High Purity Alumina (Al$_2$O$_3$)  
99.99% (4N) Grade

1. IDENTIFICATION

Product Information

Product Name: Aluminium oxide
Other name(s): Alumina, Aluminium trioxide, Alumina Powder
Recommended Use: Sapphire synthetic

COMPANY DETAILS

Supplier: Altech Chemicals Limited
ABN: 45 125 301 206
Street Address: Suite 8, 295 Rokeby Road, Subiaco
              Western Australia 6008
Telephone: +61 8 9389 5557
Emergency: 13 11 26

2. HAZARDS IDENTIFICATION

Based on available information, not classified as hazardous according to criteria of Safe Work Australia; NON-HAZARDOUS SUBSTANCE.

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

Poisons Schedule: None allocated.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS Number</th>
<th>Proportion</th>
<th>Risk Phases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al$_2$O$_3$</td>
<td>1344-28-1</td>
<td>&gt;99.99%</td>
<td>-</td>
</tr>
</tbody>
</table>
4. FIRST AID MEASURES

Inhalation:  
Remove victim from area of exposure - avoid becoming a casualty. Seek medical advice if effects persist.

Skin Contact:  
If skin contact occurs, remove contaminated clothing and wash skin with running water. If irritation occurs seek medical advice.

Eye Contact:  
If in eyes, wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

Ingestion:  
Rinse mouth with water. If swallowed, give a glass of water to drink. If vomiting occurs give further water. Seek medical advice.

Medical attention and special treatment:  
Treat symptomatically.

5. FIRE FIGHTING MEASURES

Hazards from combustion products:  
Non-combustible material.

Precautions for fire fighters and special protective equipment:  
Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition.

Suitable Extinguishing Media:  
Not combustible, however, if material is involved in a fire use: Extinguishing media appropriate to surrounding fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures:  
If contamination of sewers or waterways has occurred advise local emergency services.

Methods and materials for containment and clean up:  
Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact. Avoid breathing in dust. Work up wind or increase ventilation. Collect and seal in properly labelled containers or drums for disposal.

7. HANDLING AND STORAGE

Conditions for safe storage:  
Store in a dry, well-ventilated area, removed from chlorine trifluoride, ethylene oxide, alkaline solutions and foodstuffs. Large alumina stockpiles may be unstable and prone to slippage. Where large unbundled stockpiles are maintained, access to all personnel should be prohibited. Check regularly for spills.
**Spills:**

If spilt (bulk), contact emergency services where appropriate. Avoid generating dusts. Clear area of all unprotected personnel, and wear dust proof goggles, gloves and a Class P1 (Particulate) respirator where dust exists.

**Precautions for safe handling:**

Avoid skin and eye contact and breathing in dust.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Exposure Control Measures:**

Aluminium oxide: 8hr TWA = 10 mg/m³ as published by the National Occupational Health and Safety Commission.

**Engineering controls:**

Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. Avoid generating and breathing in dusts. Use with local exhaust ventilation or while wearing dust mask. Keep containers closed when not in use.

**Personal Protective Equipment:**

Wear overalls, safety glasses and impervious gloves. Avoid generating and inhaling dusts. If excessive dust exists, wear dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>White powder</td>
</tr>
<tr>
<td>Odour:</td>
<td>Odourless</td>
</tr>
<tr>
<td>Solubility:</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Relative Vapour Density:</td>
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</tr>
<tr>
<td>Flash Point:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting Point Range:</td>
<td>&gt;2000°C</td>
</tr>
<tr>
<td>Boiling Point:</td>
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</tr>
<tr>
<td>pH:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Bulk Density:</td>
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<tr>
<td>Vapour Pressure(20°C):</td>
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<tr>
<td>Flammability Limits (%):</td>
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</tr>
<tr>
<td>Volatile component:</td>
<td>0%</td>
</tr>
</tbody>
</table>

**10. STABILITY AND REACTIVITY**

**Reactivity:**

React violently with chlorine trifluoride, producing flame. Polymerise violently with ethylene oxide.
Dissolve slowly in alkaline solutions.

**Chemical stability:**
Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**Hazardous reactions:**
None known

**Conditions to avoid:**
Avoid dust generation. Avoid exposure to moisture.

**Incompatible materials:**
Incompatible with strong acid and strong oxidising agents

**Hazardous decomposition products:**
None known

11. **TOXICOLOGICAL INFORMATION**

Low irritant - low toxicity. Alumina is regarded as a nuisance dust. It is not readily absorbed through the skin or gastrointestinal tract. Over exposure to alumina dust may cause mucous membrane irritation of the nose and throat. Use safe work practices to avoid eye contact and dust generation (inhalation).

**Eye:**
Low to moderate irritant. Direct contact may result in lacrimation, pain, redness and conjunctivitis.

**Skin:**
Low irritant. Prolonged and repeated exposure to dust/powder may result in irritation due to mechanical action.

**Inhalation:**
Low irritant – nuisance dust. Over exposure to alumina dust may cause mucous membrane irritation of the nose and throat.

**Swallowed:**
Low toxicity. With large doses, ingestion may result in nausea, vomiting and gastrointestinal irritation.

**Long Term Effects:**
Not listed as carcinogenic according to IARC.

**Toxicological Data:**
Oral LD50 (rat): >5000 mg/kg

12. **ECOLOGICAL INFORMATION**

**Ecotoxicity:**
Avoid contaminating waterways

13. **DISPOSAL CONSIDERATIONS**

**Disposal:**
Reuse where possible. Collect without generating dust and dispose in an approved landfill site.
14. TRANSPORT INFORMATION

Road and Rail Transport

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

Marine Transport

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

Air Transport

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

15. REGULATORY INFORMATION

Classification: Based on available information, not classified as hazardous according to criteria of Safe Work Australia; NON-HAZARDOUS SUBSTANCE.

Poisons Schedule:

None allocated.

This material is listed on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

This safety data sheet has been prepared by Altech Chemicals Limited.
Issued date: 12 November 2014

Disclaimer

“The information and suggestions contained in this Data Sheet are provided in good faith and are believed to be correct at the date hereof. Nevertheless, the accuracy and completeness of these data are not guaranteed and no warranty of any kind is made with respect of these data. In particular, these data are not intended to relieve any user of the product described from taking all precautions reasonably required in connection with the use of the product and complying with all relevant requirements. The use of the product in particular situations is likely to involve matters beyond the scope of this data sheet and users should in all cases use appropriately skilled persons to advise upon and carry out each particular application or use of the product. This disclaimer applies
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