

ALFAA36594

## Aluminum calcium isopropoxide, 10% w/v in isopropanol

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

**产品说明:** 异丙氧基钙铝  
**Product Description:** Aluminum calcium isopropoxide, 10% w/v in isopropanol

**Cat No. :** 36594  
**Molecular Formula**  $\text{Ca}[\text{Al}(\text{OCH}(\text{CH}_3)_2)_4]_2$

**Supplier** Avocado Research Chemicals Ltd.  
(Part of Thermo Fisher Scientific)  
Shore Road, Heysham  
Lancashire, LA3 2XY,  
United Kingdom  
Office Tel: +44 (0) 1524 850506  
Office Fax: +44 (0) 1524 850608

**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**  
Liquid Solution

**Appearance**  
Brown

**Odor**  
Alcohol

#### Emergency Overview

Highly flammable liquid and vapor. May cause drowsiness and dizziness. Harmful if swallowed. Causes severe skin burns and eye damage. May cause respiratory irritation.

#### Classification of the substance or mixture

|  |              |
|--|--------------|
| Flammable liquids.                                 | Category 2   |
| Acute Oral Toxicity                                | Category 4   |
| Skin Corrosion/Irritation                          | Category 1 B |
| Serious Eye Damage/Eye Irritation                  | Category 1   |
| Specific target organ toxicity - (single exposure) | Category 3   |

#### Label Elements



# SAFETY DATA SHEET

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**Signal Word****Danger****Hazard Statements**

H225 - Highly flammable liquid and vapor  
H336 - May cause drowsiness or dizziness  
H302 - Harmful if swallowed  
H314 - Causes severe skin burns and eye damage  
H335 - May cause respiratory irritation

**Precautionary Statements****Prevention**

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking  
P240 - Ground and bond container and receiving equipment  
P242 - Use non-sparking tools  
P243 - Take action to prevent static discharges  
P264 - Wash face, hands and any exposed skin thoroughly after handling  
P270 - Do not eat, drink or smoke when using this product  
P271 - Use only outdoors or in a well-ventilated area  
P280 - Wear protective gloves/protective clothing/eye protection/face protection

**Response**

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower  
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing  
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  
P331 - Do NOT induce vomiting  
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish  
P362 + P364 - Take off contaminated clothing and wash it before reuse

**Storage**

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

**Disposal**

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

**Physical and Chemical Hazards**

Vapors may cause flash fire or explosion. Highly flammable.

**Health Hazards**

May cause drowsiness or dizziness. Harmful if swallowed. Corrosive. Causes skin and eye burns. May cause respiratory irritation.

**Environmental hazards**

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.

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

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

| Component                     | CAS No     | Weight % |
|-------------------------------|------------|----------|
| Isopropyl alcohol             | 67-63-0    | 90.00    |
| Aluminum calcium isopropoxide | 23275-27-6 | 10.00    |

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

Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

**Eye Contact**

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

**Skin Contact**

Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Call a physician immediately.

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**Inhalation**

If not breathing, give artificial respiration. Remove from exposure, lie down. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician immediately.

**Ingestion**

Do NOT induce vomiting. Clean mouth with water. Never give anything by mouth to an unconscious person. Call a physician immediately.

**Most important symptoms and effects**

Causes burns by all exposure routes. Difficulty in breathing. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

**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.

**Notes to Physician**

Treat symptomatically. Symptoms may be delayed.

### SECTION 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**

CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam. Water mist may be used to cool closed containers.

**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. The product causes burns of eyes, skin and mucous membranes. Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

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

### SECTION 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions**

Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Take precautionary measures against static discharges.

**Environmental Precautions**

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

**Methods for Containment and Clean Up**

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

Refer to protective measures listed in Sections 8 and 13.

### SECTION 7. HANDLING AND STORAGE

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**Handling**

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

**Storage**

Corrosives area. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame.

**Specific Use(s)**

Use in laboratories

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

| Component         | China   | Taiwan                                     | Thailand     | Hong Kong   |
|-------------------|---|--|--------------|---|
| Isopropyl alcohol | TWA: 350 mg/m <sup>3</sup><br>STEL: 700 mg/m <sup>3</sup> | TWA: 400 ppm<br>TWA: 983 mg/m <sup>3</sup> | TWA: 400 ppm | TWA: 400 ppm<br>TWA: 983 mg/m <sup>3</sup><br>STEL: 500 ppm<br>STEL: 1230 mg/m <sup>3</sup> |

| Component         | ACGIH TLV                     | OSHA PEL  | NIOSH   | The United Kingdom  | European Union |
|-------------------|-------------------------------|---|---|---|----------------|
| Isopropyl alcohol | TWA: 200 ppm<br>STEL: 400 ppm | (Vacated) TWA: 400 ppm<br>(Vacated) TWA: 980 mg/m <sup>3</sup><br>(Vacated) STEL: 500 ppm<br>(Vacated) STEL: 1225 mg/m <sup>3</sup><br>TWA: 400 ppm<br>TWA: 980 mg/m <sup>3</sup> | IDLH: 2000 ppm<br>TWA: 400 ppm<br>TWA: 980 mg/m <sup>3</sup><br>STEL: 500 ppm<br>STEL: 1225 mg/m <sup>3</sup> | STEL: 500 ppm 15 min<br>STEL: 1250 mg/m <sup>3</sup> 15 min<br>TWA: 400 ppm 8 hr<br>TWA: 999 mg/m <sup>3</sup> 8 hr |                |

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

**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. MDHS70 General methods for sampling airborne gases and vapours MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

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

Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting equipment. 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        |
|-----------------------------|-----------------------------------|-----------------|-------------|-----------------------|
| Nitrile rubber<br>Viton (R) | See manufacturers recommendations | -               | EN 374      | (minimum requirement) |

Inspect gloves before use.

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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.

|  |   |
|--|---|
| <b>Skin and body protection</b>        | Long sleeved clothing   |
| <b>Respiratory Protection</b>          | When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.<br>To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly   |
| <b>Large scale/emergency use</b>       | Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced<br><b>Recommended Filter type:</b> low boiling organic solvent Type AX Brown conforming to EN371 or Organic gases and vapours filter Type A Brown conforming to EN14387 |
| <b>Small scale/Laboratory use</b>      | 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.<br><b>Recommended half mask:-</b> Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141<br>When RPE is used a face piece Fit Test should be conducted |
| <b>Hygiene Measures</b>                | Handle in accordance with good industrial hygiene and safety practice.  |
| <b>Environmental exposure controls</b> | No information available.   |

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

|  |  |   |
|--|--|---|
| <b>Appearance</b>                              | Brown  |   |
| <b>Physical State</b>                          | Liquid Solution  |   |
| <b>Odor</b>                                    | Alcohol  |   |
| <b>Odor Threshold</b>                          | No data available  |   |
| <b>pH</b>                                      | No information available   |   |
| <b>Melting Point/Range</b>                     | No data available  |   |
| <b>Softening Point</b>                         | No data available  |   |
| <b>Boiling Point/Range</b>                     | No information available   |   |
| <b>Flash Point</b>                             | 12 °C / 53.6 °F  | <b>Method -</b> No information available    |
| <b>Evaporation Rate</b>                        | No data available  |   |
| <b>Flammability (solid,gas)</b>                | Not applicable   | Liquid                                      |
| <b>Explosion Limits</b>                        | No data available  |   |
| <b>Vapor Pressure</b>                          | No data available  |   |
| <b>Vapor Density</b>                           | No data available  | (Air = 1.0)                                 |
| <b>Specific Gravity / Density</b>              | No data available  |   |
| <b>Bulk Density</b>                            | Not applicable   | Liquid                                      |
| <b>Water Solubility</b>                        | No information available   |   |
| <b>Solubility in other solvents</b>            | No information available   |   |
| <b>Partition Coefficient (n-octanol/water)</b> |  |   |
| <b>Component</b>                               | <b>log Pow</b>   |   |
| Isopropyl alcohol                              | 0.05   |   |
| <b>Autoignition Temperature</b>                | No data available  |   |
| <b>Decomposition Temperature</b>               | No data available  |   |
| <b>Viscosity</b>                               | No data available  |   |
| <b>Explosive Properties</b>                    |  | Vapors may form explosive mixtures with air |
| <b>Oxidizing Properties</b>                    | No information available   |   |
| <b>Molecular Formula</b>                       | Ca[Al(OCH(CH <sub>3</sub> ) <sub>2</sub> ) <sub>4</sub> ] <sub>2</sub> |   |

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## Aluminum calcium isopropoxide, 10% w/v in isopropanol

Molecular Weight 566.30

### SECTION 10. STABILITY AND REACTIVITY

**Stability** Stable under normal conditions.

**Hazardous Reactions** None under normal processing.

**Hazardous Polymerization** No information available.

**Conditions to Avoid** Keep away from open flames, hot surfaces and sources of ignition.

**Materials to avoid** No information available.

**Hazardous Decomposition Products** None under normal use conditions.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Product Information

(a) acute toxicity;  
Toxicology data for the components

| Component         | LD50 Oral                                  | LD50 Dermal         | LC50 Inhalation       |
|-------------------|--|---------------------|-----------------------|
| Isopropyl alcohol | 5045 mg/kg ( Rat )<br>3600 mg/kg ( Mouse ) | 12800 mg/kg ( Rat ) | 72.6 mg/L ( Rat ) 4 h |

(b) skin corrosion/irritation; Category 1 B

(c) serious eye damage/irritation; Category 1

(d) respiratory or skin sensitization;  
Respiratory No data available  
Skin 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; Category 3  
Results / Target organs Central nervous system (CNS)  
Respiratory system

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

(j) aspiration hazard; No data available

**Symptoms / effects, both acute and** Inhalation of high vapor concentrations may cause symptoms like headache, dizziness,

**SAFETY DATA SHEET****Aluminum calcium isopropoxide, 10% w/v in isopropanol****delayed**

tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity effects**

| Component         | Freshwater Fish  | Water Flea                                      | Freshwater Algae   | Microtox   |
|-------------------|--|---|--|--|
| Isopropyl alcohol | LC50: = 9640 mg/L, 96h flow-through (Pimephales promelas)<br>LC50: > 1400000 µg/L, 96h (Lepomis macrochirus)<br>LC50: = 11130 mg/L, 96h static (Pimephales promelas)<br>LC50: = 10000000 µg/L, 96h (Daphnia) | 13299 mg/L EC50 = 48 h<br>9714 mg/L EC50 = 24 h | EC50: > 1000 mg/L, 72h (Desmodesmus subspicatus)<br>EC50: > 1000 mg/L, 96h (Desmodesmus subspicatus) | = 35390 mg/L EC50 Photobacterium phosphoreum 5 min |

**Persistence and Degradability  
Persistence**

No information available  
Persistence is unlikely.

**Bioaccumulative Potential**

Bioaccumulation is unlikely

| Component         | log Pow | Bioconcentration factor (BCF) |
|-------------------|---------|-------------------------------|
| Isopropyl alcohol | 0.05    | No data available             |

**Mobility in soil**

No information available

**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. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

**Other Information**

Waste codes should be assigned by the user based on the application for which the product was used. Do not flush to sewer. Can be landfilled or incinerated, when in compliance with local regulations. Do not empty into drains. Large amounts will affect pH and harm aquatic organisms.

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

UN-No UN1219  
Proper Shipping Name ISOPROPANOL  
Hazard Class 3

## Aluminum calcium isopropoxide, 10% w/v in isopropanol

**Packing Group** II**IMDG/IMO**

**UN-No** UN1219  
**Proper Shipping Name** ISOPROPANOL  
**Hazard Class** 3  
**Packing Group** II

**IATA**

**UN-No** UN1219  
**Proper Shipping Name** ISOPROPANOL  
**Hazard Class** 3  
**Packing Group** II

**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     |
|-------------------|---|---|------|-------|-----------|------|-----|-------|------|------|------|----------|
| Isopropyl alcohol | X   | X                                       | X    | X     | 200-661-7 | X    | X   | X     | X    | X    | X    | KE-29363 |

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

**Prepared By** Health, Safety and Environmental Department  
**Revision Date** 08-May-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.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Chemical incident response training.

**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

**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



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**IECSC** - Chinese Inventory of Existing Chemical Substances  
**KECL** - Korean Existing and Evaluated 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)

**Key literature references and sources for data**

<https://echa.europa.eu/information-on-chemicals>  
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

|                              |                       |
|------------------------------|-----------------------|
| <b>Physical hazards</b>      | On basis of test data |
| <b>Health Hazards</b>        | Calculation method    |
| <b>Environmental hazards</b> | Calculation method    |

**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**