

ACR21224

## Aluminium nitrate nonahydrate

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

**产品说明:**  
**Product Description:** 硝酸铝九水合物  
Aluminium nitrate nonahydrate

**Cat No. :** 212240000; 212240100; 212241000  
**Synonyms** Nitric acid, aluminum salt, nonahydrate.; Aluminum trinitrate nonahydrate  
**CAS No** 7784-27-2  
**Molecular Formula** Al N3 O9 . 9 H2 O

**Supplier** **UK entity/business name**  
Fisher Scientific UK  
Bishop Meadow Road,  
Loughborough, Leicestershire LE11 5RG, United Kingdom

**EU entity/business name**  
Thermo Fisher Scientific  
Janssen Pharmaceuticaaan 3a, 2440 Geel, Belgium

**Emergency Telephone Number** For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11  
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

**E-mail address** begel.sdsdesk@thermofisher.com

**Recommended Use** Laboratory chemicals.  
**Uses advised against** No Information available

### SECTION 2. HAZARD IDENTIFICATION

**Physical State**  
Solid

**Appearance**  
Clear Colourless

**Odor**  
Odorless

#### Emergency Overview

May intensify fire; oxidizer. May be harmful if swallowed. Causes serious eye damage. Hygroscopic.

#### Classification of the substance or mixture

|                                   |            |
|-----------------------------------|------------|
| Oxidizing solids                  | Category 3 |
| Acute Oral Toxicity               | Category 5 |
| Serious Eye Damage/Eye Irritation | Category 1 |

#### Label Elements



**Signal Word**

**Danger**

## Aluminium nitrate nonahydrate

**Hazard Statements**

H272 - May intensify fire; oxidizer  
H303 - May be harmful if swallowed  
H318 - Causes serious eye damage

**Precautionary Statements****Prevention**

P270 - Do not eat, drink or smoke when using this product  
P280 - Wear protective gloves/protective clothing/eye protection/face protection

**Response**

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P310 - Immediately call a POISON CENTER or doctor

**Storage**

P403 - Store in a well-ventilated place

**Disposal**

P501 - Dispose of contents/ container to an approved waste disposal plant

**Physical and Chemical Hazards**

Oxidizing. Contact with combustible material may cause fire. Hygroscopic.

**Health Hazards**

May be harmful if swallowed.

**Environmental hazards**

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants. Will likely be mobile in the environment due to its water solubility. The product is water soluble, and may spread in water systems.

This product does not contain any known or suspected endocrine disruptors.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Component                     | CAS No     | Weight % |
|-------------------------------|------------|----------|
| Aluminium nitrate nonahydrate | 7784-27-2  | 100      |
| Aluminum nitrate              | 13473-90-0 | -        |

**SECTION 4. FIRST AID MEASURES****General Advice**

If symptoms persist, call a physician.

**Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

**Skin Contact**

Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

**Inhalation**

Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

**Ingestion**

Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.

**Most important symptoms and effects**

Causes eye burns. Causes severe eye damage.

**Self-Protection of the First Aider**

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

## Aluminium nitrate nonahydrate

**Notes to Physician**

Treat symptomatically.

**SECTION 5. FIRE-FIGHTING MEASURES****Suitable Extinguishing Media**Water spray, carbon dioxide (CO<sub>2</sub>), dry chemical, alcohol-resistant foam.**Extinguishing media which must not be used for safety reasons**

No information available.

**Specific Hazards Arising from the Chemical**

Thermal decomposition can lead to release of irritating gases and vapors.

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**SECTION 6. ACCIDENTAL RELEASE MEASURES****Personal Precautions**

Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.

**Environmental Precautions**

Should not be released into the environment. See Section 12 for additional Ecological Information.

**Methods for Containment and Clean Up**

Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal.

Refer to protective measures listed in Sections 8 and 13.

**SECTION 7. HANDLING AND STORAGE****Handling**

Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation.

**Storage**

Keep containers tightly closed in a dry, cool and well-ventilated place. Store under an inert atmosphere. Protect from moisture.

**Specific Use(s)**

Use in laboratories

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Control Parameters**

| Component                     | ACGIH TLV | OSHA PEL                           | NIOSH                    | The United Kingdom  | European Union |
|-------------------------------|-----------|------------------------------------|--------------------------|---|----------------|
| Aluminium nitrate nonahydrate |           | (Vacated) TWA: 2 mg/m <sup>3</sup> | TWA: 2 mg/m <sup>3</sup> | STEL: 6 mg/m <sup>3</sup> 15 min<br>TWA: 2 mg/m <sup>3</sup> 8 hr |                |

Legend

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

**Monitoring methods**

## Aluminium nitrate nonahydrate

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust

**Exposure Controls****Engineering Measures**

Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

**Personal protective equipment**

**Eye Protection** Goggles (European standard - EN 166)

**Hand Protection** Protective gloves

| Glove material | Breakthrough time | Glove thickness | EU standard | Glove comments        |
|----------------|-------------------|-----------------|-------------|-----------------------|
| Natural rubber | See manufacturers | -               | EN 374      | (minimum requirement) |
| Nitrile rubber | recommendations   |                 |             |                       |
| Neoprene       |                   |                 |             |                       |
| PVC            |                   |                 |             |                       |

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

**Skin and body protection** Long sleeved clothing

**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced  
**Recommended Filter type:** Particulates filter conforming to EN 143

**Small scale/Laboratory use** Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.  
**Recommended half mask:-** Particle filtering: EN149:2001  
When RPE is used a face piece Fit Test should be conducted

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls** No information available.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

|                            |                          |
|----------------------------|--------------------------|
| <b>Appearance</b>          | Clear Colourless         |
| <b>Physical State</b>      | Solid                    |
| <b>Odor</b>                | Odorless                 |
| <b>Odor Threshold</b>      | No data available        |
| <b>pH</b>                  | 2.5-3.5                  |
| <b>Melting Point/Range</b> | 73 °C / 163.4 °F         |
| <b>Softening Point</b>     | No data available        |
| <b>Boiling Point/Range</b> | No information available |

5% aq.sol

**SAFETY DATA SHEET****Aluminium nitrate nonahydrate**

|  |                          |  |
|--|--------------------------|--|
| <b>Flash Point</b>                             | No information available | <b>Method -</b> No information available |
| <b>Evaporation Rate</b>                        | Not applicable           | Solid                                    |
| <b>Flammability (solid,gas)</b>                | No information available |  |
| <b>Explosion Limits</b>                        | No data available        |  |
| <b>Vapor Pressure</b>                          | No data available        |  |
| <b>Vapor Density</b>                           | Not applicable           | Solid                                    |
| <b>Specific Gravity / Density</b>              | No data available        |  |
| <b>Bulk Density</b>                            | No data available        |  |
| <b>Water Solubility</b>                        | 64 g/100ml (25°C)        |  |
| <b>Solubility in other solvents</b>            | No information available |  |
| <b>Partition Coefficient (n-octanol/water)</b> |                          |  |
| <b>Autoignition Temperature</b>                | No data available        |  |
| <b>Decomposition Temperature</b>               | 135 °C                   |  |
| <b>Viscosity</b>                               | Not applicable           | Solid                                    |
| <b>Explosive Properties</b>                    | No information available |  |
| <b>Oxidizing Properties</b>                    | No information available |  |
| <b>Molecular Formula</b>                       | Al N3 O9 . 9 H2 O        |  |
| <b>Molecular Weight</b>                        | 375.13                   |  |

**SECTION 10. STABILITY AND REACTIVITY**

|   |   |
|---|---|
| <b>Stability</b>                        | Hygroscopic.  |
| <b>Hazardous Reactions</b>              | None under normal processing.   |
| <b>Hazardous Polymerization</b>         | Hazardous polymerization does not occur.  |
| <b>Conditions to Avoid</b>              | Incompatible products. Excess heat. Combustible material. Avoid dust formation. Exposure to moist air or water. |
| <b>Materials to avoid</b>               | Bases. Reducing Agent. Acids. Heavy metals. Cyanides. Strong reducing agents.                                   |
| <b>Hazardous Decomposition Products</b> | Nitrogen oxides (NOx).  |

**SECTION 11. TOXICOLOGICAL INFORMATION****Product Information****(a) acute toxicity;**

| Component        | LD50 Oral                                    | LD50 Dermal | LC50 Inhalation |
|------------------|--|-------------|-----------------|
| Aluminum nitrate | 2060 mg/kg ( Rat )<br>204 mg/kg (Al) ( Rat ) |             |                 |

**(b) skin corrosion/irritation;** No data available**(c) serious eye damage/irritation;** Category 1**(d) respiratory or skin sensitization;**

|                    |                   |
|--------------------|-------------------|
| <b>Respiratory</b> | No data available |
| <b>Skin</b>        | No data available |

**(e) germ cell mutagenicity;** No data available**(f) carcinogenicity;** No data available

There are no known carcinogenic chemicals in this product

|  |                           |
|--|---------------------------|
| (g) reproductive toxicity;                 | No data available         |
| (h) STOT-single exposure;                  | No data available         |
| (i) STOT-repeated exposure;                | No data available         |
| Target Organs                              | No information available. |
| (j) aspiration hazard;                     | Not applicable<br>Solid   |
| Symptoms / effects, both acute and delayed | No information available  |

**SECTION 12. ECOLOGICAL INFORMATION**

|                                 |   |
|---------------------------------|---|
| Ecotoxicity effects             | Do not empty into drains.   |
| Persistence and Degradability   |   |
| Persistence                     | Soluble in water, Persistence is unlikely, based on information available.  |
| Degradability                   | Not relevant for inorganic substances.  |
| Bioaccumulative Potential       | Bioaccumulation is unlikely   |
| Mobility in soil                | The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility Highly mobile in soils |
| Endocrine Disruptor Information | This product does not contain any known or suspected endocrine disruptors   |
| Persistent Organic Pollutant    | This product does not contain any known or suspected substance  |
| Ozone Depletion Potential       | This product does not contain any known or suspected substance  |

**SECTION 13. DISPOSAL CONSIDERATIONS**

|                                     |  |
|-------------------------------------|--|
| Waste from Residues/Unused Products | Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations. |
| Contaminated Packaging              | Dispose of this container to hazardous or special waste collection point.  |
| Other Information                   | Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not flush to sewer.                   |

**SECTION 14. TRANSPORT INFORMATION****Road and Rail Transport**

|          |               |
|----------|---------------|
| IMDG/IMO | Not regulated |
|----------|---------------|

## Aluminium nitrate nonahydrate

**IATA** Not regulated**Special Precautions for User** No special precautions required**SECTION 15. REGULATORY INFORMATION****International Inventories**

X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

| Component                     | The Inventory of Hazardous Chemicals (2015 Edition) | List of dangerous goods GB 12268 - 2012 | TCSI | IECSC | EINECS    | TSCA | DSL | PICCS | ENCS | ISHL | AICS | KECL     |
|-------------------------------|---|---|------|-------|-----------|------|-----|-------|------|------|------|----------|
| Aluminium nitrate nonahydrate | X   | -                                       | X    | X     | -         | -    | -   | X     | X    | X    | X    | -        |
| Aluminum nitrate              | -   | X                                       | X    | X     | 236-751-8 | X    | X   | X     | X    | X    | X    | KE-01007 |

**National Regulations****SECTION 16. OTHER INFORMATION**

**Creation Date** 05-Oct-2010  
**Revision Date** 07-Apr-2024  
**Revision Summary** 5, 6, 7, 9, 10, 16.

**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

**Legend****CAS** - Chemical Abstracts Service**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**IECSC** - Chinese Inventory of Existing Chemical Substances**KECL** - Korean Existing and Evaluated Chemical Substances**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List**ENCS** - Japanese Existing and New Chemical Substances**AICS** - Australian Inventory of Chemical Substances**NZIoC** - New Zealand Inventory of Chemicals**WEL** - Workplace Exposure Limit**ACGIH** - American Conference of Governmental Industrial Hygienists**DNEL** - Derived No Effect Level**RPE** - Respiratory Protective Equipment**LC50** - Lethal Concentration 50%**NOEC** - No Observed Effect Concentration**PBT** - Persistent, Bioaccumulative, Toxic**TWA** - Time Weighted Average**IARC** - International Agency for Research on Cancer**PNEC** - Predicted No Effect Concentration**LD50** - Lethal Dose 50%**EC50** - Effective Concentration 50%**POW** - Partition coefficient Octanol:Water**vPvB** - very Persistent, very Bioaccumulative

**Aluminium nitrate nonahydrate**

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** - (Volatile Organic Compound)

**Key literature references and sources for data**

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of Safety Data Sheet**