Section 1 - Product and Company Information

Product Name                  ALUMINUM NITRATE NONAHYDRATE, 99.997%
Product Number                229415
Brand                         ALDRICH
Company                       Sigma-Aldrich Canada, Ltd
Address                       2149 Winston Park Drive
                              Oakville ON L6H 6J8 CA
Technical Phone:              9058299500
Fax:                          9058299292
Emergency Phone:             800-424-9300

Section 2 - Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS #</th>
<th>SARA 313</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALUMINUM NITRATE NONAHYDRATE</td>
<td>7784-27-2</td>
<td>No</td>
</tr>
</tbody>
</table>

Formula         Al(NO3)3.9H2O
Synonyms        Aluminum nitrate nonahydrate * Aluminum trinitrate nonahydrate * Nitric acid, aluminum salt, nonahydrate (8CI,9CI)
RTECS Number:   BD1050000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Oxidizing. Irritant.
Contact with combustible material may cause fire. Irritating to eyes and skin.

HMIS RATING
HEALTH: 2
FLAMMABILITY: 0
REACTIVITY: 3
SPECIAL HAZARD(S): Oxidizer

NFPA RATING
HEALTH: 2
FLAMMABILITY: 0
REACTIVITY: 3
SPECIAL HAZARD(S): Oxidizer

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE
If inhaled, remove to fresh air. If breathing becomes difficult,
call a physician.

DERMAL EXPOSURE
In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

EYE EXPOSURE
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT
N/A

AUTOIGNITION TEMP
N/A

FLAMMABILITY
N/A

EXTINGUISHING MEDIA
Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING
Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Specific Hazard(s): Emits toxic fumes under fire conditions. Contact with other material may cause fire. May accelerate combustion.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP
Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING
User Exposure: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE
Suitable: Keep tightly closed. Keep away from combustible materials, heat, sparks, and open flame.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS
Use only in a chemical fume hood. Safety shower and eye bath.
PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling. Remove and wash contaminated clothing promptly.

EXPOSURE LIMITS, RTECS

<table>
<thead>
<tr>
<th>Country</th>
<th>Source</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>ACGIH</td>
<td>TWA</td>
<td>2 MG(AL)/M3</td>
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<tr>
<td>New Zealand</td>
<td>OEL</td>
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</table>

Remarks: check ACGIH TLV

Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
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</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
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</tr>
<tr>
<td>pH</td>
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</tr>
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<td>BP/BP Range</td>
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</tr>
<tr>
<td>MP/MP Range</td>
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</tr>
<tr>
<td>Freezing Point</td>
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<tr>
<td>Vapor Pressure</td>
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<tr>
<td>Vapor Density</td>
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</tr>
<tr>
<td>Saturated Vapor Conc.</td>
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<tr>
<td>SG/Density</td>
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<td>Odor Threshold</td>
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<td>Volatile%</td>
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<tr>
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<tr>
<td>Water Content</td>
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<tr>
<td>Solvent Content</td>
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<td>Evaporation Rate</td>
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<tr>
<td>Viscosity</td>
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<td>Surface Tension</td>
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<td>Decomposition Temp.</td>
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<tr>
<td>Flash Point</td>
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<td>Explosion Limits</td>
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<td>Miscellaneous Data</td>
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<tr>
<td>Solubility</td>
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</tbody>
</table>

N/A = not available

Section 10 - Stability and Reactivity
STABILITY
Conditions to Avoid: Moisture.
Materials to Avoid: Strong reducing agents, Finely powdered metals, Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION
Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE
Skin Contact: Causes skin irritation.
Skin Absorption: May be harmful if absorbed through the skin.
Eye Contact: Causes eye irritation.
Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.
Ingestion: May be harmful if swallowed.

SIGNS AND SYMPTOMS OF EXPOSURE
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

TOXICITY DATA

Oral
Rat
3671 mg/kg
LD50

Intraperitoneal
Rat
901 MG/KG
LD50

Oral
Mouse
3980 mg/kg
LD50

Intraperitoneal
Mouse
1587 MG/KG
LD50

CHRONIC EXPOSURE - TERATOGEN
Species: Rat
Dose: 1620 MG/KG  
Route of Application: Oral  
Exposure Time: (6-14D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Embryo or Fetus: Fetal death. Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Rat  
Dose: 1620 MG/KG  
Route of Application: Oral  
Exposure Time: (6-14D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat  
Dose: 6480 MG/KG  
Route of Application: Oral  
Exposure Time: (6-14D PREG)  
Result: Specific Developmental Abnormalities: Cardiovascular (circulatory) system.

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat  
Dose: 7740 MG/KG  
Route of Application: Oral  
Exposure Time: (1-22D PREG/21D POST)  
Result: Effects on Newborn: Physical.

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Aluminum nitrate  
UN#: 1438  
Class: 5.1  
Packing Group: Packing Group III  
Hazard Label: Oxidizer  
PIH: Not PIH

IATA

Proper Shipping Name: Aluminium nitrate  
IATA UN Number: 1438  
Hazard Class: 5.1  
Packing Group: III

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: O-Xi  
Indication of Danger: Oxidizing. Irritant.
R: 8-36/38
Risk Statements: Contact with combustible material may cause fire. Irritating to eyes and skin.
S: 17-26-36
Safety Statements: Keep away from combustible material. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Oxidizing. Irritant.
Risk Statements: Contact with combustible material may cause fire. Irritating to eyes and skin.
Safety Statements: Keep away from combustible material. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

UNITED STATES REGULATORY INFORMATION
SARA LISTED: No

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: No
NDSL: No

Section 16 - Other Information

DISCLAIMER
For R&D use only. Not for drug, household or other uses.

WARRANTY
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.