



## Material Safety Data Sheet

From: Avantor Performance Materials, Inc.  
Saucon Valley Plaza  
3477 Corporate Parkway  
Suite #200  
Center Valley, PA 18034



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. and Canada  
Chemtrec: 703-527-3887

**NOTE:** CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service, 1-855-AVANTOR (855-282-6867) for assistance.

# ALUMINUM NITRATE

## 1. Product Identification

**Synonyms:** Aluminum (III) nitrate, nonohydrate (1:3:9); Nitric acid, aluminum salt; Aluminum nitrate, nonahydrate

**CAS No.:** 13473-90-0 (Anhydrous) 7784-27-2 (Nonahydrate)

**Molecular Weight:** 375.

**Chemical Formula:** Al(NO<sub>3</sub>)<sub>3</sub> 9H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 0528

Macron: 3172

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Aluminum Nitrate	13473-90-0	98 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.**

**SAF-T-DATA(tm)** Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Oxidizer)

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: Yellow (Reactive)

## Potential Health Effects

---

### **Inhalation:**

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

### **Ingestion:**

May cause gastroenteritis and abdominal pains. Purging and diuresis can be expected. Rare cases of nitrates being converted to the more toxic nitrites have been reported, mostly with infants.

### **Skin Contact:**

Causes irritation to skin. Symptoms include redness, itching, and pain.

### **Eye Contact:**

Causes irritation, redness, and pain.

### **Chronic Exposure:**

Small repeated oral doses of nitrates may cause weakness, depression, headache, and mental impairment.

### **Aggravation of Pre-existing Conditions:**

Persons with stomach diseases and infants are much more sensitive to nitrate ion toxicity.

---

## 4. First Aid Measures

### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

### **Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

### **Skin Contact:**

Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

### **Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

---

## 5. Fire Fighting Measures

### **Fire:**

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. When heated, gives off oxygen thus increasing fire hazard.

### **Explosion:**

Contact with oxidizable substances may cause extremely violent combustion. Some nitrates may explode when shocked, exposed to heat or flame, or by spontaneous chemical reaction.

### **Fire Extinguishing Media:**

Use water or water spray only. Water spray may be used to keep fire exposed containers cool.

### **Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. This oxidizing material can increase the flammability of adjacent combustible materials.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Cover spill with sodium bicarbonate or soda ash and mix.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from incompatibilities. Separate from combustible, organic, or any other readily oxidizable materials. Do not store on wooden floors. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

15 mg/m<sup>3</sup> (TWA) total dust and 5 mg/m<sup>3</sup> (TWA)

respirable fraction for Aluminum metal as Al.

-ACGIH Threshold Limit Value (TLV):

1 mg/m<sup>3</sup> respirable fraction (TWA), Aluminum metal and Insoluble compounds, A4.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

White crystals.

### **Odor:**

Odorless.

### **Solubility:**

Very soluble.

### **Specific Gravity:**

No information found.

### **pH:**

Aqueous solution is acidic.

### **% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

135C (275F) Decomposes.

**Melting Point:**

73C (163F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Oxides of nitrogen.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Reducing agents, organic materials, cyanides, thiocyanides, acids, and heavy metals.

**Conditions to Avoid:**

Heat, shock, friction, incompatibles.

---

## 11. Toxicological Information

(9-hydrate): Oral rat LD50: 3671 mg/kg; Investigated as a reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
-----			
Aluminum Nitrate (13473-90-0)	No	No	None

---

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

---

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

---

## 14. Transport Information

### Domestic (Land, D.O.T.)

-----

**Proper Shipping Name:** ALUMINUM NITRATE

**Hazard Class:** 5.1

**UN/NA:** UN1438

**Packing Group:** III

**Information reported for product/size:** 300LB

### International (Water, I.M.O.)

-----

**Proper Shipping Name:** ALUMINUM NITRATE

**Hazard Class:** 5.1

**UN/NA:** UN1438

**Packing Group:** III

**Information reported for product/size:** 300LB

---

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
Ingredient TSCA EC Japan Australia  
-----  
Aluminum Nitrate (13473-90-0) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea DSL NDSL Phil.  
-----  
Aluminum Nitrate (13473-90-0) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----  
Ingredient -SARA 302- -SARA 313-  
RQ TPQ List Chemical Catg.  
-----  
Aluminum Nitrate (13473-90-0) No No No Nitrate Cmpd

-----\Federal, State & International Regulations - Part 2\-----  
Ingredient CERCLA -RCRA- -TSCA-  
261.33 8(d)  
-----  
Aluminum Nitrate (13473-90-0) No No No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No  
Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** 1S  
**Poison Schedule:** None allocated.

## WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

---

## 16. Other Information

**NFPA Ratings:** Health: **1** Flammability: **0** Reactivity: **0** Other: **Oxidizer**

**Label Hazard Warning:**

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Keep from contact with clothing and other combustible materials.

Store in a tightly closed container.

Use only with adequate ventilation.

Avoid breathing dust.

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Disclaimer:**

\*\*\*\*\*  
THE INFORMATION PRESENTED IN THIS MATERIAL SAFETY DATA SHEET (MSDS/SDS) WAS PREPARED BY TECHNICAL PERSONNEL BASED ON DATA THAT THEY BELIEVE IN THEIR GOOD FAITH JUDGMENT IS ACCURATE. HOWEVER, THE INFORMATION PROVIDED HEREIN IS PROVIDED "AS IS," AND AVANTOR PERFORMANCE MATERIALS MAKES AND GIVES NO REPRESENTATIONS OR WARRANTIES WHATSOEVER, AND EXPRESSLY DISCLAIMS ALL WARRANTIES REGARDING SUCH INFORMATION AND THE PRODUCT TO WHICH IT RELATES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION, WARRANTIES OF ACCURACY, COMPLETENESS, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY, STABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE.  
THIS MSDS/SDS IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PROPERLY TRAINED PERSON USING THIS PRODUCT, AND IS NOT INTENDED TO BE COMPREHENSIVE AS TO THE MANNER AND CONDITIONS OF USE, HANDLING, STORAGE, OR DISPOSAL OF THE PRODUCT. INDIVIDUALS RECEIVING THIS MSDS/SDS MUST ALWAYS EXERCISE THEIR OWN INDEPENDENT JUDGMENT IN DETERMINING THE APPROPRIATENESS OF SUCH ISSUES. ACCORDINGLY, AVANTOR PERFORMANCE MATERIALS ASSUMES NO LIABILITY WHATSOEVER FOR THE USE OF OR RELIANCE UPON THIS INFORMATION. NO SUGGESTIONS FOR USE ARE INTENDED AS, AND NOTHING HEREIN SHALL BE CONSTRUED AS, A RECOMMENDATION TO INFRINGE ANY EXISTING PATENTS OR TO VIOLATE ANY FEDERAL, STATE, LOCAL, OR FOREIGN LAWS. AVANTOR PERFORMANCE MATERIALS REMINDS YOU THAT IT IS YOUR LEGAL DUTY TO MAKE ALL INFORMATION IN THIS MSDS/SDS AVAILABLE TO YOUR EMPLOYEES.  
\*\*\*\*\*

Prepared by: Environmental Health & Safety