SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form: Substance
Physical state: Solid
Substance name: ALUMINUM ISOPROPOXIDE
Product code: AKA070
Formula: C9H21AlO3
Synonyms: ALUMINUM ISOPROPYLATE; ALUMINIUM TRIISOPROPANOLATE
Chemical family: METAL ALCOHOLATE

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/mixture: Chemical intermediate

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

GELEST, INC.
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

GELEST INC.
Fritz-Klatte-Strasse 8
65933 Frankfurt
Germany
T +49 (0) 69 3535106-500 - F +49 (0) 69 3535106-501 - (M-F): 8:00 AM - 4:00 PM
info@gelestde.com - www.gelestde.com

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Flammable solids, Category 1
H228

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP):

GHS02

Signal word (CLP): Danger
Hazard statements (CLP): H228 - Flammable solid.
Precautionary statements (CLP):
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240 - Ground/bond container and receiving equipment.
ALUMINUM ISOPROPOXIDE
Safety Data Sheet

2.3. Other hazards
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances
Substance type: Mono-constituent
Name: ALUMINUM ISOPROPOXIDE
CAS-No.: 555-31-7
EC-No.: 209-090-8

<table>
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<th>Name</th>
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<th>%</th>
<th>Classification according to Regulation (EC No. 1272/2008 [CLP])</th>
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<td>(CAS-No.) 555-31-7</td>
<td>95-100</td>
<td>Flam. Sol. 1, H228</td>
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<td>(EC-No.) 209-090-8</td>
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<td>(EC Index-No.) 603-042-00-3</td>
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<td></td>
</tr>
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Full text of H-statements: see section 16

3.2. Mixtures
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures
First-aid measures general: Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation: Remove person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact: Wash with plenty of water/…. Get medical advice/attention.

First-aid measures after eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

First-aid measures after ingestion: Never give anything by mouth to an unconscious person. Get medical advice/attention.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms/effects after inhalation: May cause irritation to the respiratory tract.
Symptoms/effects after skin contact: May cause skin irritation.
Symptoms/effects after eye contact: Causes serious eye irritation.
Symptoms/effects after ingestion: May be harmful if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed
No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media
Unsuitable extinguishing media: Water.

5.2. Special hazards arising from the substance or mixture
Fire hazard: Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

5.3. Advice for firefighters
Firefighting instructions: Exercise caution when fighting any chemical fire. Use water spray to cool exposed surfaces. Do not enter fire area without proper protective equipment, including respiratory protection. Avoid contact with skin and eyes. Do not breathe dust.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
General measures: Eliminate ignition sources. Use special care to avoid static electric charges.

6.1.1. For non-emergency personnel
Protective equipment: Wear protective equipment as described in Section 8.
Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment: Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up: Sweep or shovel spills into appropriate container for disposal.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Precautions for safe handling: Avoid contact with skin and eyes. Do not breathe dust. Avoid contact with water. Do not allow dust to accumulate in work areas. Ground/bond container and receiving equipment. Provide local exhaust or general room ventilation to minimize exposure to dust.

Hygiene measures: Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures: Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.

Storage conditions: Keep container tightly closed.

Incompatible materials: Water.

Storage area: Store in a well-ventilated place. Store away from heat.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Aluminum isopropoxide (555-31-7)
Italy - Portugal - USA ACGIH ACGIH TWA (mg/m³) 10 mg/m³ total dust

8.2. Exposure controls

Appropriate engineering controls:
Provide local exhaust or general room ventilation.

Personal protective equipment:
Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Avoid all unnecessary exposure.

Hand protection:
Neoprene or nitrile rubber gloves

Eye protection:
Chemical goggles. Contact lenses should not be worn

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified dust and mist (orange cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Solid
**Appearance**: Powder.

**Molecular mass**: 204.25 g/mol

**Colour**: White.

**Odour**: Characteristic. Isopropanol.

**Odour threshold**: No additional information available

**Refractive index**: No additional information available

**pH**: No additional information available

**Relative evaporation rate (butylacetate=1)**: No additional information available

**Melting point**: 118.5 °C

**Freezing point**: No additional information available

**Boiling point**: 135 - 138 °C @10 mm Hg

**Flash point**: No additional information available

**Auto-ignition temperature**: No data available

**Decomposition temperature**: No data available

**Flammability (solid, gas)**: No data available

**Vapour pressure**: < 1 mm Hg @ 25°C

**Relative vapour density at 20 °C**: > 1

**Relative density**: 1.035

**Solubility**: Reacts with water. Organic solvent: Soluble: hot isopropanol, toluene

**Log Pow**: No data available

**Log Kow**: No data available

**Viscosity, kinematic**: No data available

**Viscosity, dynamic**: No data available

**Explosive properties**: No data available

**Oxidising properties**: No data available

**Explosive limits**: No data available

9.2. **Other information**

No additional information available

**SECTION 10: Stability and reactivity**

10.1. **Reactivity**

No additional information available

10.2. **Chemical stability**

Stable.

10.3. **Possibility of hazardous reactions**

Material decomposes slowly in contact with air by reaction with moisture, liberating isopropanol and aluminum hydroxide.

10.4. **Conditions to avoid**

Heat. Open flame. Sparks.

10.5. **Incompatible materials**

Water.

10.6. **Hazardous decomposition products**


**SECTION 11: Toxicological information**

11.1. **Information on toxicological effects**

Acute toxicity: Not classified

**Aluminum isopropoxide (555-31-7)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>11300 mg/kg</td>
</tr>
<tr>
<td>ATE CLP (oral)</td>
<td>11300 mg/kg bodyweight</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Not classified

Serious eye damage/irritation: Not classified

Respiratory or skin sensitisation: Not classified

Germ cell mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive toxicity: Not classified
ALUMINUM ISOPROPOXIDE
Safety Data Sheet

STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not classified
Symptoms/effects after inhalation : May cause irritation to the respiratory tract.
Symptoms/effects after skin contact : May cause skin irritation.
Symptoms/effects after eye contact : Causes serious eye irritation.
Symptoms/effects after ingestion : May be harmful if swallowed.
Reason for classification : Expert judgment

SECTION 12: Ecological information

12.1. Toxicity
Acute aquatic toxicity : Not classified
Chronic aquatic toxicity : Not classified

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Results of PBT and vPvB assessment
No additional information available

12.6. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Sewage disposal recommendations : Do not dispose of waste into sewer.
Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number
In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number
UN-No. (ADR) : 3181
UN-No. (IMDG) : 3181
UN-No. (IATA) : 3181
UN-No. (ADN) : 3181
UN-No. (RID) : 3181

14.2. UN proper shipping name
Proper Shipping Name (ADR) : METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S.
Proper Shipping Name (IMDG) : METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S.
Proper Shipping Name (IATA) : METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S.
Proper Shipping Name (ADN) : METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S.
Proper Shipping Name (RID) : METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S.
Transport document description (ADR) : UN 3181 METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S. (ALUMINUM ISOPROPOXIDE), 4.1, II, (E)
Transport document description (IMDG) : UN 3181 METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S. (ALUMINUM ISOPROPOXIDE), 4.1, II
Transport document description (IATA) : UN 3181 Metal salts of organic compounds, flammable, n.o.s. (ALUMINUM ISOPROPOXIDE), 4.1, II
Transport document description (ADN) : UN 3181 METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S. (ALUMINUM ISOPROPOXIDE), 4.1, II
Transport document description (RID) : UN 3181 METAL SALTS OF ORGANIC COMPOUNDS, FLAMMABLE, N.O.S. (ALUMINUM ISOPROPOXIDE), 4.1, II
## 14.3 Transport hazard class(es)

### ADR
- Transport hazard class(es) (ADR): **4.1**
- Danger labels (ADR): **4.1**

### IMDG
- Transport hazard class(es) (IMDG): **4.1**
- Danger labels (IMDG): **4.1**

### IATA
- Transport hazard class(es) (IATA): **4.1**
- Hazard labels (IATA): **4.1**

### ADN
- Transport hazard class(es) (ADN): **4.1**
- Danger labels (ADN): **4.1**

### RID
- Transport hazard class(es) (RID): **4.1**
- Danger labels (RID): **4.1**

## 14.4 Packing group

- Packing group (ADR): **II**
- Packing group (IMDG): **II**
- Packing group (IATA): **II**
- Packing group (ADN): **II**
- Packing group (RID): **II**

## 14.5 Environmental hazards

- Dangerous for the environment: **No**
- Marine pollutant: **No**
- Other information: **No supplementary information available**
### 14.6. Special precautions for user

#### - Overland transport

| Classification code (ADR) | : F3 |
| Special provisions (ADR) | : 274 |
| Limited quantities (ADR) | : 1 kg |
| Excepted quantities (ADR) | : E2 |
| Packing instructions (ADR) | : P002, IBC08 |
| Special packing provisions (ADR) | : B3 |
| Mixed packing provisions (ADR) | : MP11 |
| Portable tank and bulk container instructions (ADR) | : T3 |
| Portable tank and bulk container special provisions (ADR) | : TP33 |
| Tank code (ADR) | : SGAN |
| Vehicle for tank carriage | : AT |
| Transport category (ADR) | : 2 |
| Special provisions for carriage - Packages (ADR) | : V11 |
| Hazard identification number (Kemler No.) | : 40 |

Orange plates: 3181

| Tunnel restriction code (ADR) | : E |
| EAC code | : 1Z |

#### - Transport by sea

| Special provisions (IMDG) | : 274 |
| Limited quantities (IMDG) | : 1 kg |
| Excepted quantities (IMDG) | : E2 |
| Packing instructions (IMDG) | : P002 |
| Special packing provisions (IMDG) | : PP31 |
| IBC packing instructions (IMDG) | : IBC08 |
| IBC special provisions (IMDG) | : B2, B4 |
| Tank instructions (IMDG) | : T3 |
| Tank special provisions (IMDG) | : TP33 |
| EmS-No. (Fire) | : F-A |
| EmS-No. (Spillage) | : S-I |
| Stowage category (IMDG) | : B |
| Stowage and handling (IMDG) | : SW2 |
| Properties and observations (IMDG) | : Decomposes in water. Liable to spontaneous heating. Irritating to skin and mucous membranes. |

#### - Air transport

| PCA Excepted quantities (IATA) | : E2 |
| PCA Limited quantities (IATA) | : Y441 |
| PCA limited quantity max net quantity (IATA) | : 5 kg |
| PCA packing instructions (IATA) | : 445 |
| PCA max net quantity (IATA) | : 15 kg |
| CAO packing instructions (IATA) | : 448 |
| CAO max net quantity (IATA) | : 50 kg |
| Special provisions (IATA) | : A3 |
| ERG code (IATA) | : 3L |

#### - Inland waterway transport

| Classification code (ADN) | : F3 |
| Special provisions (ADN) | : 274 |
| Limited quantities (ADN) | : 1 kg |
| Excepted quantities (ADN) | : E2 |
ALUMINUM ISOPROPOXIDE
Safety Data Sheet

Equipment required (ADN) : PP
Number of blue cones/lights (ADN) : 1

- Rail transport
  Classification code (RID) : F3
  Special provisions (RID) : 274
  Limited quantities (RID) : 1kg
  Excepted quantities (RID) : E2
  Packing instructions (RID) : P002, IBC08
  Special packing provisions (RID) : B4
  Mixed packing provisions (RID) : MP11
  Portable tank and bulk container instructions (RID) : T3
  Portable tank and bulk container special provisions (RID) : TP33
  Tank codes for RID tanks (RID) : SGAN
  Transport category (RID) : 2
  Special provisions for carriage – Packages (RID) : W1
  Colis express (express parcels) (RID) : CE10
  Hazard identification number (RID) : 40

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations
No REACH Annex XVII restrictions
ALUMINUM ISOPROPOXIDE is not on the REACH Candidate List
ALUMINUM ISOPROPOXIDE is not on the REACH Annex XIV List
ALUMINUM ISOPROPOXIDE is not subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.

15.1.2. National regulations

Germany

Netherlands
SZW-lijs van kankerverwekkende stoffen : The substance is not listed
SZW-lijs van mutagene stoffen : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

15.2. Chemical safety assessment
No additional information available

SECTION 16: Other information

Abbreviations and acronyms:
ALUMINUM ISOPROPOXIDE
Safety Data Sheet

Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor

Other information
Prepared by safety and environmental affairs.

Full text of H- and EUH-statements:

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<thead>
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<th>Flam. Sol. 1</th>
<th>Flammable solids, Category 1</th>
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<tr>
<td>H228</td>
<td>Flammable solid.</td>
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SDS EU (REACH Annex II) - Custom

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