1. Identification

1.1. Product identifier

Product Code(s) 993
Product Name CALCIUM ALUMINATE CEMENT

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

Recommended use Hydraulic binder. Used for production of refractory concretes and mortars and as ingredient of construction materials and construction chemistry products.

Uses advised against No information available

1.3. Details of the supplier of the safety data sheet

Manufacturer Almatis B.V.
Theemsweg 30
NL-3197 KM Botlek Rt
The Netherlands
Phone: +31 181270129

Supplier Almatis GmbH
Lyoner Str. 9
60528 Frankfurt
Germany
+ 49 69 9573410

For further information, please contact info@almatis.com

1.4. Emergency telephone number

Emergency Telephone GB: +44 20 35147487
UK: 0 800 680 0425

Emergency Telephone §45 - (EC) 1272/2008
Europe 112

2. Hazard(s) identification

2.1. Classification of the substance or mixture Regulation (EC) No 1272/2008

2.2. Label elements

Hazard statements EUH210 - Safety data sheet available on request

2.3. Other hazards

May form combustible dust concentrations in air (during handling or processing).

3. Composition/information on ingredients
3.1 Substances
Not applicable

3.2 Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>EC No</th>
<th>CAS No</th>
<th>Weight-%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
<th>REACH registration number</th>
</tr>
</thead>
</table>

Full text of H- and EUH-phrases: see section 16

4. First-aid measures

4.1. Description of first aid measures
- Inhalation: Remove to fresh air.
- Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
- Skin contact: Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.
- Ingestion: Clean mouth with water and drink afterwards plenty of water.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms: Mild eye irritant. Mild skin irritant.

4.3. Indication of any immediate medical attention and special treatment needed
Note to physicians: Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media
Suitable Extinguishing Media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media: No information available.

5.2. Special hazards arising from the substance or mixture
Specific hazards arising from the chemical: Slight fire hazard. Avoid generation of dust. Fine dust dispersed in air may ignite.

5.3. Advice for firefighters
Special protective equipment for fire-fighters: Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.
6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions
Avoid generation of dust. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Take precautionary measures against static discharges.

For emergency responders
Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions
See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Prevent dust cloud.

Methods for cleaning up
Take up with inert, damp, non-combustible material using clean non-sparking tools and place into loosely covered plastic containers for later disposal. Pick up and transfer to properly labeled containers.

Prevention of secondary hazards
Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections
Advices on safe handling: See Section 7 for more information. Personal protective equipment [PPE]: See section 8 for more information. Disposal: See section 13 for more information.

7. Handling and storage

7.1. Precautions for safe handling

Advice on safe handling
Ensure adequate ventilation. Avoid generation of dust. Do not breathe dust. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use spark-proof tools and explosion-proof equipment. Take precautionary measures against static discharges.

General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity).

7.3. Specific end use(s)

Risk Management Methods (RMM)
The information required is contained in this Material Safety Data Sheet.

8. Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>European Union</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Germany</th>
</tr>
</thead>
</table>

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<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Italy</th>
<th>Portugal</th>
<th>Netherlands</th>
<th>Finland</th>
<th>Denmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide 1344-28-1</td>
<td>-</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Austria</th>
<th>Switzerland</th>
<th>Poland</th>
<th>Norway</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide 1344-28-1</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 3 mg/m³</td>
<td>TWA: 2.5 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 10 mg/m³</td>
</tr>
<tr>
<td></td>
<td>STEL 10 mg/m³</td>
<td>STEL 24 mg/m³</td>
<td>STEL 15 mg/m³</td>
<td>STEL 30 mg/m³</td>
<td>STEL 12 mg/m³</td>
</tr>
</tbody>
</table>

Derived No Effect Level (DNEL) No information available.

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). EN 166.

Hand protection Wear suitable gloves. EN 374.

Skin and body protection Wear fire/flame resistant/retardant clothing. EN ISO 6529.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks + Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>White to off-white Powder</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>White to off-white</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>None.</td>
<td></td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>11.3 - 11.5</td>
<td>aqueous solution</td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>1650 - 1820 °C</td>
<td></td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td>No data available</td>
<td>None known</td>
</tr>
<tr>
<td>Upper flammability or explosive</td>
<td>No data available</td>
<td></td>
</tr>
</tbody>
</table>
9.2. Other information

Softening point  No information available
Molecular weight  No information available
VOC Content (%)  No information available
Liquid Density  2.8-3.3 g/cm³
Bulk density  750-1100 kg/m³

10. Stability and reactivity

10.1. Reactivity

Reactivity  None under normal use conditions.

10.2. Chemical stability

Stability  Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact  None.
Sensitivity to static discharge  None.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions  Contact with water generates heat.

Hazardous polymerization  None under normal processing.

10.4. Conditions to avoid

Conditions to avoid  Avoid accumulation of airborne dust. Keep away from open flames, hot surfaces and sources of ignition.

10.5. Incompatible materials

Incompatible materials  None known based on information supplied.

10.6. Hazardous decomposition products

Hazardous decomposition products  None under normal processing.

11. Toxicological information

11.1. Information on toxicological effects
Information on likely routes of exposure

Product Information

Inhalation May cause irritation.
Eye contact Dust contact with the eyes can lead to mechanical irritation.
Skin contact Causes mild skin irritation.
Ingestion No known hazard by swallowing.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms No information available.

Numerical measures of toxicity

Unknown acute toxicity No information available.

Component Information

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>&gt; 5000 mg/kg (Rat)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation No information available.
Serious eye damage/eye irritation No information available.
Respiratory or skin sensitization No information available.
Germ cell mutagenicity No information available.
Carcinogenicity No information available.
Reproductive toxicity No information available.
STOT - single exposure No information available.
STOT - repeated exposure No information available.
Aspiration hazard No information available.

12. Ecological information

12.1. Toxicity
Ecotoxicity Not considered to be harmful to aquatic life.

12.2. Persistence and degradability
Persistence and degradability Not readily biodegradable.

12.3. Bioaccumulative potential
Bioaccumulation  Does not bioaccumulate.

12.4. Mobility in soil

Mobility in soil  No information available.
Mobility  No information available.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment  No information available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>PBT and vPvB assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>The substance is not PBT / vPvB PBT assessment does not apply</td>
</tr>
</tbody>
</table>

12.6. Other adverse effects

Other adverse effects  No information available.

13. Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products  Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
Contaminated packaging  Do not reuse empty containers.

Waste codes / waste designations according to EWC / AVV  According to the European Waste Catalog, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used. 01 03 08.

14. Transport information

IMDG
14.1 UN number  Not regulated
14.2 UN proper shipping name  Not regulated
14.3 Transport hazard class(es)  Not regulated
14.4 Packing group  Not regulated
14.5 Marine pollutant  Not applicable
14.6 Special Provisions  None
14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code  No information available

RID
14.1 UN number  Not regulated
14.2 UN proper shipping name  Not regulated
14.3 Transport hazard class(es)  Not regulated
14.4 Packing group  Not regulated
14.5 Environmental hazards  Not applicable
14.6 Special Provisions  None

ADR
14.1 UN number  Not regulated
14.2 UN proper shipping name  Not regulated
14.3 Transport hazard class(es)  Not regulated
14.4 Packing group  Not regulated
14.5 Environmental hazards  Not applicable
14.6 Special Provisions  None

IATA  Not regulated
14.1 UN number  Not regulated
14.2 UN proper shipping name  Not regulated
14.3 Transport hazard class(es)  Not regulated
14.4 Packing group  Not regulated
14.5 Environmental hazards  Not applicable
14.6 Special Provisions  None

15. Regulatory information

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

European Union
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Authorizations and/or restrictions on use:
This product does not contain substances subject to authorization (Regulation (EC) No. 1907/2006 (REACH), Annex XIV) This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Persistent Organic Pollutants
Not applicable

Ozone-depleting substances (ODS) regulation (EC) 1005/2009  Not applicable

International Inventories

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA</td>
<td>Complies</td>
</tr>
<tr>
<td>DSL/NDSL</td>
<td>Listed on DSL</td>
</tr>
<tr>
<td>EINECS/ELINCS</td>
<td>Complies</td>
</tr>
<tr>
<td>ENCS</td>
<td>Does not comply</td>
</tr>
<tr>
<td>IECSC</td>
<td>Complies</td>
</tr>
<tr>
<td>KECL</td>
<td>Complies</td>
</tr>
<tr>
<td>PICCS</td>
<td>Does not comply</td>
</tr>
<tr>
<td>AICS</td>
<td>Complies</td>
</tr>
</tbody>
</table>

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

15.2. Chemical safety assessment

Chemical Safety Report  No information available
16. Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend
SVHC: Substances of Very High Concern for Authorization:

Legend  Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION
TWA  TWA (time-weighted average)  STEL  STEL (Short Term Exposure Limit)
Ceiling  Maximum limit value  *  Skin designation

Key literature references and sources for data used to compile the SDS
Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

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This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

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