

## SAFETY DATA SHEET

according to Regulation (EC) No 1907/2006 (REACH) as amended

### Ammonium molybdate tetrahydrate

|               |                |         |     |
|---------------|----------------|---------|-----|
| Creation date | 13th June 2016 | Version | 6.0 |
| Revision date | 06th June 2025 |         |     |

#### SECTION 1: Identification of the substance/mixture and of the company/undertaking

- 1.1. Product identifier**  
 Substance / mixture Ammonium molybdate tetrahydrate  
 Chemical name substance  
 CAS number Ammonium molybdate tetrahydrate  
 EC (EINECS) number 12054-85-2  
 Other substance name 234-320-9  
 Ammonium molybdate tetrahydrate, Heptamolybdenan hexaamonný tetrahydrát
- 1.2. Relevant identified uses of the substance or mixture and uses advised against**  
**Substance's intended use**  
 Chemical production, analytical chemistry, laboratory synthesis, industrial applications.  
**Substance uses advised against**  
 The product should not be used in ways other than those referred in Section 1.
- 1.3. Details of the supplier of the safety data sheet**  
**Supplier**  
 Name or trade name Ing. Petr Švec - PENTA s.r.o.  
 Address Radiová 1122/1, Praha 10, 102 00  
 Czech Republic  
 Identification number (CRN) 02096013  
 VAT Reg No CZ02096013  
 Phone +420 226 060 681  
 E-mail info@pentachemicals.eu  
 Web address www.pentachemicals.eu
- Competent person responsible for the safety data sheet**  
 Name Ing. Petr Švec - PENTA s.r.o.  
 E-mail info@pentachemicals.eu
- 1.4. Emergency telephone number**  
 European emergency number: 112 112

#### SECTION 2: Hazards identification

- 2.1. Classification of the substance or mixture**  
**Classification of the substance in accordance with Regulation (EC) No 1272/2008**  
 The substance is classified as dangerous.

Skin Irrit. 2, H315  
 Eye Irrit. 2, H319  
 STOT SE 3, H335

#### Most serious adverse effects on human health and the environment

Causes serious eye irritation. May cause respiratory irritation. Causes skin irritation.

- 2.2. Label elements**  
**Hazard pictogram**



#### Signal word

Warning

#### Dangerous substance

Ammonium molybdate tetrahydrate  
 (EC: 234-320-9; CAS: 12054-85-2)

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#### Hazard statements

|      |                                   |
|------|-----------------------------------|
| H315 | Causes skin irritation.           |
| H319 | Causes serious eye irritation.    |
| H335 | May cause respiratory irritation. |

#### Precautionary statements

|                |  |
|----------------|--|
| P280           | Wear eye protection/protective gloves/protective clothing.   |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |

#### 2.3. Other hazards

The substance does not have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605. Substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII of Regulation (EC) No. 1907/2006 (REACH) as amended. Does not contain any PMT or vPvM components. Dust may form explosive mixture with air.

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

##### Chemical characterization

The substance specified below.

| Identification numbers           | Substance name   | Content in % weight | Classification according to Regulation (EC) No 1272/2008     | Note |
|----------------------------------|--|---------------------|--|------|
| CAS: 12054-85-2<br>EC: 234-320-9 | <b>substance main component</b><br>Ammonium molybdate tetrahydrate | >99                 | Skin Irrit. 2, H315<br>Eye Irrit. 2, H319<br>STOT SE 3, H335 |      |

Full text of all classifications and hazard statements is given in the section 16.

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

Take care of your own safety. If any health problems are manifested or if in doubt, inform a doctor and show him information from this safety data sheet. If unconscious, put the person in the stabilized (recovery) position on his side with his head slightly bent backwards and make sure that airways are free; never induce vomiting. If the person vomits by himself, make sure that the vomit is not inhaled. In life threatening conditions first of all provide resuscitation of the affected person and ensure medical assistance. Respiratory arrest - provide artificial respiration immediately. Cardiac arrest - provide indirect cardiac massage immediately.

##### If inhaled

Terminate the exposure immediately; move the affected person to fresh air. Protect the person against growing cold. Provide medical treatment if irritation, dyspnoea or other symptoms persist.

##### If on skin

Remove contaminated clothes. Wash the affected area with plenty of water, lukewarm if possible. Soap, soap solution or shampoo should be used if there is no skin injury. Provide medical treatment if skin irritation persists.

##### If in eyes

Rinse eyes immediately with a flow of running water, open the eyelids (also using force if needed); remove contact lenses immediately if worn by the affected person. Rinsing should continue at least for 10 minutes. Provide medical treatment, specialized if possible.

##### If swallowed

Rinse out the mouth with water and provide 2-5 dL of water. Provide medical treatment if the person has any health problems.

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

##### If inhaled

May cause respiratory irritation.

##### If on skin

Causes skin irritation.

##### If in eyes

Causes serious eye irritation.

##### If swallowed

Irritation, nausea.

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

Symptomatic treatment.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

##### Suitable extinguishing media

Alcohol-resistant foam, carbon dioxide, powder, water spray jet, water mist.

##### Unsuitable extinguishing media

Water - full jet.

#### 5.2. Special hazards arising from the substance or mixture

In the event of fire, carbon monoxide, carbon dioxide and other toxic gases may arise. Inhalation of hazardous degradation (pyrolysis) products may cause serious health damage.

#### 5.3. Advice for firefighters

Self-Contained Breathing Apparatus (SCBA) with a chemical protection suit only where personal (close) contact is likely. Use a self-contained breathing apparatus and full-body protective clothing. Do not allow run-off of contaminated fire extinguishing material to enter drains or surface and ground water.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment for work. Follow the instructions in the Sections 7 and 8. Do not inhale dust. Prevent contact with skin and eyes.

#### 6.2. Environmental precautions

Prevent contamination of the soil and entering surface or ground water.

#### 6.3. Methods and material for containment and cleaning up

Place the product mechanically in an appropriate manner. Dispose of the collected material according to the instructions in the section 13.

#### 6.4. Reference to other sections

See the Section 7, 8 and 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Prevent formation of gases and vapours in concentrations exceeding the occupational exposure limits. Do not inhale dust. Prevent contact with skin and eyes. Wash hands and exposed parts of the body thoroughly after handling. Use only outdoors or in a well-ventilated area. Use personal protective equipment as per Section 8. Observe valid legal regulations on safety and health protection.

#### 7.2. Conditions for safe storage, including any incompatibilities

Store in tightly closed containers in cold, dry and well ventilated areas designated for this purpose. Store locked up. Keep container tightly closed.

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Storage class

13 - Non-combustible solids that cannot be assigned to any of the above storage classes

Storage temperature

max. 25 °C

#### 7.3. Specific end use(s)

not available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

none

### 8.2. Exposure controls

Follow the usual measures intended for health protection at work and especially for good ventilation. This can be achieved only by local suction or efficient general ventilation. If exposure limits cannot be observed in this mode, suitable protection of airways must be used. Do not eat, drink and smoke during work. Wash your hands thoroughly with water and soap after work and before breaks for a meal and rest.

#### Eye/face protection

Closed goggles which are protected against dust penetration.

#### Skin protection

When choosing appropriate thickness, material and permeability of the gloves, observe recommendations of their particular manufacturer. Observe other recommendations of the manufacturer. Other protection: protective workwear. Contaminated skin should be washed thoroughly. Hand protection: Protective gloves resistant to the product (nitrile rubber).

#### Respiratory protection

Half-mask with anti-dust filter when the exposition limits of substances are exceeded or in the location with insufficient ventilation.

#### Thermal hazard

Not available.

#### Environmental exposure controls

Observe usual measures for protection of the environment, see Section 6.2.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

|  |                     |
|--|---------------------|
| Physical state   | solid               |
| Colour   | light yellow        |
| Odour  | containing ammoniac |
| Melting point/freezing point                             | 90 °C               |
| Boiling point or initial boiling point and boiling range | 190 °C              |
| Flammability   | data not available  |
| Lower and upper explosion limit                          | data not available  |
| Flash point  | data not available  |
| Auto-ignition temperature                                | data not available  |
| Decomposition temperature                                | data not available  |
| pH   | 5.3 (undiluted)     |
| Kinematic viscosity                                      | data not available  |
| Solubility in water                                      | 400 g/l             |
| Partition coefficient n-octanol/water (log value)        | data not available  |
| Vapour pressure  | data not available  |
| Density and/or relative density                          | data not available  |
| Relative vapour density                                  | data not available  |
| Particle characteristics                                 | data not available  |

### 9.2. Other information

not available

## SAFETY DATA SHEET

according to Regulation (EC) No 1907/2006 (REACH) as amended

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| Creation date | 13th June 2016 | Version | 6.0 |
| Revision date | 06th June 2025 |         |     |

#### SECTION 10: Stability and reactivity

##### 10.1. Reactivity

The substance is non-flammable.

##### 10.2. Chemical stability

The product is stable under normal conditions.

##### 10.3. Possibility of hazardous reactions

Unknown.

##### 10.4. Conditions to avoid

The product is stable and no degradation occurs under normal use. Protect against flames, sparks, overheating and against frost.

##### 10.5. Incompatible materials

Protect against strong acids, bases and oxidizing agents.

##### 10.6. Hazardous decomposition products

Not developed under normal uses. Dangerous outcomes such as carbon monoxide and carbon dioxide are formed at high temperature and in fire.

#### SECTION 11: Toxicological information

##### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

No toxicological data is available for the substance. Inhalation of solvent vapors above values exceeding exposure limits for working environment may result in acute inhalation poisoning, depending on the level of concentration and exposure time.

##### Acute toxicity

Based on available data the classification criteria are not met.

| Ammonium molybdate tetrahydrate |                  |           |               |         |     |
|---------------------------------|------------------|-----------|---------------|---------|-----|
| Route of exposure               | Parameter        | Value     | Exposure time | Species | Sex |
| Oral                            | LD <sub>50</sub> | 680 mg/kg |               | Rat     |     |

##### Skin corrosion/irritation

Causes skin irritation.

##### Serious eye damage/irritation

Causes serious eye irritation.

##### Respiratory or skin sensitisation

No data available for the substance. Based on available data the classification criteria are not met.

##### Germ cell mutagenicity

No data available for the substance. Based on available data the classification criteria are not met.

##### Carcinogenicity

No data available for the substance. Based on available data the classification criteria are not met.

##### Reproductive toxicity

No data available for the substance. Based on available data the classification criteria are not met.

##### Toxicity for specific target organ - single exposure

May cause respiratory irritation.

## SAFETY DATA SHEET

according to Regulation (EC) No 1907/2006 (REACH) as amended

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|---------------|----------------|---------|-----|
| Creation date | 13th June 2016 | Version | 6.0 |
| Revision date | 06th June 2025 |         |     |

#### Toxicity for specific target organ - repeated exposure

No data available for the substance. Based on available data the classification criteria are not met.

#### Aspiration hazard

No data available for the substance. Based on available data the classification criteria are not met.

#### 11.2. Information on other hazards

##### Endocrine disrupting properties

Based on available data the classification criteria are not met. Does not contain any components that may cause endocrine disruption for humans.

##### Other information

not available

### SECTION 12: Ecological information

#### 12.1. Toxicity

Based on available data the classification criteria are not met.

##### Acute toxicity

| Ammonium molybdate tetrahydrate |          |               |         |             |
|---------------------------------|----------|---------------|---------|-------------|
| Parameter                       | Value    | Exposure time | Species | Environment |
| LC <sub>50</sub>                | 25 mg/kg | 96 hours      | Fish    |             |
| IC <sub>50</sub>                | 54 mg/kg | 72 hours      | Algae   |             |

#### 12.2. Persistence and degradability

No data available for the substance.

#### 12.3. Bioaccumulative potential

No data available for the substance.

#### 12.4. Mobility in soil

Based on available data the classification criteria are not met. Does not contain any PMT or vPvM components.

#### 12.5. Results of PBT and vPvB assessment

Based on available data the classification criteria are not met. Does not contain any PBT or vPvB components. Product does not contain any substance meeting the criteria for PBT or vPvB in accordance with the Annex XIII of Regulation (EC) No 1907/2006 (REACH) as amended.

#### 12.6. Endocrine disrupting properties

Based on available data the classification criteria are not met. Does not contain any components that may cause endocrine disruption in the environment.

#### 12.7. Other adverse effects

Not available.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Hazard of environmental contamination; dispose of the waste in accordance with the local and/or national regulations. Any unused product and contaminated packaging should be put in labelled containers for waste collection and submitted for disposal to a person authorised for waste removal (a specialized company) that is entitled for such activity. Do not empty unused product in drainage systems. The product must not be disposed of with municipal waste. Empty containers may be used at waste incinerators to produce energy or deposited in a dump with appropriate classification. Perfectly cleaned containers can be submitted for recycling.

##### Waste management legislation

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste, as amended. Decision 2000/532/EC establishing a list of wastes, as amended.

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according to Regulation (EC) No 1907/2006 (REACH) as amended

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|               |                |         |     |
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| Creation date | 13th June 2016 | Version | 6.0 |
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#### SECTION 14: Transport information

- 14.1. UN number or ID number**  
not subject to transport regulations
- 14.2. UN proper shipping name**  
not relevant
- 14.3. Transport hazard class(es)**  
not relevant
- 14.4. Packing group**  
not relevant
- 14.5. Environmental hazards**  
not relevant
- 14.6. Special precautions for user**  
Reference in the Sections 4 to 8.
- 14.7. Maritime transport in bulk according to IMO instruments**  
not relevant

#### SECTION 15: Regulatory information

- 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**  
Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18th December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing the European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No. 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, as amended. REGULATION (EC) No. 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL as amended. Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
- 15.2. Chemical safety assessment**  
A chemical safety assessment has not been carried out.

#### SECTION 16: Other information

##### A list of standard risk phrases used in the safety data sheet

|      |                                   |
|------|-----------------------------------|
| H315 | Causes skin irritation.           |
| H319 | Causes serious eye irritation.    |
| H335 | May cause respiratory irritation. |

##### Guidelines for safe handling used in the safety data sheet

|                |  |
|----------------|--|
| P280           | Wear eye protection/protective gloves/protective clothing.   |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |

##### Other important information about human health protection

The product must not be - unless specifically approved by the manufacturer/importer - used for purposes other than as per the Section 1. The user is responsible for adherence to all related health protection regulations.

##### Key to abbreviations and acronyms used in the safety data sheet

|        |   |
|--------|---|
| ADR    | Agreement concerning the international carriage of dangerous goods by road                        |
| BCF    | Bioconcentration Factor   |
| CAS    | Chemical Abstracts Service  |
| CLP    | Regulation (EC) No 1272/2008 on classification, labelling and packaging of substance and mixtures |
| EC     | Identification code for each substance listed in EINECS   |
| EINECS | European Inventory of Existing Commercial Chemical Substances                                     |
| EmS    | Emergency plan  |
| EU     | European Union  |

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|                  |   |
|------------------|---|
| EuPCS            | European Product Categorisation System  |
| Eye Irrit.       | Eye irritation  |
| IATA             | International Air Transport Association   |
| IBC              | International Code For The Construction And Equipment of Ships Carrying Dangerous Chemicals       |
| IC <sub>50</sub> | Concentration causing 50% blockade  |
| ICAO             | International Civil Aviation Organization   |
| IMDG             | International Maritime Dangerous Goods  |
| IMO              | International Maritime Organization   |
| INCI             | International Nomenclature of Cosmetic Ingredients  |
| ISO              | International Organization for Standardization  |
| IUPAC            | International Union of Pure and Applied Chemistry   |
| LC <sub>50</sub> | Lethal concentration of a substance in which it can be expected death of 50% of the population    |
| LD <sub>50</sub> | Lethal dose of a substance in which it can be expected death of 50% of the population             |
| log Kow          | Octanol-water partition coefficient   |
| OEL              | Occupational Exposure Limits  |
| PBT              | Persistent, bioaccumulative and toxic   |
| PMT              | Persistent, mobile and toxic  |
| ppm              | Parts per million   |
| REACH            | Registration, Evaluation, Authorisation and Restriction of Chemicals                              |
| RID              | Agreement on the transport of dangerous goods by rail   |
| Skin Irrit.      | Skin irritation   |
| STOT SE          | Specific target organ toxicity - single exposure  |
| UN number        | Four-figure identification number of the substance or article taken from the UN Model Regulations |
| UVCB             | Substances of unknown or variable composition, complex reaction products or biological materials  |
| VOC              | Volatile organic compounds  |
| vPvB             | Very persistent and very bioaccumulative  |
| vPvM             | Very persistent and very mobile   |

#### Training guidelines

Inform the personnel about the recommended ways of use, mandatory protective equipment, first aid and prohibited ways of handling the product.

#### Recommended restrictions of use

not available

#### Information about data sources used to compile the Safety Data Sheet

REGULATION (EC) No. 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL (REACH) as amended.  
REGULATION (EC) No. 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL as amended. Data from the manufacturer of the substance / mixture, if available - information from registration dossiers.

#### The changes (which information has been added, deleted or modified)

The version 6.0 replaces the SDS version from Thursday, 21 December 2023. Changes were made in sections 2, 11, 12, 13 and 16.

#### More information

Classification procedure - calculation method.

#### Statement

The safety data sheet provides information aimed at ensuring safety and health protection at work and environmental protection. The provided information corresponds to the current status of knowledge and experience and complies with valid legal regulations. The information should not be understood as guaranteeing the suitability and usability of the product for a particular application.