Material Safety Data Sheet  
Ammonium molybdate(VI) tetrahydrate

MSDS# 01284

Section 1 - Chemical Product and Company Identification

MSDS Name: Ammonium molybdate(VI) tetrahydrate

Catalog Numbers: AC205850000, AC205851000, AC205855000, AC423310000, AC423310050, AC423311000, AC423311000, 42331-5000, A674-10, A674-3, A674-500, NC9419177

Synonyms: Ammonium heptamolybdate tetrahydrate; Ammonium heptamolybdate tetrahydrate; Ammonium paramolybdate 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:

CAS#: 12054-85-2
Chemical Name: Ammonium molybdate(VI) tetrahydrate
%: 99+
EINECS#: unlisted

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Warning! Harmful if swallowed. May cause liver and kidney damage. May cause blood abnormalities. Causes eye, skin, and respiratory tract irritation. Target Organs: Blood, kidneys, liver, respiratory system, eyes, skin.

Potential Health Effects

Eye: Causes eye irritation.
Skin: Causes skin irritation. May be harmful if absorbed through the skin.
Ingestion: Harmful if swallowed. May cause irritation of the digestive tract. May cause liver and kidney damage.
Inhalation: Causes respiratory tract irritation. May be harmful if inhaled. Exposure may cause blood abnormalities.
Chronic: No information found.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: Do not induce vomiting. Get medical aid immediately. Call a poison control center.
Inhalation:
Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

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.

Extinguishing Media:
Use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature:
Not available.

Flash Point:
Not applicable.

Explosion Limits:
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. Avoid generating dusty conditions. Provide ventilation. Do not let this chemical enter the environment.

Section 7 - Handling and Storage

Handling:
Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale.

Storage:
Store in a cool, dry place. Store in a tightly closed container.

Section 8 - Exposure Controls, Personal Protection

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium molybdate(VI) anhydrous</td>
<td>0.5 mg/m³ TWA</td>
<td>1000 mg/m³ IDLH</td>
<td>5 mg/m³ TWA (as Mo)</td>
</tr>
<tr>
<td></td>
<td>(respirable fraction, as Mo)</td>
<td>under Molybdenum (listed under Mo (listed under Molybdenum compounds).)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>soluble</td>
<td>Molybdenum (compounds).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Molybdenum (compounds).</td>
<td></td>
</tr>
<tr>
<td>Ammonium molybdate(VI) tetrahydrate</td>
<td>0.5 mg/m³ TWA</td>
<td>1000 mg/m³ IDLH</td>
<td>5 mg/m³ TWA (as Mo)</td>
</tr>
<tr>
<td></td>
<td>(respirable fraction, as Mo)</td>
<td>under Molybdenum (listed under Mo (listed under Molybdenum compounds).)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>soluble</td>
<td>Molybdenum (compounds).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Molybdenum (compounds).</td>
<td></td>
</tr>
</tbody>
</table>

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 ventilation to keep airborne concentrations low.

Exposure Limits

Personal Protective Equipment
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face
Eyes: 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: Crystalline powder
Color: white
Odor: none reported
pH: 5.0 - 5.5 (5% aq.sol.)
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)

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, dust generation, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, strong acids.
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide, ammonia and/or derivatives, oxides of molybdenum.
Hazardous Polymerization: Will not 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.

Carcinogenicity: The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.
Other: Do not empty into drains.

Section 12 - Ecological Information

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

Section 13 - Disposal Considerations

US DOT Shipping Name: Not Regulated
Hazard Class:
UN Number:
Packing Group: Canada TDG
Shipping Name: Not regulated as a hazardous material

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols: XN
Risk Phrases:
  R 22 Harmful if swallowed.
  R 36/37/38 Irritating to eyes, respiratory system and skin.
Safety Phrases:
  S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
  S 37/39 Wear suitable gloves and eye/face protection.

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: D1B, 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: 12/12/1997
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 merchantability 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.

---------------------------------------------------------------------------