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

1.1. Product identifier

Product Code(s) 387
Chemical name Calcined Alumina and Polishing Alumina
Synonyms A-Aluminas, CL-Aluminas, CT-Aluminas, CTC-Aluminas, E-SY 1000, Gilox, GMA, HVA, MPC, P-Aluminas, PSG, RAPOL, RG-Aluminas, Ultimate, WRA, Exception: CTC55 - see Material Safety Data Sheet 1000, Exception: CT3000 SDP - see Material Safety Data Sheet 1259
Molecular weight 101.96

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

Recommended use Adsorbents Filler Polishing agent Refractory Ceramic
Uses advised against No information available

1.3. Details of the supplier of the safety data sheet

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

For further information, please contact
E-mail address info@almatis.com

1.4. Emergency telephone number

Emergency Telephone 3E Global Incident Response Hotline (Almatis access code: 334735)
GB: +44 20 35147487
UK: 0 800 680 0425

Emergency Telephone - §45 - (EC)1272/2008
Not applicable

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

2.2. Label elements

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]
Signal word
None

Hazard statements
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

Precautionary Statements - EU (§28, 1272/2008)
P403 + P235 - Store in a well-ventilated place. Keep cool

2.3. Other hazards
No information available

SECTION 3: Composition/information on ingredients

3.1 Substances

<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>
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</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>215-691-6</td>
<td>1344-28-1</td>
<td>&gt;99</td>
<td>-</td>
<td>01-2119529248-35-XXXX</td>
</tr>
</tbody>
</table>

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

SECTION 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 doctor.

Skin contact Wash skin with soap and water. In the case of skin irritation or allergic reactions see a doctor.

Ingestion Clean mouth with water and drink afterwards plenty of water.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms Contact with dust can cause mechanical irritation or drying of the skin.

4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors Treat symptomatically.

SECTION 5: Firefighting 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 No information available.
chemical

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.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions

Ensure adequate ventilation.

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

Methods for cleaning up

Sweep up and shovel into suitable containers for disposal. Pick up and transfer to properly labelled 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.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Ensure adequate ventilation. Avoid generation of dust.

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.

7.3. Specific end use(s)

Specific use(s)

Aluminum filter, Heat exchanger, Inert bed support, Refractory.

Identified Uses

Risk Management Methods (RMM)

The information required is contained in this Material Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits
CALCINED ALUMINA and POLISHING ALUMINA

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>United Kingdom</th>
<th>France</th>
<th>Germany</th>
<th>Spain</th>
<th>European Union</th>
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</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 4 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>1344-28-1</td>
<td>TWA: 4 mg/m³</td>
<td>TWA: 1.5 mg/m³</td>
<td>TWA: 4 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

Chemical name | Italy | Portugal | Netherlands | Finland | Denmark |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>-</td>
<td>TWA: 10 mg/m³</td>
<td>-</td>
<td>-</td>
<td>TWA: 5 mg/m³</td>
</tr>
<tr>
<td>1344-28-1</td>
<td></td>
<td>TWA: 2 mg/m³</td>
<td></td>
<td></td>
<td>TWA: 2 mg/m³</td>
</tr>
</tbody>
</table>

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

Chemical name | Slovakia |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>TWA: 4 mg/m³</td>
</tr>
<tr>
<td>1344-28-1</td>
<td>TWA: 1.5 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 No special protective equipment required.

Eye protection must conform to standard EN 166.

Hand protection Wear suitable gloves.

Gloves must conform to standard EN 374.

Skin and body protection No special protective equipment required.

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 No information available.

SECTION 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>
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</tr>
<tr>
<td>Appearance</td>
<td>white Powder</td>
<td></td>
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<tr>
<td>Colour</td>
<td>white</td>
<td></td>
</tr>
<tr>
<td>Odour</td>
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<td></td>
</tr>
<tr>
<td>Odour threshold</td>
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<td></td>
</tr>
</tbody>
</table>

Property  | Values | Remarks • Method |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
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<td>Not applicable</td>
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<td>Melting point / freezing point</td>
<td>2000 °C</td>
<td>Literary reference</td>
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<tr>
<td>Property</td>
<td>Value</td>
<td>Notes</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------------------------------</td>
<td>----------------</td>
</tr>
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<td>Boiling point / boiling range</td>
<td>No data available</td>
<td>None known</td>
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<tr>
<td>Flash point</td>
<td>-</td>
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</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper flammability or explosive limits</td>
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<td>Not applicable</td>
</tr>
<tr>
<td>Lower flammability or explosive limits</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour pressure</td>
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<td>None known</td>
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<td>Vapour density</td>
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<td>Not applicable</td>
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<td>Relative density</td>
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<tr>
<td>Water solubility</td>
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<tr>
<td>Solubility(ies)</td>
<td>Insoluble</td>
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<td>Partition coefficient</td>
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<td>Not applicable</td>
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<td>Autoignition temperature</td>
<td>No data available</td>
<td>None known</td>
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<tr>
<td>Hyphen</td>
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<td>None known</td>
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<tr>
<td>Kinematic viscosity</td>
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<td>Dynamic viscosity</td>
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<td>Not applicable</td>
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<tr>
<td>Explosive properties</td>
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<tr>
<td>Oxidising properties</td>
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<td></td>
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<tr>
<td>Softening point</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Molecular weight</td>
<td>101.96</td>
<td></td>
</tr>
<tr>
<td>VOC Content (%)</td>
<td>None . ?</td>
<td></td>
</tr>
<tr>
<td>Liquid Density</td>
<td>2.7-3.94 g/cm3</td>
<td></td>
</tr>
<tr>
<td>Bulk density</td>
<td>350-1250 kg/m³</td>
<td></td>
</tr>
</tbody>
</table>

**SECTION 10: Stability and reactivity**

10.1. Reactivity

Reactivity

No information available.

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: None under normal processing.

Hazardous polymerisation: Hazardous polymerisation does not occur.

10.4. Conditions to avoid

Conditions to avoid: dust formation.

10.5. Incompatible materials

Incompatible materials: None known based on information supplied.

10.6. Hazardous decomposition products

Hazardous decomposition products: None known based on information supplied.
SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on likely routes of exposure

Product Information

Inhalation May cause irritation of respiratory tract.
Eye contact Dust contact with the eyes can lead to mechanical irritation.
Skin contact No known hazard in contact with skin.
Ingestion No known hazard by swallowing.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms No information available.

Numerical measures of toxicity

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 sensitisation 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.
Other adverse effects No information available.
Aspiration hazard

No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity

Not considered to be harmful to aquatic life.

Product Information

12.2. Persistence and degradability

Persistence and degradability

Not readily biodegradable.

12.3. Bioaccumulative potential

Bioaccumulation

MATERIAL 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

The product does not contain any substance(s) classified as PBT or vPvB.

<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.

SECTION 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 Catalogue, 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.

SECTION 14: Transport information

IMDG

14.1 UN number

Not regulated

14.2 UN proper shipping name

Not regulated
SECTION 15: Regulatory information

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

Water hazard class (WGK)  non-hazardous to water (nwg)

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

Authorisations and/or restrictions on use:
This product does not contain substances subject to authorisation (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>International Inventories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA</td>
<td>Complies</td>
</tr>
<tr>
<td>DSL/NDSL</td>
<td>Contact supplier for inventory compliance status</td>
</tr>
<tr>
<td>EINECS/ELINCS</td>
<td>Complies</td>
</tr>
</tbody>
</table>
ENCS  Complies
IECSC  Complies
KECL  Complies
PICCS  Complies
AICS  Complies

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

SECTION 16: Other information

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

Legend
SVHC: Substances of Very High Concern for Authorisation:

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

Classification procedure

<table>
<thead>
<tr>
<th>Classification procedure</th>
<th>Method Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification according to Regulation (EC) No. 1272/2008 [CLP]</td>
<td>Method Used</td>
</tr>
<tr>
<td>Acute oral toxicity</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Acute inhalation toxicity - gas</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Acute inhalation toxicity - vapour</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Acute inhalation toxicity - dust/mist</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Respiratory sensitisation</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Skin sensitisation</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Calculation method</td>
</tr>
<tr>
<td>STOT - single exposure</td>
<td>Calculation method</td>
</tr>
<tr>
<td>STOT - repeated exposure</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Acute aquatic toxicity</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Chronic aquatic toxicity</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Ozone</td>
<td>Calculation method</td>
</tr>
</tbody>
</table>

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
CALCINED ALUMINA and POLISHING ALUMINA

U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus database (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
Organisation 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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The Netherlands
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info@almatis.com

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18-Feb-2020

Revision date
18-Feb-2020

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