

ALFAAA16645

## Calcium nitrate, tetrahydrate

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

|   |  |
|---|--|
| <b>产品说明:</b><br><b>Product Description:</b> | <b>四水硝酸钙</b><br><b>Calcium nitrate, tetrahydrate</b>   |
| <b>Cat No. :</b>                            | <b>A16645</b>  |
| <b>Synonyms</b>                             | Calcium dini; Nitric acid, calcium salt, tetrahydrate; Norwegian saltpeter tetrahydrate  |
| <b>CAS No</b>                               | 13477-34-4   |
| <b>Molecular Formula</b>                    | Ca N2 O6 . 4 H2 O  |
| <b>Supplier</b>                             | Avocado Research Chemicals Ltd.<br>(Part of Thermo Fisher Scientific)<br>Shore Road, Heysham<br>Lancashire, LA3 2XY,<br>United Kingdom<br>Office Tel: +44 (0) 1524 850506<br>Office Fax: +44 (0) 1524 850608   |
| <b>Emergency Telephone Number</b>           | For information <b>US</b> call: 001-800-227-6701 / <b>Europe</b> call: +32 14 57 52 11<br>Emergency Number <b>US</b> :001-201-796-7100 / <b>Europe</b> : +32 14 57 52 99<br><b>CHEMTREC</b> Tel. No. <b>US</b> :001-800-424-9300 / <b>Europe</b> :001-703-527-3887 |
| <b>E-mail address</b>                       | begel.sdsdesk@thermofisher.com   |
| <b>Recommended Use</b>                      | Laboratory chemicals.  |
| <b>Uses advised against</b>                 | No Information available   |

### SECTION 2. HAZARD IDENTIFICATION

|  |                            |                         |
|--|----------------------------|-------------------------|
| <b>Physical State</b><br>Solid Crystalline   | <b>Appearance</b><br>White | <b>Odor</b><br>Odorless |
| <b>Emergency Overview</b><br>Harmful if swallowed. Causes serious eye damage. Hygroscopic. |                            |                         |

#### Classification of the substance or mixture

|                                   |            |
|-----------------------------------|------------|
| Acute Oral Toxicity               | Category 4 |
| Serious Eye Damage/Eye Irritation | Category 1 |

#### Label Elements



**Signal Word**

**Danger**

**Hazard Statements**

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H302 - Harmful if swallowed  
H318 - Causes serious eye damage

**Precautionary Statements****Prevention**

P264 - Wash face, hands and any exposed skin thoroughly after handling  
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  
P330 - Rinse mouth

**Storage**

P403 - Store in a well-ventilated place

**Disposal**

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

**Physical and Chemical Hazards**

Hygroscopic.

**Health Hazards**

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.

**Other Hazards**

Toxic to terrestrial vertebrates. This product does not contain any known or suspected endocrine disruptors.

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

| Component                    | CAS No     | Weight % |
|------------------------------|------------|----------|
| Calcium nitrate tetrahydrate | 13477-34-4 | >95      |

**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 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.

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**Notes to Physician**

Treat symptomatically.

**SECTION 5. FIRE-FIGHTING MEASURES****Suitable Extinguishing Media**

Water spray. Dry chemical. Carbon dioxide (CO<sub>2</sub>).

**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. Keep product and empty container away from heat and sources of ignition.

**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**

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

**Environmental Precautions**

Should not be released into the environment.

**Methods for Containment and Clean Up**

Sweep up and shovel into suitable 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. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Avoid dust formation. Keep away from clothing and other combustible materials.

**Storage**

Do not store near combustible materials. Keep containers tightly closed in a dry, cool and well-ventilated place.

**Specific Use(s)**

Use in laboratories

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

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**

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**Engineering Measures**

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. 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 recommendations | 0.6mm           | EN 374      | (minimum requirement) |
| Nitrile rubber |                                   |                 |             |                       |
| 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** No protective equipment is needed under normal use conditions.

**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

**Small scale/Laboratory use** Maintain adequate ventilation

**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>                   | White                    |  |
| <b>Physical State</b>               | Solid Crystalline        |  |
| <b>Odor</b>                         | Odorless                 |  |
| <b>Odor Threshold</b>               | No data available        |  |
| <b>pH</b>                           | 5-7                      | 5% aq.sol                                |
| <b>Melting Point/Range</b>          | 45 °C / 113 °F           |  |
| <b>Softening Point</b>              | No data available        |  |
| <b>Boiling Point/Range</b>          | 132 °C / 269.6 °F        |  |
| <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>   | 1.820                    |  |
| <b>Bulk Density</b>                 | No data available        |  |
| <b>Water Solubility</b>             | 1293 g/L (20°C)          |  |
| <b>Solubility in other solvents</b> | No information available |  |

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**Partition Coefficient (n-octanol/water)**

|                                  |                          |       |
|----------------------------------|--------------------------|-------|
| <b>Autoignition Temperature</b>  | No data available        |       |
| <b>Decomposition Temperature</b> | No data available        |       |
| <b>Viscosity</b>                 | Not applicable           | Solid |
| <b>Explosive Properties</b>      | No information available |       |
| <b>Oxidizing Properties</b>      | No information available |       |

|                          |   |
|--------------------------|---|
| <b>Molecular Formula</b> | Ca N <sub>2</sub> O <sub>6</sub> . 4 H <sub>2</sub> O |
| <b>Molecular Weight</b>  | 236.15  |

**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. Exposure to moist air or water. Combustible material. Excess heat. |
| <b>Materials to avoid</b>       | Strong reducing agents. Combustible material. Strong bases.                               |

**Hazardous Decomposition Products** Nitrogen oxides (NO<sub>x</sub>). Calcium oxides.

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

| Component                    | LD50 Oral            | LD50 Dermal | LC50 Inhalation |
|------------------------------|----------------------|-------------|-----------------|
| Calcium nitrate tetrahydrate | 300-2000 mg/kg (Rat) |             |                 |

**(b) skin corrosion/irritation;** No data available  
**Test species** rabbit

**(c) serious eye damage/irritation;** Category 1  
**Test method** OECD 405  
**Test species** rabbit

**(d) respiratory or skin sensitization;**  
**Respiratory** No data available  
**Skin** No data available

**(e) germ cell mutagenicity;** No data available  
Not mutagenic in AMES Test

**(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

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(i) STOT-repeated exposure; No data available  
 Target Organs No information available.

(j) aspiration hazard; Not applicable  
 Solid

Symptoms / effects, both acute and delayed No information available

**SECTION 12. ECOLOGICAL INFORMATION**

Ecotoxicity effects Do not empty into drains.

| Component                    | Freshwater Fish  | Water Flea                            | Freshwater Algae | Microtox |
|------------------------------|--|---------------------------------------|------------------|----------|
| Calcium nitrate tetrahydrate | LD50 > 100mg/L, 96h<br>Oncorhynchus mykiss<br>OECD Test Guideline<br>203 | EC50 = 490 mg/L, 48h<br>Daphnia magna |                  |          |

**Persistence and Degradability**

**Persistence**  
**Degradability**

Soluble in water, Persistence is unlikely, based on information available.  
 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**  
**Persistent Organic Pollutant**  
**Ozone Depletion Potential**

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

**IATA**

Not regulated

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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 |
|------------------------------|---|---|------|-------|--------|------|-----|-------|------|------|------|------|
| Calcium nitrate tetrahydrate | -   | -                                       | X    | X     | -      | -    | -   | X     | X    | X    | X    | -    |

## National Regulations

## SECTION 16. OTHER INFORMATION

Prepared By Health, Safety and Environmental Department  
 Creation Date 11-Oct-2011  
 Revision Date 23-Apr-2024  
 Revision Summary New emergency telephone response service provider.

## 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

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)

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**Key literature references and sources for data**

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

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

**Disclaimer**

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**End of Safety Data Sheet**