

SECTION 1: Identification

1.1. Product identifier

Trade name : AMMONIUM MOLYBDATE 4hydr
 Type of product : Hygroscopic substance. Preventive measures apply to the substance in dry state only
 EC-No. : 234-722-4
 CAS-No. : 12054-85-2
 Product code : 101125xxx
 Formula : (NH₄)₆Mo₇O₂₄·4H₂O

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended uses and restrictions : For laboratory use only

1.3. Supplier's details

Labchem (Pty)Ltd
 6 Wakefield Road
 Founders Hill
 1609 Johannesburg - South Africa
 T +27 11 452 1116 - F +27 86 588 0293
techlab@labchem.co.za - www.labchem.co.za

1.4. Emergency telephone number

Emergency number : +27 11 452 1116

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to the United Nations GHS

Acute toxicity (oral), Category 4 : H302
 Hazardous to the aquatic environment — : H402
 Acute Hazard, Category 3
 Full text of H statements : see section 16

2.2. Label elements

Labelling according to the United Nations GHS

Hazard pictograms (GHS-ZA) :



GHS07

Signal word (GHS-ZA) : Warning
 Hazard statements (GHS-ZA) : H302 - Harmful if swallowed.
 H402 - Harmful to aquatic life
 Precautionary statements (GHS-ZA) : P264 - Wash hands, forearms and face thoroughly after handling.
 P270 - Do not eat, drink or smoke when using this product.
 P273 - Avoid release to the environment.
 P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
 P330 - Rinse mouth.
 P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards

Adverse physicochemical, human health and environmental effects : Harmful if swallowed, Harmful to aquatic life

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance identification codes: See section 1.1

| Name | Product identifier | % | Classification according to the United Nations GHS |
|--|----------------------|------|--|
| hexaammonium molybdate, tetrahydrate (Main constituent) | (CAS-No.) 12054-85-2 | ≥ 99 | Acute Tox. 4 (Oral), H302 Aquatic Acute 3, H402 |

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

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According to SANS 10234:2019 and SANS 11014:2010

SECTION 4: First aid measures

4.1. Description of first aid measures

| | |
|---------------------------------------|--|
| First-aid measures general | : Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Call a poison center or a doctor if you feel unwell. |
| First-aid measures after inhalation | : Remove person to fresh air and keep comfortable for breathing. Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service. |
| First-aid measures after skin contact | : Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists. Wash skin with plenty of water. |
| First-aid measures after eye contact | : Rinse with water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists. Rinse eyes with water as a precaution. |
| First-aid measures after ingestion | : Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Give milk to drink. Call Poison Information Centre (www.big.be/antigif.html). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital. Rinse mouth. Call a poison center or a doctor if you feel unwell. |

4.2. Most important symptoms and effects, both acute and delayed

| | |
|---|---|
| Symptoms/effects after inhalation | : AFTER INHALATION OF DUST: Coughing. |
| Symptoms/effects after skin contact | : No effects known. |
| Symptoms/effects after eye contact | : Slight irritation. ON CONTINUOUS EXPOSURE/CONTACT: Irritation of the eye tissue. |
| Symptoms/effects after ingestion | : AFTER INGESTION OF HIGH QUANTITIES: Irritation of the oral mucous membranes. Nausea. Vomiting. Gastrointestinal complaints. |
| Chronic symptoms | : ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Headache. Loss of weight. Pain in the joints. Change in the haemogramme/blood composition. |
| Potential adverse human health effects and symptoms | : Practically non-toxic if swallowed (LD50 oral, rat > 2000 mg/kg). Not irritant to skin. Not irritant to eyes. |

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

| | |
|------------------------------|--|
| Suitable extinguishing media | : Adapt extinguishing media to the environment for surrounding fires. Water spray. Dry powder. Foam. |
|------------------------------|--|

5.2. Special hazards arising from the substance or mixture

| | |
|--|--|
| Fire hazard | : DIRECT FIRE HAZARD: Non combustible. INDIRECT FIRE HAZARD: Reactions involving a fire hazard: see "Reactivity Hazard". |
| Hazardous decomposition products in case of fire | : On burning: release of toxic and corrosive gases/vapours (nitrous vapours, ammonia) and formation of metallic fumes. |

5.3. Advice for firefighters

| | |
|--------------------------------|---|
| Precautionary measures fire | : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows. |
| Firefighting instructions | : Cool tanks/drums with water spray/remove them into safety. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water. |
| Protection during firefighting | : Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing. |

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

No additional information available

6.1.1. For non-emergency personnel

| | |
|----------------------|--|
| Protective equipment | : Gloves. Protective clothing. Dust cloud production: compressed air/oxygen apparatus. |
| Emergency procedures | : Ventilate spillage area. Mark the danger area. Prevent dust cloud formation. No naked flames. Wash contaminated clothes. |

6.1.2. For emergency responders

| | |
|----------------------|---|
| Protective equipment | : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection". |
|----------------------|---|

6.2. Environmental precautions

Avoid release to the environment. Prevent spreading in sewers.

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According to SANS 10234:2019 and SANS 11014:2010

6.3. Methods and material for containment and cleaning up

- For containment : Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust cloud with water spray. Collect spillage.
- Methods for cleaning up : Mechanically recover the product. Stop dust cloud by humidifying. Scoop solid spill into closing containers. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.
- Other information : Dispose of materials or solid residues at an authorized site.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Avoid raising dust. Keep away from naked flames/heat. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Keep container tightly closed.
- Hygiene measures : Observe strict hygiene. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Store in a well-ventilated place. Keep cool.
- Storage area : Store in a dry area. Keep container in a well-ventilated place. Meet the legal requirements.
- Heat and ignition sources : KEEP SUBSTANCE AWAY FROM: heat sources.
- Information on mixed storage : KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. water/moisture.
- Special rules on packaging : SPECIAL REQUIREMENTS: closing. watertight. dry. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
- Packaging materials : SUITABLE MATERIAL: synthetic material. tin.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| AMMONIUM MOLYBDATE 4hydr (12054-85-2) | |
|--|---|
| South Africa - Occupational Exposure Limits (Recommended Limits) | |
| Local name | Molybdenum |
| OEL TWA (mg/m ³) | 5 mg/m ³ soluble compounds as Mo 10 mg/m ³ insoluble compounds, as Mo |
| OEL STEL (mg/m ³) | 10 mg/m ³ soluble compounds as Mo 20 mg/m ³ insoluble compounds, as Mo |
| Regulatory reference | Government Notice. R: 1179 |

8.2. Appropriate engineering controls

- Appropriate engineering controls : Ensure good ventilation of the work station.
- Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures, such as personal protective equipment (PPE)

- Materials for protective clothing : GIVE EXCELLENT RESISTANCE: nitrile rubber. GIVE GOOD RESISTANCE: natural rubber
- Hand protection : Protective gloves against chemicals (EN 374)
- Eye protection : Safety glasses. In case of dust production: protective goggles. Safety glasses
- Skin and body protection : Protective clothing
- Respiratory protection : Dust production: dust mask with filter type P2

Personal protective equipment symbol(s):



8.4. Exposure limit values for the other components

No additional information available

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Solid
- Appearance : Crystalline solid. Powder.

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According to SANS 10234:2019 and SANS 11014:2010

| | |
|---|---|
| Molecular mass | : 1235.86 g/mol |
| Colour | : Colourless-white to yellow-green. |
| Odour | : Odourless. |
| Odour threshold | : No data available |
| pH | : 5 (5 %) |
| pH solution | : No data available |
| Relative evaporation rate (butylacetate=1) | : < 1 |
| Relative evaporation rate (ether=1) | : No data available |
| Melting point | : Not applicable (decomposes) |
| Freezing point | : Not applicable |
| Boiling point | : Not applicable |
| Flash point | : Not applicable |
| Auto-ignition temperature | : Not applicable |
| Decomposition temperature | : 90 °C |
| Flammability (solid, gas) | : Non flammable. |
| Vapour pressure | : No data available |
| Vapour pressure at 50 °C | : No data available |
| Relative vapour density at 20 °C | : Not applicable |
| Relative density | : 2.86 (20 °C, OECD 109: Density of Liquids and Solids) |
| Relative density of saturated gas/air mixture | : No data available |
| Density | : 2498 kg/m ³ (25 °C) |
| Relative gas density | : No data available |
| Solubility | : Soluble in water. Water: 20.65 g/100ml (20 °C, OECD 105: Water Solubility) |
| Partition coefficient n-octanol/water (Log Pow) | : No data available |
| Partition coefficient n-octanol/water (Log Kow) | : No data available |
| Viscosity, kinematic | : No data available |
| Viscosity, dynamic | : No data available |
| Explosive properties | : No data available |
| Oxidising properties | : No data available |
| Explosive limits | : Not applicable |
| Lower explosive limit (LEL) | : No data available |
| Upper explosive limit (UEL) | : No data available |

9.2. Other information

| | |
|------------------|-------------------------------|
| VOC content | : Not applicable (inorganic) |
| Other properties | : Hygroscopic. Acid reaction. |

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Hygroscopic.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

| | |
|-----------------------------|-------------------------|
| Acute toxicity (oral) | : Harmful if swallowed. |
| Acute toxicity (dermal) | : Not classified |
| Acute toxicity (inhalation) | : Not classified |

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According to SANS 10234:2019 and SANS 11014:2010

| AMMONIUM MOLYBDATE 4hydr (12054-85-2) | |
|---------------------------------------|--|
| LD50 oral rat | 3883 mg/kg bodyweight (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental value, Oral) |
| LC50 inhalation rat (mg/l) | > 2.08 mg/l (4 h, Rat, Male / female, Experimental value, (maximum achievable concentration), Inhalation (dust)) |

| | |
|---|---|
| Skin corrosion/irritation | : Not classified pH: 5 (5 %) |
| Serious eye damage/irritation | : Not classified pH: 5 (5 %) |
| Respiratory or skin sensitisation | : Not classified |
| Germ cell mutagenicity | : Not classified |
| Carcinogenicity | : Not classified |
| Reproductive toxicity | : Not classified |
| STOT-single exposure | : Not classified |
| STOT-repeated exposure | : Not classified |
| Aspiration hazard | : Not classified |
| Potential adverse human health effects and symptoms | : Practically non-toxic if swallowed (LD50 oral, rat > 2000 mg/kg). Not irritant to skin. Not irritant to eyes. |

SECTION 12: Ecological information

12.1. Toxicity

| | |
|---|--|
| Ecology - general | : Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008. Harmful to aquatic life. |
| Ecology - air | : Not included in the list of substances which may contribute to the greenhouse effect (IPCC). Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014). Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). |
| Ecology - water | : Harmful to crustacea. Slightly harmful to fishes. May cause eutrophication. Not harmful to algae. |
| Hazardous to the aquatic environment, short-term (acute) | : Harmful to aquatic life. |
| Hazardous to the aquatic environment, long-term (chronic) | : Not classified |

| AMMONIUM MOLYBDATE 4hydr (12054-85-2) | |
|---------------------------------------|--|
| LC50 fish 1 | 420 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value, GLP) |
| EC50 Daphnia 1 | 79 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Read-across, GLP) |
| EC50 72h algae (1) | 2453.6 mg/l (OECD 201: Alga, Growth Inhibition Test, Pseudokirchneriella subcapitata, Static system, Fresh water, Read-across, Dihydrate) |
| BCF fish 1 | < 0.22 (OECD 305: Bioconcentration: Flow-Through Fish Test, 60 day(s), Oncorhynchus mykiss, Flow-through system, Fresh water, Experimental value, GLP) |

12.2. Persistence and degradability

| AMMONIUM MOLYBDATE 4hydr (12054-85-2) | |
|---------------------------------------|-----------------------------------|
| Persistence and degradability | Biodegradability: not applicable. |
| Chemical oxygen demand (COD) | Not applicable (inorganic) |
| ThOD | Not applicable (inorganic) |

12.3. Bioaccumulative potential

| AMMONIUM MOLYBDATE 4hydr (12054-85-2) | |
|---------------------------------------|--|
| BCF fish 1 | < 0.22 (OECD 305: Bioconcentration: Flow-Through Fish Test, 60 day(s), Oncorhynchus mykiss, Flow-through system, Fresh water, Experimental value, GLP) |
| Bioaccumulative potential | Low potential for bioaccumulation (BCF < 500). |

12.4. Mobility in soil

| AMMONIUM MOLYBDATE 4hydr (12054-85-2) | |
|---------------------------------------|---|
| Mobility in soil | No additional information available |
| Ecology - soil | No (test)data on mobility of the substance available. |

12.5. Other adverse effects

| | |
|-----------------------|---------------------------------------|
| Ozone | : Not classified |
| Other adverse effects | : No additional information available |

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According to SANS 10234:2019 and SANS 11014:2010

SECTION 13: Disposal considerations

13.1. Disposal methods

- Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
- Product/Packaging disposal recommendations : Do not discharge into drains or the environment. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Remove to an authorized dump (Class I). Precipitate/make insoluble. Immobilize the toxic or harmful components.
- Additional information : Can be considered as non hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.

SECTION 14: Transport information

In accordance with SANS / IMDG / IATA

| SANS | IMDG | IATA |
|---|------------------------------------|------------------------------------|
| 14.1. UN number | | |
| Not regulated for transport | | |
| 14.2. Proper Shipping Name | | |
| Not applicable | Not applicable | Not applicable |
| 14.3. Transport hazard class(es) | | |
| Not applicable | Not applicable | Not applicable |
| Not applicable | Not applicable | Not applicable |
| 14.4. Packing group | | |
| Not applicable | Not applicable | Not applicable |
| 14.5. Environmental hazards | | |
| Dangerous for the environment : No | Dangerous for the environment : No | Dangerous for the environment : No |
| No supplementary information available | | |

14.6. Special precautions for user

- SANS

Transport regulations (UN) : Not subject

- IMDG

Transport regulations (IMDG) : Not subject

- IATA

Transport regulations (IATA) : Not subject

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health, and environmental national regulations specific for the product

Regulatory reference : SANS 10234:2008; SANS 11014:2010; SANS 10228:2012; SANS 10229:2010; SANS 10232(1,2,4), SANS 10231:2018; Occupational Health and Safety Act 85 of 1993; National Road Traffic Act 93 of 1996.

SECTION 16: Other information

Issue date : 01/07/2020

Revision date : 01/07/2025

Full text of H-statements:

| | |
|------|-------------------------|
| H302 | Harmful if swallowed. |
| H402 | Harmful to aquatic life |

SDS South Africa

The data provided in this Safety Data Sheet (SDS) is correct to the best of our knowledge. The data relates to the specific product as named and is intended as a guide to the safe handling of the product in all its facets. The data may no longer be valid if the product is used in any process or in combination with other products. This SDS is not a quality specification nor any form of guarantee.