
Safety Data Sheet**1. Chemical product and company identification****Product name** : Ammonium molybdate solution**SDS code** : P8-12**Company/undertaking identification** :

HAYASHI PURE CHEMICAL IND.,LTD.

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URL : <https://www.hpc-j.co.jp/>**Emergency number** : 06-6910-7305**Recommended use** : For research and experimental use only.**Restrictions on use** : Do not use on a human body or for animal medicines, foods, household products, cosmetics, etc.**2. Hazards identification****GHS classification**

| | | | |
|--|--|---------------------------------|-----------------------------|
| Physical hazards | Explosives | classification not possible | |
| | Flammable gases | No classification | |
| | Aerosol | classification not possible | |
| | Oxidizing gases | No classification | |
| | Gases under pressure | No classification | |
| | Flammable liquids | classification not possible | |
| | Flammable solids | No classification | |
| | Self-reactive substances and mixtures | classification not possible | |
| | Pyrophoric liquids | classification not possible | |
| | Pyrophoric solids | No classification | |
| | Self-heating substances and mixtures | classification not possible | |
| | Substances and mixtures which in contact with water emit flammable gases | classification not possible | |
| | Oxidizing liquids | classification not possible | |
| | Oxidizing solids | No classification | |
| | Organic peroxides | classification not possible | |
| | Corrosive to metals | classification not possible | |
| | Desensitized explosives | classification not possible | |
| | Health hazards | Acute toxicity (oral) | No classification |
| | | Acute toxicity (dermal) | classification not possible |
| | | Acute toxicity (inhalation:gas) | No classification |
| Acute toxicity (inhalation:vapors) | | classification not possible | |
| Acute toxicity (inhalation:dust/mist) | | classification not possible | |
| Skin corrosion/irritation | | classification not possible | |
| Serious eye damage/eye irritation | | No classification | |
| Respiratory sensitization | | classification not possible | |
| Skin sensitization | | classification not possible | |
| Germ cell mutagenicity | | classification not possible | |
| Carcinogenicity | | Category 2 | |
| Reproductive toxicity | | Category 2 | |
| Specific target organ toxicity (single exposure) | No classification | | |

| | | |
|-----------------------|---|-----------------------------|
| Environmental hazards | Specific target organ toxicity (repeated exposure) | No classification |
| | Aspiration hazard | classification not possible |
| | Hazardous to the aquatic environment, short-term (acute) | Category 3 |
| | Hazardous to the aquatic environment, long-term (chronic) | classification not possible |
| | Hazardous to the ozone layer | classification not possible |

Hazard pictograms (GHS JP)



GHS08

| | |
|-----------------------------------|---|
| Signal word (GHS JP) | : Warning |
| Hazard statements (GHS JP) | : Suspected of causing cancer (H351) Suspected of damaging fertility or the unborn child (H361) Harmful to aquatic life (H402) |
| Precautionary statements (GHS JP) | |
| Prevention | : Obtain special instructions before use. (P201) Do not handle until all safety precautions have been read and understood. (P202) Avoid release to the environment. (P273) Wear protective gloves/protective clothing/eye protection/face protection. (P280) |
| Response | : IF exposed or concerned: Get medical advice/attention. (P308+P313) |
| Storage | : Store locked up. (P405) |
| Disposal | : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501) |

3. Composition/information on ingredients

Distinction of substance or mixture : Mixture

| Name | Concentration or Concentration range | Formula | Kanpo number | | CAS RN |
|--------------------|--------------------------------------|---|--------------|-----------------------------|------------|
| | | | CSCL no | ISHL no | |
| Ammonium molybdate | About 9.2% | (NH ₄) ₆ Mo ₇ O ₂₄ | (1)-389 | Existing Chemical Substance | 12027-67-7 |
| Hydrogen chloride | About 0.5% | HCl | (1)-215 | Existing Chemical Substance | 7647-01-0 |
| Water | About 90.3% | H ₂ O | - | - | 7732-18-5 |

The above concentration or concentration range are not product specification.

All percentages listed in the above concentration or concentration range are wt%, unless otherwise specified.

4. First aid measures

First aid measures

| | |
|---------------------------------------|---|
| First-aid measures after inhalation | : Remove person to fresh air and keep comfortable for breathing. Get immediate medical advice/attention. |
| First-aid measures after skin contact | : Remove/Take off immediately all contaminated clothing. Gently wash with plenty of soap and water. Get immediate medical advice/attention. |
| First-aid measures after eye contact | : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention. |
| First-aid measures after ingestion | : Rinse mouth. Get immediate medical advice/attention. |

5. Fire fighting measures

- Suitable extinguishing media : Use proper extinguishing media depending on peripheral fire.
- Unsuitable extinguishing media : Do not use a heavy water stream.
- Hazardous decomposition products in case of fire : In case of fire, product may produce irritative or toxic fumes/gases.
- Firefighting instructions : If ignited, for the initial fire-fighting, cut off combustion sources, extinguish fire at a stroke using appropriate fire-extinguishers.
In the case of peripheral fire, quickly remove movable containers to safe places.
If unable to be moved containers, sprinkle water to containers and surrounding equipment, etc. to cool.
- Protection during firefighting : Wear appropriate fire-resistant clothing including self contained-compressed air breathing apparatus.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

- General measures : Before entering, ventilate the area.
Do not let unauthorized persons come close to the area.
Immediately place the leakage area in isolation, with taking proper distances for all directions.
Wear appropriate personal protective devices to prevent inhalation and contact with eye, skin, and clothing, and never attempt to work on the lee.

Environmental precautions

- Environmental precautions : Avoid release to the environment.
Prevent entry to sewers and public waters.

Methods and Equipment for Containment and Cleaning up

- Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it.
Collect leaking and spilled liquid in sealable containers as far as possible.
Wash out the spilled area with large amounts of water.

7. Handling and storage

Handling

- Technical measures : Work with appropriate personal protective equipment to prevent inhalation or contact to eyes, skin, and clothing.
Handle with care to prevent leakage, overflowing, or scattering, minimize generation of mist or vapor, and thoroughly ventilate.
- Precautions for safe handling : Do not eat, drink or smoke when using this product.
Thoroughly wash your hands and gargle after handling.
Ensure good ventilation of the work station.
Do not contact, breathe or swallow.
- Prevents handling of incompatible substances or mixtures : Avoid prolonged or repeated exposure.

Storage

- Storage conditions : Store locked up.
Store in a well-ventilated place, away from direct sunlight. Keep container tightly closed and keep away from fire and heat sources.
- Material used in packaging/containers : Light shielding airtight container.
- Technical measures : Comply with applicable regulations.
- Storage temperature : Cool and dark place

8. Exposure controls / Personal protection equipment

| Exposure limit values | |
|---------------------------|--|
| Ammonium molybdate | |
| Exposure limits (ACGIH) | TWA 0.5 mg/m ³ (R),STEL - (as Mo Soluble compounds) |
| Hydrogen chloride | |
| Exposure limits (JSOH) | 【Ceiling】2ppm(3.0mg/m ³) |
| Exposure limits (ACGIH) | TWA -,STEL C 2 ppm |

Appropriate engineering controls : Cover up tightly the generation source at the handling place or install local exhaust equipment or overall ventilation equipment. Install safety showers and eye-fountains near a handling place. Clearly indicate the location.

Protective equipment

Respiratory protection : Gas mask for acid gases
 Hand protection : Impervious protective gloves
 Eye protection : Protective glasses (general glasses, glasses with side-shields, goggles)
 Skin and body protection : Impervious aprons, Impervious work clothing, Impervious long boots

9. Physical and chemical properties

Physical state : Liquid
 Appearance : Liquid
 Color : colorless transparent
 Odor : Odorless
 pH : 3.3 (25°C)
 Melting point : No data available
 Freezing point : No data available
 Boiling point : No data available
 Flash point : No data available
 Auto-ignition temperature : No data available
 Decomposition temperature : No data available
 Flammability (solid, gas) : No data available
 Vapor pressure : No data available
 Relative density : No data available
 Density : 1.06 g/cm³ (20°C)
 Relative gas density : No data available
 Solubility : No data available
 Partition coefficient n-octanol/water (Log Pow) : No data available
 Explosive limits (vol %) : No data available
 Viscosity, kinematic : No data available
 Particle characteristics : No data available

10. Stability and reactivity

Reactivity : No data available
 Chemical stability : Stable under normal handling conditions. Precipitation may occur depending on the storage conditions.
 Possibility of hazardous reactions : Reacts with oxidizing agents to evolve toxic chlorine gas. When heated, evolves toxic hydrogen chloride gas. Reacts with many kinds of metals to evolve flammable/explosive hydrogen gas.
 Conditions to avoid : Sunlight, heat. Contact with bases, oxidizing agents, reducing agents, combustible substances, organic peroxides and metals.
 Incompatible materials : Bases, Oxidizing agents, Reducing agents, Combustible substances, Organic peroxides, Metals
 Hazardous decomposition products : Chlorine, Hydrogen chloride, Ammonia, Nitrogen oxides, Molybdenum compounds, Hydrogen

11. Toxicological information

The information in this section is based on the "GHS Classification Results" by NITE.

| As a product | |
|---------------------------------------|---|
| Acute toxicity (oral) | No classification |
| Acute toxicity (dermal) | classification not possible |
| Acute toxicity (inhalation) | vapors:classification not possible Gases:No classification dust, mist:classification not possible |
| Skin corrosion/irritation | classification not possible |
| Serious eye damage/irritation | No classification |
| Respiratory sensitization | classification not possible |
| Skin sensitization | classification not possible |
| Germ cell mutagenicity | classification not possible |
| Carcinogenicity | Category 2 |
| Reproductive toxicity | Category 2 |
| STOT-single exposure | No classification |
| STOT-repeated exposure | No classification |
| Aspiration hazard | classification not possible |
| Ammonium molybdate | |
| Acute toxicity (oral) | Category 4 |
| Acute toxicity (dermal) | classification not possible |
| Acute toxicity (gas) | No classification |
| Acute toxicity (vapour) | No classification |
| Acute toxicity (inhalation:dust/mist) | classification not possible |
| Skin corrosion/irritation | classification not possible |
| Serious eye damage/irritation | Category 2 |
| Respiratory sensitization | classification not possible |
| Skin sensitization | classification not possible |
| Germ cell mutagenicity | classification not possible |
| Carcinogenicity | Category 2 |
| Reproductive toxicity | Category 2 |
| STOT-single exposure | Category 3 (Respiratory tract irritation.) |
| STOT-repeated exposure | Category 2 |
| Aspiration hazard | classification not possible |
| Hydrogen chloride | |
| Acute toxicity (oral) | Category 3 |
| Acute toxicity (dermal) | No classification |
| Acute toxicity (gas) | Category 3 |
| Acute toxicity (vapour) | classification not possible |
| Acute toxicity (inhalation:dust/mist) | Category 2 |
| Skin corrosion/irritation | Category 1 |
| Serious eye damage/irritation | Category 1 |
| Respiratory sensitization | Category 1 |
| Skin sensitization | No classification |
| Germ cell mutagenicity | classification not possible |
| Carcinogenicity | No classification |
| Reproductive toxicity | classification not possible |
| STOT-single exposure | Category 1 |
| STOT-repeated exposure | Category 1 |
| Aspiration hazard | No classification |
| Water | |
| Acute toxicity (oral) | No classification |
| Acute toxicity (dermal) | No classification |
| Acute toxicity (gas) | No classification |
| Acute toxicity (vapour) | No classification |
| Acute toxicity (inhalation:dust/mist) | No classification |
| Skin corrosion/irritation | No classification |

| Water | |
|-------------------------------|-------------------|
| Serious eye damage/irritation | No classification |
| Respiratory sensitization | No classification |
| Skin sensitization | No classification |
| Germ cell mutagenicity | No classification |
| Carcinogenicity | No classification |
| Reproductive toxicity | No classification |
| STOT-single exposure | No classification |
| STOT-repeated exposure | No classification |
| Aspiration hazard | No classification |

12. Ecological information

The information in this section is based on the "GHS Classification Results" by NITE.

| As a product | |
|---|-----------------------------|
| Hazardous to the aquatic environment, short-term (acute) | Category 3 |
| Hazardous to the aquatic environment, long-term (chronic) | classification not possible |
| Persistence and degradability | No data available |
| Bioaccumulative potential | No data available |
| Mobility in soil | No data available |
| Ozone | classification not possible |
| Ammonium molybdate | |
| Hazardous to Aquatic Environment - Acute Hazard | classification not possible |
| Hazardous to Aquatic Environment - Chronic Hazard | classification not possible |
| Persistence and degradability | No data available |
| Bioaccumulative potential | No data available |
| Mobility in soil | No data available |
| Hazardous to the ozone layer | classification not possible |
| Hydrogen chloride | |
| Hazardous to Aquatic Environment - Acute Hazard | Category 1 |
| Hazardous to Aquatic Environment - Chronic Hazard | No classification |
| Persistence and degradability | No data available |
| Bioaccumulative potential | No data available |
| Mobility in soil | No data available |
| Hazardous to the ozone layer | classification not possible |
| Water | |
| Hazardous to Aquatic Environment - Acute Hazard | No classification |
| Hazardous to Aquatic Environment - Chronic Hazard | No classification |
| Persistence and degradability | No data available |
| Bioaccumulative potential | No data available |
| Mobility in soil | No data available |
| Hazardous to the ozone layer | classification not possible |

13. Disposal considerations

- Ecology - waste materials : With the detail information of the waste, subcontract its disposal to a waste disposer authorized by a Prefectural Governor.
- Contaminated container and packaging : Empty the packaging completely prior to disposal.
Empty containers should be taken for recycle, recovery or waste in accordance with local regulation.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG) : Not applicable
 Proper Shipping Name (IMDG) : Not applicable
 Packing group (IMDG) : Not applicable
 Transport hazard class(es) (IMDG) : Not applicable

Air transport(IATA)

UN-No. (IATA) : Not applicable
 Proper Shipping Name (IATA) : Not applicable
 Packing group (IATA) : Not applicable
 Transport hazard class(es) (IATA) : Not applicable

Marine pollutant : Not applicable

Regulations in Japan

Regulatory information by sea : Not applicable
 Regulatory information by air : Not applicable

Special transport precautions : When transporting, load containers so that they do not tip over, damage, drop or collapse. Make sure there is no leak in containers.

15. Regulatory information

National law

Industrial Safety and Health Law : Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57, Para.1, Enforcement Order Art.18 Item 1, Item 2, Attached Table No.9)
 Notifiable Substances (Law Art.57-2, Enforcement Order Art.18-2 Item 1, Item 2, Attached Table No.9)
 Molybdenum and its compounds (Ordinance number : 603)
 Hydrogen chloride (Ordinance number : 98)
 Substances on dental health checkup (Act, Art.66, Para.3, Enforcement Order, Art.22 Item 3)

Japanese Poisonous and Deleterious Substances Control Law : Not applicable

Water Pollution Prevention Law : Hazardous Substances (Act, Art.2, Enforcement Order Art.2, Ministerial Ordinance to Provide for Effluent Standards, Art.1)
 Designated Chemical Substances (Law Article 2, Paragraph 4, Enforcement Order Article 3-3)

Fire Service Law : Not applicable

Air Pollution Control Law : Hazardous substances (Article 2, Paragraph 1, Item 3 of the Law, Article 1 of the Enforcement Ordinance)
 Specified substances (Article 17, Paragraph 1 of the Law, Article 10 of the Enforcement Ordinance)
 Hazardous Air Pollutants (Central Environment Council Report No. 9)

Foreign Exchange and Foreign Trade Control Act : Export Trade Control Ordinance appendix 1-16

Japanese Pollutant Release and Transfer Register Law (PRTR Law) : Class 1 Designated Chemical Substances (Act Art.2 para.2, Enforcement Order Art.1 Appended Table No.1)
 Molybdenum and its compounds as molybdenum(5.3%)

Labor Standards Act : Chemical Substances Causing Occupational Illnesses (Act Art.75, Para.2, Ordinance Attached Table 1-2, Item 4-1, MHLW Notification No.36 of 1978)

16. Other information

Data sources : Handbook of 17423 Chemical Products, The Chemical Daily Co, Ltd.
 International Chemical Safety Cards.
 National Institute of Technology and Evaluation (NITE).
 2020 Emergency Response Guidebook (ERG 2020).

Other information : The SDS is copyrighted material of Hayashi Pure Chemical Ind, Ltd. This Safety Data Sheet is intended to be provided for business operators who handle chemical substance products of the relevant product and is not intended to assure safety in any way. The Safety Data Sheet does not verify all the information on the applicable chemical substance in the present time. With the recognition in that

unknown danger constantly exists in the relevant chemical substance, the product shall be used in the principle of self-responsibility of the user with the highest priority to safety from transport and unpacking to disposal. When the relevant chemical substance is used, the user him/herself shall collect safety information and shall investigate laws and regulations at the place, organizations, countries, etc. where the substance is actually used and give the highest priority to them. The Company shall take no responsibility for investigating state and local regulations and the user shall handle this problem on his/her own responsibility. In the event that SDS in Japanese and SDS translated into other languages exist, the document described in Japanese is prior to all other documents whether or not there is any difference in contents, and documents in other languages shall be references.