Material Safety Data Sheet
Molybdic acid, 85% certified ACS powder (assay MoO3 > 85%, rest is water of hydration and amm

MSDS# 15130

Section 1 - Chemical Product and Company Identification

MSDS Name: Molybdic acid, 85% certified ACS powder (assay MoO3 > 85%, rest is water of hydration and ammonium ions)
Catalog Numbers: A173-500

This reagent consists largely of ammonium molybdate. Synonyms: Ammonium heptamolybdate ((NH4)6Mo7O24) tetrahydrate; Ammonium paramolybdate tetrahydrate; Molybdic acid (H6Mo7O24), hexaammonium salt, tetrahydrate.

Company Identification: Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
For information in the US, call: 201-796-7100
Emergency Number US: 201-796-7100
CHEMTREC Phone Number, US: 800-424-9300

Section 2 - Composition, Information on Ingredients

Risk Phrases: 36/37/38

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Warning! May be harmful if swallowed. May be harmful if inhaled. Causes eye, skin, and respiratory tract irritation. Target Organs: Blood, lungs, respiratory system, eyes, skin.

Potential Health Effects
Eye: Causes eye irritation.
Skin: Causes skin irritation.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea.
Inhalation: Causes upper respiratory tract irritation.
Chronic:

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.
Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Substance is noncombustible.

Extinguishing Media: Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

Autoignition Temperature: Not available.

Flash Point: Not applicable.

Explosion Limits:

Lower: Not available

Upper: Not available

NFPA Rating: health: 2; flammability: 0; instability: 0;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Do not breathe dust. Use only with adequate ventilation.

Storage: Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
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<tbody>
<tr>
<td>Ammonium molybdate(VI) anhydrous</td>
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<td>1000 mg/m3 IDLH</td>
<td>5 mg/m3 TWA (as Mo)</td>
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<tr>
<td>(fraction, as Mo)</td>
<td>(respirable)</td>
<td>(as Mo) (listed Mo)</td>
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<td>compounds)</td>
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<tr>
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OSHA Vacated PELs: Ammonium molybdate(VI) anhydrous: 5 mg/m3 TWA (as Mo) (listed under Molybdenum soluble compounds) Ammonium molybdate(VI) tetrahydrate: 5 mg/m3 TWA (as Mo) (listed under Molybdenum soluble compounds)

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure
Exposure Limits

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Powder
Color: white or yellow
Odor: odorless
pH: Not available
Vapor Pressure: Not applicable.
Vapor Density: Not available
Evaporation Rate: Not applicable.
Viscosity: Not applicable.
Boiling Point: decomposes
Freezing/Melting Point: 190 deg C (374.00°F)
Decomposition Temperature: Not available
Solubility in water: Slightly to negligible to insoluble
Specific Gravity/Density: 2.49
Molecular Formula: (NH4)6Mo7O24.4H2O
Molecular Weight: 1235.86

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Dust generation, excess heat.
Incompatibilities with Other Materials Strong acids.
Hazardous Decomposition Products Nitrogen oxides, ammonia and/or derivatives, oxides of molybdenum.
Hazardous Polymerization May occur.

Section 11 - Toxicological Information

RTECS#: CAS# 12027-67-7: QA5076000
CAS# 12054-85-2: None listed
RTECS: Not available. RTECS: Not available. Other: Oral median lethal dose for daily repeated doses was found to be 333 mg Mo/kg/day (up to 232 days) for ammonium molybdate. This is not an acute oral LD50 value, which is a dose administered once.
Ammonium molybdate(VI) anhydrous - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Ammonium molybdate(VI) tetrahydrate - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Other: See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Not available

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT
Shipping Name: Not regulated
Hazard Class:
Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XI
Risk Phrases:
  R 36/37/38 Irritating to eyes, respiratory system and skin.
Safety Phrases:
  S 22 Do not breathe dust.
  S 24/25 Avoid contact with skin and eyes.
WGK (Water Danger/Protection)
  CAS# 12027-67-7: 1
  CAS# 12054-85-2: 1

Canada

CAS# 12027-67-7 is listed on Canada's DSL List
Canadian WHMIS Classifications: D2B
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
CAS# 12027-67-7 is listed on Canada's Ingredient Disclosure List
CAS# 12054-85-2 is not listed on Canada's Ingredient Disclosure List.

US Federal

TSCA

CAS# 12027-67-7 is listed on the TSCA Inventory.
CAS# 12054-85-2 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the Inventory (40CFR720.3(u)(2)).

Section 16 - Other Information

MSDS Creation Date: 9/02/1997
Revision #11 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

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