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

1.1. Product identifier
Product Code 154
Product Name TABULAR ALUMINA
Contains Aluminum oxide, CAS 1344-28-1
Synonyms T60/64 CD and all sizes, T160, T162 all sizes, Filter Bed Alumina (FBA), Premix, Tabalox

1.2. Relevant identified uses of the substance or mixture and uses advised against
Recommended Use Aluminum filter, Heat exchanger, Inert bed support, Refractory
Uses advised against No information available

1.3. Details of the supplier of the safety data sheet
Almatis GmbH Lyoner Str. 9 60528 Frankfurt Germany Phone: +49 69 9573410
Almatis GmbH Giulinistrasse 2 67065 Ludwigshafen Germany Phone: +49 621 57070
Almatis GmbH Theesweg 30 NL-3197 KM Botlek Rt The Netherlands Phone: +31 181270129
Almatis B.V. No.1 Song Hua Jiang Road QGD Econ Dev & Tech Develop Sec III Zone Huangdao 266510 P.R. China Phone: +86 532 86957300
Almatis, B.V. The Netherlands USA Almatis, Inc. 501 West Park Road Leetsdale, PA 15056 USA Phone: +1 412 630-2800
Almatis, Inc. 4701 Alcoa Road Benton, AR 72015 USA Phone: +1 501 776-4677
Almatis Limited 1815-2, Nagano Iwakuni Yamaguchi 740-0045 Japan Phone: +81 827 381271
Qingdao Almatis Co., Ltd. No.1 Song Hua Jiang Road QGD Econ Dev & Tech Develop Sec III Zone Huangdao 266510 P.R. China Phone: +86 532 86957300
Almatis Alumina Pvt. Ltd. Falta Industrial Growth Centre, 24-Parganas South, West Bengal Falta, India Phone: +91 993 3343379
Almatis Limited 1815-2, Nagano Iwakuni Yamaguchi 740-0045 Japan Phone: +81 827 381271
Qingdao Almatis Co., Ltd. No.1 Song Hua Jiang Road QGD Econ Dev & Tech Develop Sec III Zone Huangdao 266510 P.R. China Phone: +86 532 86957300
Almatis Alumina Pvt. Ltd. Falta Industrial Growth Centre, 24-Parganas South, West Bengal Falta, India Phone: +91 993 3343379

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

1.4. Emergency telephone number
Emergency Telephone Number 3E Global Incident Response Hotline (Almatis access code: 334735)
GB: +44 20 35147487
UK: 0 800 680 0425
US: +01 760 476 3961
US: +01 760 476 3959

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture
REGULATION (EC) No 1272/2008
Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Classification according to Regulation (EC) No. 1272/2008 [CLP]
2.2. Label Elements
Symbol(s)
None

Signal word
None

Hazard statements
None

2.3. Other information
No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS No.</th>
<th>Weight-%</th>
<th>REACH Reg. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>1344-28-1</td>
<td>&gt;99</td>
<td>01-2119529248-35-0024</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>01-2119529248-35-0125</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>01-2119529248-35-0086</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>01-2119529248-35-0238</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

4.1. Description of first aid measures
Eye Contact
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Skin Contact
Wash skin with soap and water.

Ingestion
Rinse mouth

Inhalation
Remove to fresh air

General Advice
If symptoms persist, call a physician
Show this safety data sheet to the doctor in attendance

4.2. Most important symptoms and effects, both acute and delayed
No information available

4.3. Indication of any immediate medical attention and special treatment needed
Notes to Physician
Treat symptomatically

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media
Suitable Extinguishing Media
The product itself does not burn
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Extinguishing media which must not be used for safety reasons
No information available

5.2. Special hazards arising from the substance or mixture
Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases
None in particular.

5.3. Advice for firefighters
Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
Wear personal protective equipment
Avoid dust formation

6.2. Environmental precautions
No special environmental precautions required

6.3. Methods and material for containment and cleaning up
Recover product. Place into appropriate container for disposal.

Methods for Cleaning Up
Sweep up and shovel into suitable containers for disposal

6.4. Reference to other sections
See Section 12 for additional information.

7. HANDLING AND STORAGE

7.1. Precautions for Safe Handling
Handling
Provide appropriate exhaust ventilation at places where dust is formed

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice

Exposure scenario
No information available

7.2. Conditions for safe storage, including any incompatibilities
Keep in a dry place

7.3. Specific end use(s)
No information available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>EU</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Germany OEL (TWA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td></td>
<td></td>
<td>VME: 10 mg/m³</td>
<td>VLA-ED: 10 mg/m³</td>
<td>1.25 mg/m³</td>
</tr>
<tr>
<td>1344-28-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.0 mg/m³(a)</td>
</tr>
</tbody>
</table>

(a) GOEL - Germany - TRGS 900 - Occupational Exposure Limits - TWAs, (a) exempt facilities listed in 2.4(8) and (9)

<table>
<thead>
<tr>
<th>Component</th>
<th>Italy</th>
<th>Portugal</th>
<th>Netherlands</th>
<th>Finland</th>
<th>Denmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td></td>
<td>TWA: 10 mg/m³</td>
<td></td>
<td></td>
<td>TWA: 10 mg/m³</td>
</tr>
<tr>
<td>1344-28-1 ( &gt;99 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>OSHA PEL</td>
<td>ACGIH TWA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------------------------</td>
<td>----------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum oxide</td>
<td>15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)</td>
<td>1 mg/m³ TWA (respirable fraction)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Derived No Effect Level (DNEL) 3 mg/m³, respirable, 8 hour TWA

Predicted No Effect Concentration (PNEC) No information available

8.2. Exposure controls

Personal protective equipment

Eye Protection Wear safety glasses with side shields (or goggles)

Skin Protection No special protective equipment required.

Hand Protection No special protective equipment required.

Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators

Environmental exposure controls Avoid dust formation

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Balls, Powder, Granules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>White</td>
</tr>
<tr>
<td>Odor</td>
<td>None</td>
</tr>
<tr>
<td>Flash point (°C) DEGREES</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Autoignition temp (°C) DEGREES</td>
<td>Does not ignite</td>
</tr>
</tbody>
</table>

Melting Point/Range

<table>
<thead>
<tr>
<th>Melting point (°C) DEGREES</th>
<th>2053 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solubility</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Density</td>
<td>3.5-3.7 g/cm³</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>800-2800 kg/m³</td>
</tr>
<tr>
<td>Explosives</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

10.1. Reactivity

None under normal processing

10.2. Chemical Stability

Stable under normal conditions

10.3. Possibility of Hazardous Reactions

None under normal processing

10.4. Conditions to Avoid

None under normal processing

10.5. Incompatible materials

None under normal processing

10.6. Hazardous Decomposition Products

None under normal processing

11. TOXICOLOGICAL INFORMATION
11.1. Information on toxicological effects

Acute Toxicity

<table>
<thead>
<tr>
<th>Acute toxicity - Oral</th>
<th>Conclusive but not sufficient for classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Dermal</td>
<td>Conclusive but not sufficient for classification</td>
</tr>
<tr>
<td>Acute toxicity - Inhalation (Dusts/Mists)</td>
<td>Conclusive but not sufficient for classification</td>
</tr>
<tr>
<td>Oral LD50</td>
<td>&gt; 5000 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>No effect</td>
</tr>
<tr>
<td>Inhalation LC50</td>
<td>&gt; 5 mg/m³ (rat)</td>
</tr>
</tbody>
</table>

Chronic Toxicity

<table>
<thead>
<tr>
<th>Irritation</th>
<th>Conclusive but not sufficient for classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosivity</td>
<td>Conclusive but not sufficient for classification</td>
</tr>
<tr>
<td>Sensitization</td>
<td>Conclusive but not sufficient for classification</td>
</tr>
<tr>
<td>Mutagenic Effects</td>
<td>Conclusive but not sufficient for classification</td>
</tr>
<tr>
<td>Carcinogenic effects</td>
<td>Conclusive but not sufficient for classification</td>
</tr>
<tr>
<td>Reproductive Effects</td>
<td>Conclusive but not sufficient for classification</td>
</tr>
<tr>
<td>Developmental Effects</td>
<td>Conclusive but not sufficient for classification</td>
</tr>
<tr>
<td>Aspiration Hazard</td>
<td>Conclusive but not sufficient for classification</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects
Not water endangering
(WGK: 1346)
Aquatic toxicity is unlikely due to low solubility

12.2. Persistence and degradability
Not readily biodegradable.

12.3. Bioaccumulative potential
No information available

12.4. Mobility in soil
No information available

12.5. Results of PBT and vPvB assessment
No information available

12.6. Other adverse effects
None

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues/Unused Products
Disposal should be in accordance with applicable regional, national and local laws and regulations

Contaminated Packaging
Empty containers should be taken to an approved waste handling site for recycling or disposal

14. TRANSPORT INFORMATION

Note: Not classified as dangerous in the meaning of transport regulations

IMDG/IMO Not regulated.
15. REGULATORY INFORMATION

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

International Inventories

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA</td>
<td>Complies</td>
</tr>
<tr>
<td>EINECS/ELINCS</td>
<td>Complies</td>
</tr>
<tr>
<td>DSL/NDSL</td>
<td>Listed on DSL</td>
</tr>
<tr>
<td>PICCS</td>
<td>Complies</td>
</tr>
<tr>
<td>ENCS</td>
<td>Complies</td>
</tr>
<tr>
<td>IECSC</td>
<td>Complies</td>
</tr>
<tr>
<td>AICS</td>
<td>Complies</td>
</tr>
<tr>
<td>KECL</td>
<td>Complies</td>
</tr>
</tbody>
</table>

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

15.2. A Chemical Safety Assessment has been carried out

A Chemical Safety Assessment has been carried out

16. OTHER INFORMATION

Key literature references and sources for data
www.ChemADVISOR.com/

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24-Mar-2011

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07-Mar-2018

Revision Note
Revision 16, March 2018
Updated Almatis Inc. address
Updated Prepared By

Updates
The most current version of this Safety Data Sheet is available at this URL:

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End of Safety Data Sheet