# SAFETY DATA SHEET

## 1. Identification

**Product identifier:** AMMONIUM MOLYBDATE TETRAHYDRATE

**Other means of identification**
**Product No.:** 3420, 0716

**Recommended use and restriction on use**

**Recommended use:** Not available.
**Restrictions on use:** Not known.

**Manufacturer/Importer/Supplier/Distributor information**

**Manufacturer**

| | |
|---|---|
| Company Name: | Avantor Performance Materials, Inc. |
| Address: | 3477 Corporate Parkway, Suite 200<br>Center Valley, PA 18034 |
| Telephone: | Customer Service: 855-282-6867 |
| Fax: | |
| Contact Person: | Environmental Health & Safety |
| e-mail: | info@avantormaterials.com |

**Emergency telephone number:**
24 Hour Emergency: 908-859-2151

Chemtrec: 800-424-9300

## 2. Hazard(s) identification

**Hazard classification**

**Health hazards**

| | |
|---|---|
| Acute toxicity (Oral) | Category 4 |
| Germ cell mutagenicity | Category 2 |
| Toxic to reproduction | Category 2 |
| Specific target organ toxicity - repeated exposure | Category 2 |
| Specific target organ toxicity - repeated exposure | Category 1 |

**Label elements**

**Hazard symbol:**

**Signal word:** Danger

**Hazard statement:** Harmful if swallowed.
Suspected of causing genetic defects.
Suspected of damaging fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure.

**Precautionary statement**

**Prevention:** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Do not breathe dust. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

**Response:** IF exposed or concerned: Get medical advice/attention. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.

**Storage:** Store locked up.

**Disposal:** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Other hazards which do not result in GHS classification:** None.

## 3. Composition/information on ingredients

**Substances**

| Chemical identity | Common name and synonyms | CAS number | Content in percent (%)* |
|---|---|---|---|
| AMMONIUM MOLYBDATE (HYDRATED FORM) | | 12054-85-2 | 90 - 100% |

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## 4. First-aid measures

**General information:** Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

**Ingestion:** Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.

**Inhalation:** Move to fresh air. Get medical attention if symptoms persist.

**Skin contact:** Wash skin thoroughly with soap and water. Get medical attention if irritation persists after washing. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

**Eye contact:** Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if symptoms persist.

**Most important symptoms/effects, acute and delayed**

**Symptoms:** Harmful if swallowed. May cause irritation to skin, eyes, and respiratory tract.

**Indication of immediate medical attention and special treatment needed**

**Treatment:** Symptoms may be delayed. Treat symptomatically.

## 5. Fire-fighting measures

**General fire hazards:** No unusual fire or explosion hazards noted.

**Suitable (and unsuitable) extinguishing media**

**Suitable extinguishing media:** Use fire-extinguishing media appropriate for surrounding materials.

**Unsuitable extinguishing media:** None known.

**Specific hazards arising from the chemical:** During fire, gases hazardous to health may be formed.

**Special protective equipment and precautions for firefighters**

**Special fire fighting procedures:** Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out.

**Special protective equipment for fire-fighters:** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures:** Keep unauthorized personnel away. Keep upwind. Ventilate closed spaces before entering them. Avoid inhalation of dust. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**Methods and material for containment and cleaning up:** Sweep up and place in a clearly labeled container for chemical waste. Clean surface thoroughly to remove residual contamination.

**Notification Procedures:** Inform authorities if large amounts are involved.

**Environmental precautions:** Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

## 7. Handling and storage

**Precautions for safe handling:** Use personal protective equipment as required. Avoid inhalation of dust. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

**Conditions for safe storage, including any incompatibilities:** Keep container tightly closed. Store in a dry place. Store in a well-ventilated place.

## 8. Exposure controls/personal protection

**Control parameters**

**Occupational exposure limits**

| Chemical identity | Type | Exposure Limit values | Source |
|---|---|---|---|
| AMMONIUM MOLYBDATE (HYDRATED FORM) - Respirable fraction. - as Mo | TWA | 0.5 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| AMMONIUM MOLYBDATE (HYDRATED FORM) - Inhalable fraction. - as Mo | TWA | 10 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| AMMONIUM MOLYBDATE (HYDRATED FORM) - Respirable fraction. - as Mo | TWA | 3 mg/m3 | US. ACGIH Threshold Limit Values (2011) |
| AMMONIUM MOLYBDATE (HYDRATED FORM) - as Mo | PEL | 5 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| AMMONIUM MOLYBDATE (HYDRATED FORM) - Total dust. - as Mo | PEL | 15 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| AMMONIUM MOLYBDATE (HYDRATED FORM) - as Mo | TWA | 5 mg/m3 | US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989) |
| AMMONIUM MOLYBDATE (HYDRATED FORM) - Total dust. - as Mo | TWA | 10 mg/m3 | US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989) |

**Appropriate engineering controls** No data available.

**Individual protection measures, such as personal protective equipment**

**General information:** Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area.

**Eye/face protection:** Wear safety glasses with side shields (or goggles).

**Skin protection**

**Hand protection:** Chemical resistant gloves

**Other:** Wear suitable protective clothing.

**Respiratory protection:** In case of inadequate ventilation use suitable respirator. Air-purifying respirator with a high efficiency particulate filter.

**Hygiene measures:** Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned. Wash contaminated clothing before reuse.

## 9. Physical and chemical properties

**Appearance**

**Physical state:** Solid

**Form:** Crystalline Powder.

**Color:** Yellow green to white.

**Odor:** Odorless

**Odor threshold:** No data available.

| | |
|---|---|
| **pH:** | 5 - 5.5 |
| **Melting point/freezing point:** | 90 °C |
| **Initial boiling point and boiling range:** | 190 °C |
| **Flash Point:** | Not applicable |
| **Evaporation rate:** | No data available. |
| **Flammability (solid, gas):** | No data available. |
| **Upper/lower limit on flammability or explosive limits** | |
| **Flammability limit - upper (%):** | No data available. |
| **Flammability limit - lower (%):** | No data available. |
| **Explosive limit - upper (%):** | No data available. |
| **Explosive limit - lower (%):** | No data available. |
| **Vapor pressure:** | No data available. |
| **Vapor density:** | No data available. |
| **Relative density:** | 2.5 (20 °C) |
| **Solubility(ies)** | |
| **Solubility in water:** | Soluble |
| **Solubility (other):** | No data available. |
| **Partition coefficient (n-octanol/water):** | No data available. |
| **Auto-ignition temperature:** | No data available. |
| **Decomposition temperature:** | No data available. |
| **Viscosity:** | No data available. |

**Other information**

| | |
|---|---|
| **Molecular weight:** | 1,235.86 g/mol (H4N.2/3H2O.1/6Mo7O24) |

## 10. Stability and reactivity

| | |
|---|---|
| **Reactivity:** | No dangerous reaction known under conditions of normal use. |
| **Chemical stability:** | Material is stable under normal conditions. |
| **Possibility of hazardous reactions:** | Hazardous polymerization does not occur. |
| **Conditions to avoid:** | Excessive heat. |
| **Incompatible materials:** | Strong oxidizing agents. Alkali metals. |
| **Hazardous decomposition products:** | Nitrogen Oxides ammonia |

## 11. Toxicological information

**Information on likely routes of exposure**

| | |
|---|---|
| **Ingestion:** | Harmful if swallowed. |
| **Inhalation:** | May cause irritation to the respiratory system. |
| **Skin contact:** | May cause irritation. |
| **Eye contact:** | May irritate eyes. |

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

**Oral**

| | |
|---|---|
| **Product:** | LD 50 (Rat): 333 mg/kg |

**Dermal**
**Product:** No data available.

**Inhalation**
**Product:** No data available.

**Repeated dose toxicity**
**Product:** No data available.

**Skin corrosion/irritation**
**Product:** May cause skin irritation.

**Serious eye damage/eye irritation**
**Product:** May irritate eyes.

**Respiratory or skin sensitization**
**Product:** Not a skin sensitizer.

**Carcinogenicity**
**Product:** This substance has no evidence of carcinogenic properties.

**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**
No carcinogenic components identified

**US. National Toxicology Program (NTP) Report on Carcinogens:**
No carcinogenic components identified

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):**
No carcinogenic components identified

**Germ cell mutagenicity**

**In vitro**
**Product:** Suspected of causing genetic defects.

**In vivo**
**Product:** Suspected of causing genetic defects.

**Reproductive toxicity**
**Product:** Suspected of damaging fertility or the unborn child.

**Specific target organ toxicity - single exposure**
**Product:** None known.

**Specific target organ toxicity - repeated exposure**
**Product:** Oral Inhalation - dust and mist: Blood. Kidneys. Liver. Bones

**Aspiration hazard**
**Product:** Not classified

**Other effects:** None known.

## 12. Ecological information

**Ecotoxicity:**

**Acute hazards to the aquatic environment:**

**Fish**
**Product:** No data available.

**Aquatic invertebrates**
**Product:** No data available.

**Chronic hazards to the aquatic environment:**

**Fish**
**Product:** No data available.

**Aquatic invertebrates**
**Product:** No data available.

**Toxicity to Aquatic Plants**
**Product:** No data available.

**Persistence and degradability**

**Biodegradation**
**Product:** The product is not expected to be biodegradable.

**BOD/COD ratio**
**Product:** No data available.

**Bioaccumulative potential**
**Bioconcentration factor (BCF)**
**Product:** No data available on bioaccumulation.

**Partition coefficient n-octanol / water (log Kow)**
**Product:** No data available.

**Mobility in soil:** The product is water soluble and may spread in water systems.

**Other adverse effects:** The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

## 13. Disposal considerations

**Disposal instructions:** Discharge, treatment, or disposal may be subject to national, state, or local laws.

**Contaminated packaging:** Since emptied containers retain product residue, follow label warnings even after container is emptied.

## 14. Transport information

**DOT**
Not regulated.

**IMDG**
Not regulated.

**IATA**

Not regulated.

## 15. Regulatory information

**US federal regulations**

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**
None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**
None present or none present in regulated quantities.

**Superfund amendments and reauthorization act of 1986 (SARA)**

**Hazard categories**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X | Acute (Immediate) | X | Chronic (Delayed) | | Fire | | Reactive | | Pressure Generating |

**SARA 302 Extremely hazardous substance**
None present or none present in regulated quantities.

**SARA 304 Emergency release notification**
None present or none present in regulated quantities.

**SARA 311/312 Hazardous chemical**

| Chemical identity | Threshold Planning Quantity |
|---|---|
| AMMONIUM MOLYBDATE (HYDRATED FORM) | 500 lbs |

**SARA 313 (TRI reporting)**

| Chemical identity | Reporting threshold for other users | Reporting threshold for manufacturing and processing |
|---|---|---|
| AMMONIUM MOLYBDATE (HYDRATED FORM) | 10000 lbs | 25000 lbs. |

**Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**
None present or none present in regulated quantities.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**
None present or none present in regulated quantities.

**US state regulations**

**US. California Proposition 65**
No ingredient regulated by CA Prop 65 present.

**US. New Jersey Worker and Community Right-to-Know Act**
No ingredient regulated by NJ Right-to-Know Law present.

**US. Massachusetts RTK - Substance List**
No ingredient regulated by MA Right-to-Know Law present.

**US. Pennsylvania RTK - Hazardous Substances**
No ingredient regulated by PA Right-to-Know Law present.

**US. Rhode Island RTK**
AMMONIUM MOLYBDATE (HYDRATED FORM) Listed

**Inventory Status:**

| | |
|---|---|
| Canada DSL Inventory List: | On or in compliance with the inventory |
| EU EINECS List: | On or in compliance with the inventory |
| US TSCA Inventory: | On or in compliance with the inventory |
| Australia AICS: | On or in compliance with the inventory |
| Japan (ENCS) List: | On or in compliance with the inventory |
| China Inv. Existing Chemical Substances: | On or in compliance with the inventory |
| Korea Existing Chemicals Inv. (KECI): | Not in compliance with the inventory. |
| Canada NDSL Inventory: | Not in compliance with the inventory. |
| Philippines PICCS: | On or in compliance with the inventory |
| New Zealand Inventory of Chemicals: | On or in compliance with the inventory |
| Japan ISHL Listing: | On or in compliance with the inventory |
| Japan Pharmacopoeia Listing: | Not in compliance with the inventory. |

## 16.Other information, including date of preparation or last revision

**NFPA Hazard ID**

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

| | |
|---|---|
| **Issue date:** | 08-04-2014 |
| **Revision date:** | No data available. |
| **Version #:** | 1.0 |
| **Further information:** | No data available. |

**Disclaimer:**

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