Executive Drive, Willowbrook, IL 60527  
Toll Free (800) 626-0226 | Fax (630) 325-3571  
E-Mail: [mts@tungsten.com](mailto:mts@tungsten.com)

Trade Name: Molybdenum  
Synonym: Molybdenum Metal Product  
Chemical Family: Refractory metal  
Formula: Mo  
Molecular Weight: 95.94  
CAS #: 7439-98-7

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## II. Hazardous Identification

Hazardous Component: Molybdenum  
%: 0-100  
OSHA/PEL 15 mg/m<sup>3</sup>  
ACGIH/ TLV 10 mg/m<sup>3</sup>  
HMIS Ratings(Solid): Health:0 Flammability:0 Reactivity: 0  
HMIS Ratings(Powder): Health:1 Flammability:2 Reactivity: 1

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## III. Composition/Information on Ingredients

Molybdenum, addition of Ti, Zr, La, Y oxides <1% mass fraction. No hazardous components.

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#### **IV. First-Aid Measures**

**INHALATION:** Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult and seek medical attention.

**INGESTION:** Give 1-2 glasses of milk or water and 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 mild soap and water. If irritation persists, seek medical attention.

**EYE:** Flush eyes, including under upper and lower eyelids, with lukewarm water. If irritation persists seek medical attention.

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#### **V. Fire-Fighting Measures**

Flash Point: N/A  
Flammability: Flammable in powder form  
Autoignition Temperature: N/A Flammable Limits: Lower: N/A Upper: N/A

**Extinguishing Media:** For powder fires: Use special powder for metal fires. Do not use water. For fires involving solid forms: Use suitable extinguishing media for surrounding materials and type of fire.

**Special Firefighting Procedures:** Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes.

**Unusual Fire and Explosion Hazards:** Flammable in the form of dust or powder (below 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<sup>3</sup>.

## **VI. Accidental Release Measures**

Steps to Be Taken in Case Material Is Released or Spilled: Wear appropriate respiratory and protective equipment specified in section VIII. Ventilate area of spill. Remove all sources of ignition. Clean-up using methods which avoid dust generation such as vacuuming (with HEPA filter), wet dust mop or wet clean-up.

Waste Disposal Method: Dispose of in accordance with Federal, State and Local regulations.

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## **VII. Handling & Storage**

Precautions to Be Taken in Handling and Storage: Store in a cool, dry area. Store powders and/or pieces in a tightly sealed container. Wash thoroughly after handling.

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## **VIII. Exposure Controls & Personal Protection**

Molybdenum compounds are poison by subcutaneous and intraperitoneal routes. Molybdenum and its compounds are highly toxic based upon animal experiments. Symptoms of acute poisoning include severe gastrointestinal irritation with diarrhea, coma and deaths from heart failure. Experimental animals exposed to high levels accumulated Mo in the lungs, spleen and heart, and showed a decrease of DNA and RNA in the liver, kidneys and spleen. (Sax, Dangerous Properties of Industrial Materials, eighth edition.)

Routes of Exposure: Dust, mist and/or fumes generated during physical or metallurgical treatment may be inhaled, swallowed or come in contact with the skin or eyes.

Acute Effects:

Inhalation: May cause irritation to the upper respiratory system.

Ingestion: May cause acute molybdenum poisoning.

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Skin: May cause irritation.

Eye: May cause irritation.

#### Chronic Effects:

Inhalation: May cause pneumoconiosis, anemia, hyperthyroidism, abnormal liver function test, increased susceptibility to gout.

Ingestion: May cause chronic molybdenum poisoning.

Skin: No chronic effects recorded.

Eye: No chronic effects recorded.

Target Organs: May affect the lungs, bones, spleen, respiratory system, nervous system, liver, blood and heart.

Medical Conditions Aggravated by Exposure: Pre-existing lung disorders.

Carcinogenicity: NTP: No, IARC: No, OSHA: No

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## IX. Physical & Chemical Properties

Boiling Point: 5560°C

Melting Point: 2610°C

Specific Gravity: 10.2 g/cc

Vapor Pressure: N/A

Solubility in H<sub>2</sub>O: Insoluble

% Volatile: N/A

Appearance and Odor: Silver-white solid or gray-black powder, no odor.

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## X. Stability & Reactivity

Stability: Stable

Conditions to Avoid: None

Incompatibility (Material to Avoid): Oxidizing agents, bromine trifluoride, chlorine trifluoride, fluorine, lead dioxide.

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Hazardous Decomposition Products: Molybdenum, molybdenum trioxide and other molybdenum oxide fumes.

Hazardous Polymerization: Will not occur

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## **XI. Toxicological Information**

No Known toxic effects

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## **XII. Ecological Information**

Ecotoxicity: molybdenosis – copper deficiency in ruminants

Mobility: Decreased mobility on account of low solubility

Persistence and degradability: stable and inorganic

Bioaccumulation: no known evidence of accumulation

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## **XIII. Disposal Considerations**

Treat as metal waste and follow relevant regulations

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## **XIV. Transport Information**

Not specified as a dangerous good according to international transportation regulations

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## **XV. Regulatory Information**

No labeling required – obey national regulations

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## **XVI. Other Information**

*To the best of Molybdenum Total Service's knowledge, the information and recommendations contained in this publication are reliable and accurate as of the date prepared. However, accuracy, suitability, or completeness are not guaranteed, and no warranty, guarantee, or representation, expressed or implied, is made by Molybdenum Total Services. as to the absolute correctness or sufficiency of any representation contained in this and other publications; Midwest Tungsten Service assumes no responsibility in connection therewith; nor can it be assumed that all acceptable safety measures are contained in this and other publications, or that other or additional measures may not be required under particular or exceptional conditions or circumstances. Data may be changed from time to time.*

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