

**Section 1 Chemical Product/Company Identification**

**Product Name:** Ferromolybdenum; Ferromolybdenum Alloy; Lump – plus 3/4 inch; Nut – 3/4 inch x 1/5; Ladle – 1/5 inch x 20 mesh; Small ladle – 20 mesh and under; 60 mesh powder.

**Product Use:** Alloying molybdenum to molten steel and iron; as ingredient in welding flux.

**REACH Registration Number(s):** Fe - 01-2119462838-24-0031  
Mo - 01-2119472304-43-0002

**Synonyms:** Alloy of Molybdenum and Iron

**Company/supplier:**  
Climax Molybdenum  
333 North Central Avenue  
Phoenix, Arizona 85004 USA

**Emergency Information:**  
Contact: 1-602-366-8100 (Days only)  
CHEMTREC: 1-800-424-9300  
FAX: 1-602-366-7309  
E-mail: robert\_stepp@fmi.com

**Section 2 Hazard Identification**

**Emergency Overview:** May cause irritation to eyes, skin and respiratory tract. Avoid breathing dust. Avoid contact with eyes, skin and clothing. Keep container closed. Wash thoroughly after handling. Use only with adequate ventilation.

**Route(s) of Entry:** Ingestion, inhalation, skin, and eye contact.

**Acute/Chronic Exposure:** May cause irritation to eyes, skin and respiratory tract. Ingestion of acute, high dose of molybdenum compounds may cause weakness and coma. Ingestion may also cause vomiting, diarrhea and shock. Additional effects may include coughing sweating, metallic taste, thirst, chills, fever, nausea, vomiting, diarrhea, frequent urination, headache, weakness and muscle pain. Repeated (chronic) inhalation overexposure may cause liver dysfunction with hyperbilirubinaemia; and chronic ingestion may cause lack of appetite, diarrhea.

Iron oxide dust and fumes may cause metal fume fever, a flu-like illness. Symptoms include fever and chills, chest tightness, coughing and a metallic taste. Symptoms may be delayed. Prolonged eye exposure may lead to permanent iron staining of the eye.

**Carcinogenicity:** (NTP) No (IARC) No (OSHA) No

**Section 3 Composition / Information on Ingredients**

CAS #	Name	Percentage
12719-90-3/11121-95-2/94277-04-0	Ferromolybdenum	100

**Risk Code:** R 33  
**Safety Phrases:** None

**Alloy composition:**

CAS No.	Name	Percentage
7439-98-7	Molybdenum	59-63
7439-89-6	Iron	34-37

**Note:** Ferromolybdenum alloy has CAS Numbers, 11121-95-2, 12719-90-3 and 94277-04-0.  
Ferromolybdenum may have residual contaminants of silicon, copper, sulfur phosphorus, and aluminum.

#### Section 4 First Aid Measures

**Eye Contact:** Wash eyes with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Seek medical attention.

**Skin Contact:** Remove contaminated clothes and shoes. Wash affected area with soap or a mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). Seek medical attention.

**Inhalation:** Remove from exposure area to fresh air. If breathing has stopped, perform artificial respiration. Keep person warm and at rest. Seek medical attention.

**Ingestion:** Get medical attention if needed. If vomiting occurs, keep head lower than hips to prevent aspiration into lungs.

#### Section 5 Fire Fighting Measures

**Flash Point:** Not available

**Flammable Limits in Air-Lower:** Not available

**Flammable Limits in Air-Upper:** Not available

**Auto Ignition Temperature:** Not available

**Extinguishing Media:** Extinguish using agent suitable for type of surrounding fire.

**Fire Fighting Equipment:** Use full firefighting turnout gear (bunker gear). Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Use any self-contained breathing apparatus with a full facepiece.

**Fire Fighting Instructions:** No acute hazard. Move container from fire area if possible. Avoid breathing vapors or dusts; keep upwind.

**Fire and Explosion Hazards:** Negligible fire hazard. Highly divided metal alloy powder may increase fire and explosion hazard. Water may react with very fine dusts which increases the possibility of hydrogen gas generation in confined space atmospheres which increase risk of fire or explosion.

**Unusual Hazards:** None

**Hazardous Combustion Products:** Thermal decomposition may release toxic and/or hazardous gases.

#### Section 6 Accidental Release Measures

**Occupational Spill:** Sweep up and place in suitable clean, dry containers for reclamation or later disposal. Do not flush spilled material into sewer.

#### Section 7 Handling and Storage

**ANSI Signal Word:** Caution!

**Handling Information:** Limit personal contact. Wear the appropriate protective clothing when risk of excessive exposure occurs.

**Storage Information:** Keep dry. Store away from incompatible substances. Store in original containers. Keep containers securely sealed.

**Section 8 Exposure Controls / Personal Protection**

**Exposure Controls:**

Molybdenum

insoluble compounds (as Mo) OSHA PEL- TWA(t): 15 mg/m<sup>3</sup>  
OSHA PEL- TWA(r): 5 mg/m<sup>3</sup>  
ACGIH TLV- TWA(i): 10 mg/m<sup>3</sup>  
ACGIH TLV-TWA(r): 3 mg/m<sup>3</sup>

Iron (as Fe)

OSHA PEL- TWA(r): 5 mg/m<sup>3</sup>  
ACGIH TLV-TWA(t): 10 mg/m<sup>3</sup>

**Engineering Controls:** Provide local exhaust ventilation system to meet published exposure limits.

**Eye Protection:** Employee should wear safety glasses or dust-resistant safety goggles to prevent eye contact.

**Emergency Eyewash:** Where there is any possibility that an employee's eyes may be exposed to this product; the employer should provide an eyewash fountain within the immediate work area for emergency use.

**Skin Protection:** Employee should wear appropriate protective clothing and equipment to prevent repeated or prolonged skin contact.

**Gloves:** Employee should wear gloves.

**Respiratory Protection:** Use respirator suitable for levels of dust/fume in the work environment. If using a respirator, establish a respiratory protection program that meets applicable standards.

**For firefighting and other immediately dangerous to life or health conditions:** Any self-contained breathing apparatus that has a full face piece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator that has a full facepiece and is set to operate in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

**Section 9 Physical and Chemical Properties**

**Appearance:** Odorless, silver/gray solid, nut, ladle, lump or powder  
**Melting Point:** Not available  
**Melting Range:** ~1630 (°C)  
**Flash Point:** Not available  
**Boiling Point:** Not available  
**Specific Gravity:** 7.86 to 9.4  
**Bulk Density:** > 65.5 lbs/gal  
**Vapor Pressure:** Not available  
**Vapor Density:** Not applicable  
**Solubility in Water:** Insoluble  
**pH:** Not applicable  
**Molecular Weight:** Mixture, not applicable  
**Molecular Formula:** Molybdenum-iron alloy of varying composition  
**State:** Divided Solid

**Section 10 Stability and Reactivity**

**Stability/Reactivity:** Stable under normal temperatures and pressures.

**Incompatibility:** Acids, bases, and oxidising materials.

**Conditions to avoid:** Prevent dispersion of ultra fine dust in air.

**Decomposition Products:** Thermal decomposition products may include metal oxide fumes.

**Hazardous Polymerization:** Has not been reported to occur under normal temperatures and pressures.

**Section 11 Toxicological Information**

***Ferromolybdenum***

**Inhalation Toxicity:** Acute exposure may cause respiratory tract irritation. Chronic exposure of workmen in a molybdenum-copper plant produced liver dysfunction with hyperbilirubinaemia. Similar Hepatotoxic effects were found in animals given molybdenum salts.

**Ingestion:** Acute high dose in animals has caused dyspnea, anorexia, colic, trembling, and in coordination. Listlessness, anemia, and deformities of the forelegs were reported. There is a correlation between high molybdenum content in food and the incidence of gout, uricemia, and xanthine oxidase activity. In animals, molybdenum may interfere with copper metabolism.

**Skin Contact:** Among chemists handling solutions of molybdenum and tungsten, there was a high incidence of gout.

**Medical conditions aggravated by exposure (at increased risk from exposure):** Persons with pre-existing respiratory, kidney, or blood disorders or gout.\* May be excreted in breast milk.

**Additional Information:** The levels of copper, sulphur, and zinc in the diet may have an effect on toxicity.  
\*

\* **Note** - Based on general information on soluble molybdenum compounds.

**Section 12 Ecological Information**

There is no available data.

**Section 13 Disposal Considerations**

**Disposal:** Recycle wherever possible. Consult State Land Waste Management Authority for disposal.

**Note** - According to European Waste Catalogue, Waste Codes are not product specific. Waste Codes should be assigned by the user based on the application in which the product is used.

**Waste Disposal Method:** Waste must be disposed of in accordance with federal, state, and local environmental control regulations.

**Section 14 Transport Information**

Not Regulated for Transport of Dangerous Goods by: ADR, IATA, IMDG or DOT

**Section 15 Regulatory Information**

**EU Risk Phrases:**

Risk Codes	Risk Phrases
R 33	Danger of cumulative effects.

**EU Safety Phrases:**

Safety Codes	Safety Phrases
S 22	Do not breathe dust.
S 24	Avoid contact with skin.

**Regulations:**

Ferromolybdenum (CAS: 12719-90-3) is found on the following regulatory lists;  
UK Workplace Exposure Limits (WELs)

Ferromolybdenum (CAS: 11121-95-2) is found on the following regulatory lists;  
UK Workplace Exposure Limits (WELs)

**This safety data sheet is in compliance with the following:**

EU legislation and its adaptations – as far as applicable - : 67/548/EEC, 1999/45/EC, 76/769/EEC, 98/24/EC, 92/85/EEC, 94/33/EC, 91/689/EEC, 1999/13/EC:

As well as the following British legislation:

The Control of Substances Hazardous to Health Regulations (COSHH) 2002 - COSHH Essentials and The Management of Health and Safety at Work Regulations 1999.

**For US Federal**

**RCRA:** Not listed.

**Clean Air Act:** Not listed.

**Clean Water Act:** This product is not identified in 40 CFR § 116.4, but in contact with water could dissociate into compounds listed in 40 CFR § 116.4.

**Safe Drinking Water Act:** This product could contain minor impurities for which there are Maximum Concentration Limits established. See 40 CFR § 141.62. (Note - It is highly unlikely that this product will be found in drinking water.)

**EPCRA, SARA Title III, Section 313 (chemicals subject to reporting requirements, see Section 2 for CAS number and percentage in mixture:** Section 312 reporting may be required for this product, depending on the quantity stored on-site.

**CERCLA Hazardous Substances:** CERCLA reporting for releases into the environment may be required in case of thermal decomposition.

**TSCA Inventory Status:** YES

**TSCA 12 (B) Export Notification:** Not listed

**For Canadian**

**WHMIS:** Class D, Division 2B

<b>Section 16</b>	<b>Other Information</b>
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**Note:** The end user should verify the suitability in using the supplied HMIS rating for their condition of end use.

**HMIS(II) Rating:** Health 1; Fire 0; Reactivity 0; Personal Protection D

**HMIS(III) Rating:** Health 1; Fire 0; Physical Haz 0; Personal Protection D

**NFPA Rating:** Health 1; Flammability: 0; Instability: 0

**Creation Date:** Unknown **Last Revision:** 11 Nov 2010

**Revision Date:** 24 March 2011

**Reason for Revision:** Add general EU format and new address.

**REACH Statement and Point of Contact Information**

Climax Molybdenum has pre-registered and registered this substance as required by the European Union's Registration, Evaluation, Authorization, and Restriction of Chemicals regulation, EC 1907/2006 (REACH). Additional registration information is available upon request. Any REACH-related inquiries regarding this substance should be directed to Ir. Aad van Meerkerk, Climax Molybdenum B.V., Rotterdam, The Netherlands, Tel: +31-181-243-705; Email: [aad\\_vanmeerkerk@fmi.com](mailto:aad_vanmeerkerk@fmi.com).

**Disclaimer**

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