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

1.1. Product identifier

Product Code: 340
Product Name: MAGNESIUM ALUMINATE SPINEL
Contains: Spinel, CAS 1302-67-6
Synonyms: AR 78, AR 90, MR 66

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

Recommended Use: 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

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]
No data available

2.2. Label Elements

Signal word
None

Hazard statements
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>Spinel (Mg(AlO2)2)</td>
<td>1302-67-6</td>
<td>85-100</td>
<td>01-2119457267-32-0000</td>
</tr>
<tr>
<td>Aluminum oxide</td>
<td>1344-28-1</td>
<td>5-15</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>Magnesium oxide</td>
<td>1309-48-4</td>
<td>0-5</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>
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</thead>
<tbody>
<tr>
<td>Spinel (Mg(AlO2)2)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1302-67-6</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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 (a)</td>
</tr>
<tr>
<td>1344-28-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnesium oxide</td>
<td>TWA: 10</td>
<td>TWA: 10 mg/m³</td>
<td>VME: 10 mg/m³</td>
<td>VLA-ED: 10 mg/m³</td>
<td>6 mg/m³ respirable fraction</td>
</tr>
<tr>
<td>1309-48-4</td>
<td>mg/m³</td>
<td>STEL: 10 mg/m³</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 4 mg/m³</td>
<td></td>
<td></td>
<td></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>Spinel (Mg(AlO2)2)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1302-67-6 (85-100)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum oxide</td>
<td></td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1344-28-1 (5-15)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnesium oxide</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 6 mg/m³</td>
<td>TWA: 6 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1309-48-4 (0-5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA PEL</th>
<th>ACGIH TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinel (Mg(AlO2)2)</td>
<td>N/A</td>
<td>1 mg/m³ TWA (respirable fraction)</td>
</tr>
<tr>
<td>1302-67-6 (85-100)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 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**: In case of insufficient ventilation, wear suitable respiratory equipment. 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

- **Physical State**: Powder, Granules, Balls
- **Color**: Off-white
- **Odor**: None
- **pH**: Not applicable
- **Flash point (°C) DEGREES**: Not applicable
- **Autoignition temp (°F) DEGREES**: Does not ignite
- **Solubility**: Insoluble
- **Density**: 3.0-3.4 g/cm³
- **Bulk Density**: 0.7-2.7 g/cm³
- **Explosives**: Not applicable

### 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**

### Derived No Effect Level (DNEL)

3 mg/m³, respirable, 8 hour TWA

### Predicted No Effect Concentration (PNEC)

No information available

<table>
<thead>
<tr>
<th>Aluminum oxide</th>
<th>15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)</th>
<th>1 mg/m³ TWA (respirable fraction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium oxide</td>
<td>15 mg/m³ TWA (fume, total particulate)</td>
<td>10 mg/m³ TWA (inhalable particulate matter)</td>
</tr>
</tbody>
</table>
340 - MAGNESIUM ALUMINATE SPINEL

Acute toxicity - Oral
Conclusive but not sufficient for classification

Acute toxicity - Dermal
Conclusive but not sufficient for classification

Acute toxicity - Inhalation (Dusts/Mists)
Conclusive but not sufficient for classification

Chronic Toxicity

Irritation
Conclusive but not sufficient for classification

Corrosivity
Conclusive but not sufficient for classification

Sensitization
Conclusive but not sufficient for classification

Mutagenic Effects
Conclusive but not sufficient for classification

Carcinogenic effects
Conclusive but not sufficient for classification

Reproductive Effects
Conclusive but not sufficient for classification

Developmental Effects
Conclusive but not sufficient for classification

Aspiration Hazard
Conclusive but not sufficient for classification

12. ECOLOGICAL INFORMATION

12.1. Toxicity
Ecotoxicity effects
Not water endangering
Aquatic toxicity is unlikely due to low solubility

12.2. Persistence and degradability
No information available

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

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.
RID Not regulated.
ADR Not regulated
ICAO Not regulated
IATA 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>International Inventory</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>Not listed</td>
</tr>
<tr>
<td>PICCS</td>
<td>Not listed</td>
</tr>
<tr>
<td>ENCS</td>
<td>Not listed</td>
</tr>
<tr>
<td>IECSC</td>
<td>Not listed</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. Chemical Safety Assessment

A Chemical Safety Assessment has been carried out

16. OTHER INFORMATION

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

Prepared By Edwin van Hagen

Almatis B.V.
Theemsweg 30
3197 KM Botlek Rt
The Netherlands
+31-181-270124
Edwin.vanhagen@almatis.com

Issuing Date 29-Mar-2011
Revision Date 07-Mar-2018

Revision Note Reason for revision
Revision 12, March 2018
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