Ammonium Molybdate, 4-Hydrate

Section 1: Product and Company Identification

Synonyms/General Names: Ammonium Heptamolybdate
Product Use: For educational use only
Manufacturer: Columbus Chemical Industries, Inc., Columbus, WI 53925.

Section 2: Hazards Identification

White to light green crystalline powder; slight odor of ammonia.

WARNING! Toxic by ingestion and body tissue irritant
Target organs: Lungs, blood.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Section 3: Composition / Information on Ingredients

Ammoniummolybdate, Tetrahydrate, (12054-85-2), 100%

Section 4: First Aid Measures

Always seek professional medical attention after first aid measures are provided.

Eyes: Immediately flush eyes with excess water for 15 minutes, lifting lower and upper eyelids occasionally.
Skin: Immediately flush skin with excess water for 15 minutes while removing contaminated clothing.
Ingestion: Call Poison Control immediately. Rinse mouth with cold water. Give victim 1-2 cups of water or milk to drink. Induce vomiting immediately.
Inhalation: Remove to fresh air. If not breathing, give artificial respiration.

Section 5: Fire Fighting Measures

Non-flammable solid. When heated to decomposition, emits acrid fumes of molybdate and ammonia.

Protective equipment and precautions for firefighters: Use foam or dry chemical to extinguish fire. Firefighters should wear full fire fighting turn-out gear and respiratory protection (SCBA). Cool container with water spray. Material is not sensitive to mechanical impact or static discharge.

Section 6: Accidental Release Measures

Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Sweep up spill and place in sealed bag or container for disposal. Wash spill area after pickup is complete. See Section 13 for disposal information.

Section 7: Handling and Storage

Handling: Use with adequate ventilation and do not breathe dust or vapor. Avoid contact with skin, eyes, or clothing. Wash hands thoroughly after handling.
Storage: Store in General Storage Area [Green Storage] with other items with no specific storage hazards. Store in a cool, dry, well-ventilated, locked store room away from incompatible materials.

Section 8: Exposure Controls / Personal Protection

Use ventilation to keep airborne concentrations below exposure limits. Have approved eyewash facility, safety shower, and fire extinguishers readily available. Wear chemical splash goggles and chemical resistant clothing such as gloves and aprons. Wash hands thoroughly after handling material and before eating or drinking. Use NIOSH-approved respirator with a dust cartridge. Exposure guidelines: Molybdate compounds: OSHA PEL: 5 mg/m³, ACGIH: TLV: 0.5 mg/m³, STEL: N/A.
Section 9: Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular formula</td>
<td>(NH₄)₆Mo₇O₂₄ • 4H₂O.</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>1235.86.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>2.49 g/mL @ 20°C.</td>
</tr>
<tr>
<td>Vapor Density (air=1)</td>
<td>N/A.</td>
</tr>
<tr>
<td>Melting Point</td>
<td>N/A.</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>N/A.</td>
</tr>
<tr>
<td>Vapor Pressure (20°C)</td>
<td>N/A.</td>
</tr>
<tr>
<td>Flash Point</td>
<td>N/A.</td>
</tr>
<tr>
<td>Autoignition Temp.</td>
<td>N/A.</td>
</tr>
<tr>
<td>Appearance</td>
<td>White to light green crystalline powder.</td>
</tr>
<tr>
<td>Odor</td>
<td>Slight odor of ammonia.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>N/A.</td>
</tr>
<tr>
<td>Solubility</td>
<td>Very soluble.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>N/A (Butyl acetate = 1).</td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>N/A (log PO/w).</td>
</tr>
<tr>
<td>pH</td>
<td>N/A.</td>
</tr>
<tr>
<td>LEL</td>
<td>N/A.</td>
</tr>
<tr>
<td>UEL</td>
<td>N/A.</td>
</tr>
</tbody>
</table>

N/A = Not available or applicable

Section 10: Stability and Reactivity

Avoid heat and ignition sources.

Stability: Stable under normal conditions of use and storage.

Incompatibility: Strong oxidizers.

Shelf life: Indefinite if stored properly.

Section 11: Toxicology Information

Acute Symptoms/Signs of exposure:

**Eyes**: Redness, tearing, itching, burning, conjunctivitis. **Skin**: Redness, itching.

**Ingestion**: Irritation and burning sensations of mouth and throat, nausea, vomiting and abdominal pain. **Inhalation**: Irritation of mucous membranes, coughing, wheezing, shortness of breath,

Chronic Effects: No information found.

Sensitization: none expected

Molybdate compounds: LD₅₀ [oral, rat]; 333 mg/kg; LC₅₀ [rat]; N/A; LD₅₀ Dermal [rabbit]: N/A

Material has not been found to be a carcinogen nor produce genetic, reproductive, or developmental effects.

Section 12: Ecological Information

Ecotoxicity (aquatic and terrestrial): Contains a heavy metal – toxic to terrestrial and aquatic plants and animals. Do not release to environment.

Section 13: Disposal Considerations

Check with all applicable local, regional, and national laws and regulations. Local regulations may be more stringent than regional or national regulations. Use a licensed chemical waste disposal firm for proper disposal.

Section 14: Transport Information

DOT Shipping Name: Not regulated by DOT.

DOT Hazard Class: Not regulated by DOT.

DOT Identification Number: Not regulated by DOT.

Canada TDG: Not regulated by TDG.

Hazard Class: Not regulated by TDG.

UN Number: Not regulated by TDG.

Section 15: Regulatory Information

EINECS: Not listed.

WHMIS Canada: Not WHMIS Controlled.

TSCA: All components are listed or are exempt.

California Proposition 65: Not listed.

The product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16: Other Information

Current Issue Date: January 23, 2009

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