

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Molybdenum Metal Powder, Enriched Molybdenum
Chemical Formula	Mo
Molecular Weight	95.94 amu
CAS No.	7439-98-7
RTECS No.	QA4680000
Synonyms	Molybdate
Supplier Address*	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

*May include subsidiaries or affiliate companies/divisions

2. HAZARDS IDENTIFICATION

Emergency Overview: Flammable (USA); Highly Flammable (EU).

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 1 Flammability = 2 Reactivity = 1



HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 1 Flammability = 2 Physical Hazard = 1

HEALTH HAZARD	1
FLAMMABILITY	2
PHYSICAL HAZARD	1

For additional information on toxicity, please refer to Section 10.

Potential Health Effects

<i>Skin Contact</i>	May cause skin irritation
<i>Skin Absorption</i>	May be harmful if absorbed through the skin
<i>Eye Contact</i>	May cause eye irritation
<i>Ingestion</i>	May be harmful if swallowed
<i>Inhalation</i>	Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.
<i>Signs and Symptoms of Exposure</i>	To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	Molybdenum
CAS No.:	7439-98-7
Chemical Formula:	Mo
Molecular Weight:	95.94 amu

4. FIRST AID MEASURES

<i>Oral Exposure</i>	If swallowed, wash out mouth with water, provided person is conscious. Call a physician.
<i>Inhalation Exposure</i>	If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.
<i>Dermal Exposure</i>	In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.
<i>Eye Exposure</i>	In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

5. FIREFIGHTING MEASURES

<i>Flammability</i>	Yes
<i>Flash Point</i>	N/A
<i>Autoignition Temperature</i>	N/A
<i>Suitable Extinguishing Media</i>	Dry chemical powder

Firefighting

<i>Protective Equipment</i>	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
<i>Specific Hazard(s)</i>	Flammable solid. Emits toxic fumes under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

<i>Personal Precautions</i>	Evacuate area. Shut off all sources of ignition. Use non-sparking tools. Wear self-contained breathing apparatus, rubber boots and heavy
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Environmental Precautions

rubber gloves.

No special environmental precautions required.

Methods for Cleaning Up

Avoid raising dust. Sweep up, place in a bag and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

7. HANDLING AND STORAGE

Handling

Avoid contact with eyes, skin, and clothing.
Avoid breathing dust. Avoid prolonged or repeated exposure.

Storage

Keep container closed. Keep away from heat, sparks and open flame.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Safety shower and eye bath. Use non-sparking tools. Mechanical exhaust required.

Personal Protective Equipment

Respiratory

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand

Compatible chemical-resistant gloves.

Eye

Chemical safety goggles.

General Hygiene Measures

Wash thoroughly after handling.

Exposure Limits

Country	Source/Type	Value
Poland	NDS	4 mg/m ³
Poland	NDSCh	10 mg/m ³
Poland	NDSP	-

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form

Solid, Powder

Safety Data

Molecular Weight:

95.94 amu

pH:

N/A

BP/BP Range:

5560 °C

MP/MP Range:

2610 °C

Freezing Point:

N/A

Vapor Pressure:

N/A

Vapor Density:

N/A

Saturated Vapor

SG/Density:

Concentration: N/A

N/A

Bulk Density:

N/A

Odor Threshold:

N/A

Volatile %:

N/A

VOC Content:

N/A

Water Content:

Solvent Content:	N/A	N/A	Evaporation Rate:
Viscosity:		N/A	Surface Tension:
Partition Coefficient:	N/A	N/A	Decomposition Temperature:
Flash Point:		N/A	Explosion Limits:
Flammability:		N/A	Autoignition
Refractive Index:	Temperature: N/A	N/A	Optical Rotation:
Miscellaneous Data:	N/A	N/A	Solubility in Water:
Solvent:		N/A	



10. STABILITY AND REACTIVITY

<i>Stability</i>	Stable
<i>Materials to Avoid</i>	Strong oxidizing agents. Molybdenum reacts readily with fluorine and concentrated nitric and sulfuric acids.
<i>Hazardous Decomposition Products</i>	Nature of decomposition products not known
<i>Hazardous Polymerization</i>	Will not occur

11. TOXICOLOGICAL INFORMATION

Potential Health Effects

<i>Skin Contact</i>	May cause skin irritation
<i>Skin Absorption</i>	May be harmful if absorbed through the skin
<i>Eye Contact</i>	May cause eye irritation
<i>Ingestion</i>	May be harmful if swallowed
<i>Inhalation</i>	Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.
<i>Signs and Symptoms of Exposure</i>	To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
<i>Chronic Exposure – Teratogen</i>	
Species	Rat
Dose	5800 UG/KG
Route of Application	Oral
Exposure Time	(30W PRE/1-20D PREG)
Result	Specific Developmental Abnormalities: Musculoskeletal system.
Species	Mouse
Dose	448 mg/kg
Route of Application	Oral
Exposure Time	(MULTIGENERATIONS)
Result	Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Embryo or Fetus: Fetal death.
<i>Chronic Exposure - Mutagen</i>	
Species	Rat
Route	Inhalation
Dose	19500 µg/m ³
Mutation test	Cytogenetic analysis
<i>Chronic Exposure – Reproductive Hazard</i>	
Species	Rat
Dose	6050 µg/kg
Route of Application	Oral
Exposure Time	(35W PRE)
Result	Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Specific Developmental Abnormalities: Musculoskeletal system.

12. ECOLOGICAL INFORMATION

Toxicity

<i>Toxicity to Fish</i>	LC50 - <i>Oncorhynchus mykiss</i> (rainbow trout) - 800 mg/l - 96 h Mortality LOEC - <i>Oncorhynchus mykiss</i> (rainbow trout) - 500 mg/l - 96 h
<i>Persistence and Degradability</i>	No data available
<i>Bioaccumulative Potential</i>	No data available
<i>Mobility in Soil</i>	No data available
<i>Results of PBT and vPvB Assessment</i>	PBT/vPvB assessment not available, as chemical safety assessment not required/not conducted
<i>Other Adverse Effects</i>	No data available

13. DISPOSAL CONSIDERATIONS

<i>Product</i>	Material in the elemental state should be recovered for reuse or recycling. Observe all federal, state, and local environmental regulations.
<i>Contaminated Packaging</i>	Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT

<i>Proper Shipping Name</i>	Metal powders, flammable, n.o.s.
<i>UN No.</i>	3089
<i>Class</i>	4.1
<i>Packing Group</i>	III
<i>Hazard Label</i>	Flammable Solid
<i>PIH</i>	Not PIH

IATA

<i>Proper Shipping Name</i>	Metal powder, flammable, n.o.s.
<i>IATA UN No.</i>	3089
<i>Hazard Class</i>	4.1
<i>Packing Group</i>	III

15. REGULATORY INFORMATION

EU Additional Classification

<i>Symbol of Danger</i>	F
<i>Indication of Danger</i>	Highly Flammable
<i>Risk Statements</i>	11 / Highly flammable
<i>Safety Statements</i>	9-16-36/37/39 / Keep container in a well-ventilated place. Keep away from sources of ignition - no smoking. Wear suitable protective clothing, gloves, and eye/face protection.

US Classification and Label Text

<i>Indication of Danger</i>	Flammable (USA) Highly Flammable (EU)
<i>Risk Statements</i>	Highly flammable
<i>Safety Statements</i>	Keep container in a well-ventilated place. Keep away from sources of ignition - no smoking. Wear suitable protective clothing, gloves, and eye/face protection.

United States Regulatory Information

<i>SARA Listed</i>	No
<i>TSCA Inventory Item</i>	Yes

Canada Regulatory Information

<i>WHMIS Classification</i>	This product has been classified in accordance with the hazard criteria of the CPR, and the SDS contains all the information required by the CPR.
<i>DSL</i>	Yes
<i>NDSL</i>	No

16. OTHER INFORMATION

Prepared By	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
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Revision Number	5
Revision Note	Update supplier address

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
BOD5	Biochemical Oxygen Demand
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
COD	Chemical Oxygen Demand
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)

DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
ECL	Korean Existing Chemicals List
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RQ	Reportable Quantity
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
SNUR	Significant New Use Rule (TSCA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

General Disclaimer

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