

## Material Safety Data Sheet AMMONIUM MALATE

### Section 1 - Product Identification

Synonyms : Ammonium malate  
Molecular Weight : 168.15 g/mol  
Chemical Formula :  $\text{NH}_4(\text{C}_2\text{H}_4\text{O}(\text{COO})_2)$   
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Recommended use of the chemical and restrictions on use  
The product is used in industrial manufacturing, in particular in :

- Food industry
- Cosmetics industry

### Section 2 – Composition/Information on Ingredients

Chemical Name	EC No/CAS No	Purity, %
Diazanium 2-hydroxybutanedioate	243-649-7; 6283-27-8	min. 99.9

### Section 3 – Hazards Identification

**3.1 Potential Acute Health Effects:** Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

**3.2.Potential Chronic Health Effects: CARCINOGENIC EFFECTS:** Not available. **MUTAGENIC EFFECTS:** Not available. **TERATOGENIC EFFECTS:** Classified POSSIBLE for human. **DEVELOPMENTAL TOXICITY:** Classified Reproductive system/toxin/female, Reproductive system/ toxin/male [SUSPECTED]. The substance may be toxic to blood, the reproductive system, liver, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Classification of the substance according to GHS

### Section 4 – First-Aid Measures

#### 4.1. Description of first aid measures

##### Skin contact

Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

##### Eye contact

Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

##### Inhalation

If symptoms such as nose or throat irritation are observed, move to fresh air.

##### Ingestion

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Victim is fully conscious: immediately induce vomiting. Induce vomiting by giving a 0.9 % saline solution. Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital. Doctor: administration of chemical antidote.

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

N.A.

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

N.A.

## Section 5 – Fire Fighting Measures

**5.1. Flammability of the Product:** Non flammable.

**5.2. Auto-Ignition Temperature:** Not available.

**5.3. Flash Points:** Not available.

**5.4. Flammable Limits:** Not available.

**5.5. Products of Combustion:** Not available.

**5.6. Fire Hazards in Presence of Various Substances:** Not applicable.

**5.7. Explosion Hazards in Presence of Various Substances:** Non-explosive in presence of open flames and sparks, of shocks.

**5.8. Fire Fighting Media and Instructions:** Not applicable.

**5.9. Special Remarks on Fire Hazards:** N.A.

**5.10. Special Remarks on Explosion Hazards:** N.A.

## Section 6 – Accidental Release Measures

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

Avoid dust formation. In case of exposure to prolonged or high level of airborne dust, wear a personal respirator in compliance with national legislation.

**6.2. Methods and material for containment and cleaning up**

**Land spill**

Vacuum, shovel or sweep up and place in containers for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during clean up and disposal. No personal protective equipment is needed to clean up land spills.

**Spillage into water**

Where possible, remove any intact containers from the water. Advise local water authority that none of the affected water should be used for irrigation or for the abstraction of potable water until natural dilution returns the boron value to its normal environmental background level (see sections 12, 13 and 15).

## Section 7 – Handling and Storage

**7.1. Precautions for safe Handling**

To maintain package integrity and to minimise caking of the product, bags should be handled on a first-in first out basis. Good housekeeping and dust prevention procedures should be followed to minimise dust generation and accumulation. Your supplier can advise you on safe handling, please contact the supplier.

The product should be kept away from strong reducing agents. Apply above handling advice when mixing with other substances.

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

No special handling precautions are required, but dry, indoor storage is recommended. No specific requirements. Provide appropriate ventilation and store bags such as to prevent any accidental damage.

## Section 8 – Exposure Controls/Personal Protection

### 8.1. Appropriate engineering controls

Maintain air concentrations below occupational exposure standards.

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

#### Respiratory protection

In case of prolonged exposure to dust wear a personal respirator in compliance with national legislation (make reference to the appropriate CEN standard)

#### Eyes and hands protection

Goggles and gloves are not required for normal industrial exposures, but may be warranted if environment is excessively dusty.

## Section 9 – Physical and Chemical Properties

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

Appearance : White crystalline powder

Odour : Odourless

Odour threshold : N.A.

pH @ 20°C : N.A.

Melting point : Decomposes

Boiling point : N.A.

Evaporation rate : N.A.

Flammability : N.A.

Upper/lower flammability or explosive limits : Non explosive

Vapour pressure : Negligible @ 20°C

Vapour density : N.A.

Relative density : N.A.

Solubility in water : Easily soluble in water and ethanol.

Partition coefficient: n-octanol/water : N.A

Auto-ignition temperature : N.A.

Decomposition temperature : H<sub>2</sub>O @ 120°C

Viscosity : N.A.

### 9.2. Other information

Molecular weight : 168.15 g/mol

Specific gravity : N.A.

## Section 10 – Stability and Reactivity

**10.1. Stability:** The product is stable.

**10.2. Instability Temperature:** Not available.

**10.3. Conditions of Instability:** Not available.

**10.4. Incompatibility with various substances:** Not available.

**10.5. Corrosivity:** Non-corrosive in presence of glass.

**10.6. Special Remarks on Reactivity:** Not available.

**10.7. Special Remarks on Corrosivity:** Not available.

**10.8. Polymerization:** Will not occur

## Section 11 – Toxicological Information

**11.1. Routes of Entry:** Inhalation. Ingestion.

**11.2. Toxicity to Animals:** LD50 Oral - Rat - 3.380 mg/kg(Diammonium maleate anhydrous)

**11.3. Chronic Effects on Humans:** TERATOGENIC EFFECTS: Classified POSSIBLE for human. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. May cause damage to the following organs: blood, the reproductive system, liver, central nervous system (CNS).

**11.4. Other Toxic Effects on Humans:** Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

**11.5. Special Remarks on Toxicity to Animals:** Not available.

**11.6. Special Remarks on other Toxic Effects on Humans:** Acute Potential Health Effects: Skin: May cause skin irritation. Eyes: Dust may cause mechanical Inhalation: May cause respiratory tract irritation. Ingestion: Ingestion of large amounts may cause gastrointestinal tract irritation with gastric pain, nausea, and vomiting. May also affect behavior/central nervous system (tremor, convulsions, change in motor activity), and respiration (dyspnea). Chronic Potential Health Effects: Ingestion: Prolonged or repeated ingestion may affect behavior/central nervous system (symptoms similar to acute exposure) as well as liver, metabolism, blood, and urinary system.

## Section 12 – Ecological Information

**12.1. Ecotoxicity:** Not available

**12.2. BOD5 and COD:** Not available.

**12.3. Products of Biodegradation:** Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**12.5. Toxicity of the Products of Biodegradation:** The product itself and its products of degradation are not toxic.

## Section 13 – Disposal Considerations

**13.1. Disposal methods**

Waste must be disposed of in accordance with federal, state and local environmental control regulations

## Section 14 – Transport Information

**14.1. UN number :** N.A.

**14.2. UN proper shipping name :** N.A

**14.3. Transport of hazard classes :** N.A

**14.4. Packing group :** N.A

**14.5. Environmental hazards :** N.A.

**14.6. Special precautions for user :** N.A

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

## Section 15 – Regulatory Information

**15.1. Federal and State Regulations:** TSCA 8(b) inventory

**15.2. Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**15.3. Other Classifications:**

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC): R20/21/22- Harmful by inhalation, in contact with skin and if swallowed. R36/38- Irritating to eyes and skin. R63- Possible risk of harm to the unborn child. S24/25- Avoid contact with skin and eyes.

**15.4. HMIS (U.S.A.):** Health Hazard: 1 Fire Hazard: 0 Reactivity: 0 Personal Protection: C

**15.5. National Fire Protection Association (U.S.A.):** Health: 1 Flammability: 0 Reactivity: 0 Specific hazard:

**15.6. Protective Equipment:** Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles

## Section 16 : Additional Information

**16.1. Mainly changes made to the previous version of this Material Safety Data Sheet (MSDS):**

- This MSDS complies with ISO 11014; the requirements of UN-GHS

Revision No	Revision content
05	<ul style="list-style-type: none"> <li>• This SDS is updated in accordance with the GHS (Rev.6) (2015)-Guidance on the Compilation of Safety data Sheets.</li> <li>• This SDS is updated in line with Eti Maden Corporate identity.</li> </ul>

## 16.2. List of abbreviation and acronyms used in this MSDS

**SDS** : Safety Data Sheets

**Index N°** : atomic number of the element most characteristic of the properties of the substance

**CAS No** : Chemical Abstracts Service number

**EC No** : EINECS Number : European Inventory of Existing Commercial Substances

**Repr. Cat. 2** : Substance presumed human reproductive toxicant

**Acute Oral Cat. 5** : Substance which is of relatively low acute oral toxicity.

**GHS** : Globally Harmonised System of Classification and Labelling

**LD<sub>50</sub>** : Median Lethal Dose

**LC<sub>50</sub>** : Lethal Concentration, 50%

**N.A.** : Not Applicable

**OSHA** : Occupational Safety & Health Administration

**Cal OSHA** : The State of California Division of Occupational Safety and Health (DOSH)

**PEL** : Permissible Exposure Limits

**ACGIH** : American Conference of Governmental Industrial Hygienists

**TLV** : Threshold Limit Value

**Japanese MITI** : Japanese Ministry of International Trade and Industry

**EC<sub>50</sub>** : Half maximal effective concentration

**UN** : United Nations

**U.S. EPA TSCA Inventory**: Inventory of the chemical substances manufactured or processed in the United States according to Toxic Substances Control Act compiled and published under the authority of the Environmental Protection Agency

**Canadian DSL**: Canadian Domestic Substances List

## 16.3. List of relevant hazard statements and precautionary statements used in this MSDS

### Hazard Statement

**H361 d**: Suspected of damaging the unborn child

**H319**: Causes serious eye irritation

**H303**: May be harmful if swallowed

### Precautionary Statements

#### Prevention

**P201**: Obtain special instructions before use.

**P202**: Do not handle until all safety precautions have been read and understood.

**P281**: Use personal protective equipment as required.

**P264**: Wash eyes thoroughly after handling.

**P280:** Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response**

**P308 + P313:** If exposed or concerned: get medical advice/attention.

**P305+P351+P338:** IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

**P337+P313:** If eye irritation persists: Get medical advice/attention.

**Storage**

**P405:** Store locked up.

**Disposal**

**P501:** Dispose of contents/container to in accordance with local regulations.

**16.4. Disclaimer of Liability**

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