**Section 1 - IDENTIFICATION**

**Material Name:**
Brown Fused Alumina

**Trade Name:**
Brown Aluminum Oxide

**Recommended Use**
Abrasive applications

**Restrictions on Use**
None known

**Manufacturer Information**
US Minerals, Inc.
18635 West Creek Drive
Tinley Park, IL 60477

Phone: (708) 623-1935; Fax: 219-864-4675

Emergency U.S. Minerals: (800) 803-2803

ChemTrec: (800) 424-9300

**Section 2 - HAZARDS IDENTIFICATION**

**OSHA (29 CFR 1910.1200) Classification of Brown Fused Silica:**

<table>
<thead>
<tr>
<th>Hazard Symbol</th>
<th>Hazard Description</th>
<th>Signal Word</th>
<th>Hazard Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single Target Organ Toxicity (STOT) Repeated Exposure Category 2 (Respiratory System)</td>
<td>Warning</td>
<td>May cause damage to lungs (pulmonary fibrosis) through prolonged or repeated exposure.</td>
</tr>
</tbody>
</table>

**Precautionary Statements**

<table>
<thead>
<tr>
<th>Prevention</th>
<th>Response</th>
<th>Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not breathe dusts.</td>
<td>Get medical advice/attention if you feel unwell.</td>
<td>Dispose of contents in accordance with federal, state/provincial and local regulations</td>
</tr>
</tbody>
</table>

**Hazards not Otherwise Classified:** None Known.  

**Unknown Acute Toxicity Statement (Mixture):** None Known.

**Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

<table>
<thead>
<tr>
<th>Component of Brown Fused Alumina</th>
<th>CAS No.</th>
<th>% Percentage (W/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>1344-28-1</td>
<td>90 - 91</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>13463-67-7</td>
<td>2 - 3</td>
</tr>
<tr>
<td>Silicon Dioxide (amorphous silica)</td>
<td>7631-86-9</td>
<td>1 - 2</td>
</tr>
<tr>
<td>Crystalline Silica (α-quartz)</td>
<td>14808-60-7</td>
<td>0.5 – 1.0</td>
</tr>
<tr>
<td>Calcium Oxide</td>
<td>1305-78-8</td>
<td>0.1 – 0.5</td>
</tr>
<tr>
<td>Iron Oxide</td>
<td>1309-37-1</td>
<td>0.1 – 0.5</td>
</tr>
<tr>
<td>Magnesium Oxide</td>
<td>1309-48-4</td>
<td>0.1 – 0.5</td>
</tr>
<tr>
<td>Impurities (other oxides)</td>
<td>Not applicable</td>
<td>&lt; 5</td>
</tr>
</tbody>
</table>
**Section 4 - FIRST AID MEASURES**

**Description of First Aid Measures**

**General Information:** No special measures required.

**Inhalation:** Remove to fresh air. Get medical attention if you feel unwell.

**Skin:** Product is not a skin sensitizer. Wash skin with soap and water. Remove contaminated clothing. Get medical attention, if needed.

**Eyes:** Remove contact lenses, if present. Rinse opened eye for several minutes under running water. Do not rub eyes. If symptoms persist, get medical attention.

**Ingestion:** Rinse mouth and drink plenty of water. Do not induce vomiting; get medical attention if symptoms occur.

**Most Important Symptoms/Effects, both Acute and Delayed**

**Acute:** Slight irritant effect on eyes and respiratory tract.

**Chronic:** Prolonged and repeated inhalation exposure to excessive concentrations of dusts may cause pulmonary fibrosis.

**Any immediate medical attention / special treatment needed:** Treat symptomatically.

---

**Section 5 - FIRE FIGHTING MEASURES**

**Suitable Extinguishing Media**

Use extinguishing agents appropriate for surrounding conditions.

**Unsuitable Extinguishing Media**

None known.

**Specific Hazards Arising from the Chemical**

None known.

**Hazardous Combustion Products**

None known.

**Advice for Firefighters**

Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure to fumes and/or smoke from the fire.

---

**Section 6 - ACCIDENTAL RELEASE MEASURES**

**Personal Precautions, Protective Equipment and Emergency Procedures**

For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. If material is in a dry state, avoid inhalation of dust. Fine, dry material should be removed by vacuuming or wet weeping methods to prevent spreading of dust. Avoid use compressed air to air sweep surfaces. Do not release into sewers or waterways.

**Environmental Precautions**

No special measures required.

**Methods and Materials for Containment and Cleaning Up**

Collect spilled material in appropriate container for disposal. Avoid formation and dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Dampen spilled material with water to minimize dust generation during sweeping, if applicable. See Sections 7 and 13.
**Section 7 - HANDLING AND STORAGE**

Precautions for Safe Handling
Prevent formation of dust. Do not air sweep surfaces. Dampen material with water prior to sweeping, if applicable. Aluminum oxide dust alone is non-combustible.

Conditions for Safe Storage, including any Incompatibilities
Store away from oxidizing agents such as sodium hypochlorite; calcium hypochlorite, sulfuric acid, and nitric acid.

**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

Component Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>OSHA Exposure Limit</th>
<th>NIOSH Exposure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Oxide</td>
<td>CAS 1344-28-1</td>
<td>15 mg/m³ 8-hr TWA (total dust); 5 mg/m³ TWA (respirable fraction)</td>
<td></td>
</tr>
<tr>
<td>Crystalline Silica</td>
<td>CAS # 14808-60-7</td>
<td>0.050 mg/m³ 8-hr TWA (respirable fraction)</td>
<td>0.050 mg/m³ 8-hr TWA (respirable fraction)</td>
</tr>
<tr>
<td>Calcium Oxide</td>
<td>CAS # 1305-78-8</td>
<td>5 mg/m³ 8-hr TWA</td>
<td>5 mg/m³ 8-hr TWA</td>
</tr>
<tr>
<td>Iron Oxide</td>
<td>CAS # 1309-37-1</td>
<td>15 mg/m³ 8-hr TWA (fume)</td>
<td>5 mg/m³ 8-hr TWA (dust and fume)</td>
</tr>
<tr>
<td>Magnesium Oxide</td>
<td>CAS # 1309-48-4</td>
<td>15 mg/m³ 8-hr TWA (total dust)</td>
<td>None established</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>(13463-67-7)</td>
<td>15 mg/m³ TWA</td>
<td>Lowest Feasible Concentration (LFC)</td>
</tr>
</tbody>
</table>

Appropriate Engineering Controls
Provide local exhaust or process enclosure ventilation system, as applicable. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

Individual Protection Measures

Respiratory Protection
Where dust concentration exceeds or is likely to exceed applicable exposure limits, an applicable NIOSH approved respirator is required in accordance with OSHA Respiratory Protection Standard (29 CFR §1910.134). Seek professional advice prior to respirator selection and use. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. Concentration in air of the various contaminants determines the extent of respiratory protection needed.

Half-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Protection by air-purifying negative-pressure and powered air respirators is limited. Use a positive-pressure-demand, full-face, supplied air respirator or self-contained breathing apparatus (SCBA) for concentrations above 50 times the exposure limit. If exposure is above the IDLH (immediately dangerous to life or health) for any of the constituents, or there is a possibility of an uncontrolled release or exposure levels are unknown, then use a positive-demand, full-face, supplied air respirator with escape bottle or SCBA.
Warning! Air-purifying respirators both negative-pressure, and powered-air do not protect workers in oxygen-deficient atmospheres.

Eye Protection
Wear safety glasses with side shields. Contact lenses should not be worn where particulate exposure to this material is likely.

Skin Protection
Wear suitable protective gloves and long sleeve shirt.

***Section 9 - PHYSICAL AND CHEMICAL PROPERTIES***

<table>
<thead>
<tr>
<th>Physical State:</th>
<th>Appearance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid granular</td>
<td>Brown</td>
</tr>
<tr>
<td>Odor:</td>
<td>No characteristic odor</td>
</tr>
<tr>
<td>pH:</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition:</td>
<td>Not available</td>
</tr>
<tr>
<td>OSHA Flammability Class:</td>
<td>Non - Flammable</td>
</tr>
<tr>
<td>UEL:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Density (air = 1):</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Specific Gravity (water = 1):</td>
<td>Not available</td>
</tr>
<tr>
<td>Log KOW:</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>Not available</td>
</tr>
<tr>
<td>Odor Threshold:</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting Point:</td>
<td>Not available</td>
</tr>
<tr>
<td>Flash Point:</td>
<td>Non-flammable; non-explosive</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
<td>Not available</td>
</tr>
<tr>
<td>pH:</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting Point:</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition:</td>
<td>Not available</td>
</tr>
<tr>
<td>OSHA Flammability Class:</td>
<td>Non - Flammable</td>
</tr>
<tr>
<td>UEL:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash Point:</td>
<td>Non-flammable; non-explosive</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
<td>Not available</td>
</tr>
</tbody>
</table>

***Section 10 - STABILITY AND REACTIVITY***

Reactivity
No reactivity hazard is expected.

Chemical Stability
Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions
As the product is supplied, a dust explosion from handling the product is not likely to occur. However, enrichment with fine dust causes risk of dust explosion.

Conditions to Avoid
No further information available.

Incompatible Materials
Store away from oxidizing agents; see Section 7.

Hazardous Decomposition Products
Oxides of carbon and metal oxides may be released at elevated temperatures.
**Section 11 - TOXICOLOGICAL INFORMATION**

**Acute and Chronic Toxicity**

**Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and the following endpoints are published:

- **Aluminum oxide (1344-28-1)**
  - Oral LD50 Rat >5000 mg/kg

- **Amorphous Silicon Dioxide (7631-86-9)**
  - Oral LD50 Rat >5000 mg/kg
  - Dermal LD50 Rabbit >2000

- **Titanium Dioxide (13463-67-7)**
  - Oral LD50 Rat >20000 mg/kg;
  - Dermal LD50 Rabbit >10000 mg/kg
  - Inhalation LC50/4 h Rat >6.82 mg/L

**Information on Likely Routes of Exposure**

**Acute Effects**

Slight abrasive irritant effect on eyes, skin, and mucous membranes.

**Respiratory Sensitization**

No data available.

**Dermal Sensitization**

No data available.

**Carcinogenicity (Components)**

- **Crystalline Silica** (CAS # 14808-60-7)
  - IARC Monograph 100C (2012): Group 1 (Known to be a Human Carcinogen)

- **Titanium Dioxide** (CAS # 13463-67-7)

**Mutagenicity**

Not known to be a mutagen.

**Reproductive Toxicity**

Not known to be a reproductive hazard.

**Teratogenicity / Embryotoxicity**

Not known to harm the unborn child.

**Specific Target Organ Toxicity - Single Exposure**

- Respiratory system, lungs

**Specific Target Organ Toxicity - Repeated Exposure**

- Respiratory system, lungs

**Chronic Exposure**

Frequent inhalation of dust over a long period of time may increase the risk of developing chronic lung disease (cancer).

**Aspiration Hazard**

No data available.

**Section 12 - ECOLOGICAL INFORMATION**

**Ecotoxicity:**

Product is not expected to be hazardous to the environment.
Material Name: Brown Fused Alumina

Component Analysis - Aquatic Toxicity:
Aluminum Oxide (1344-28-1)

Fish: NOEC 96 hr Salmo trutta > 100 mg/L
Algae: 72 Hr EC50 Pseudokirchneriella subcapitata: 440 mg/L
Invertebrate: 48 Hr EC50 Ceriodaphnia dubia: 7600 mg/L

Persistence and Degradability:
No information available for the product.

Bioaccumulative Potential:
Bioaccumulation is unlikely to be significant because of low water solubility of this product.

Mobility:
Product is insoluble in water and will likely sediment in water systems.

**Section 13 - DISPOSAL CONSIDERATIONS**

Disposal Instructions
Disposal guidance is based on material as supplied. Disposal must be in accordance with all current applicable laws and regulations, and material characteristics at time of disposal.

Local Disposal Regulations
Dispose of in accordance with local regulations.

Hazardous Waste Code
Not regulated.

Contaminated Packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied.

**Section 14 - TRANSPORT INFORMATION**

<table>
<thead>
<tr>
<th>Land Transport (ADR/RID) (c) (d)</th>
<th>Land Transport (within USA) (b) (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN Number</td>
<td>None</td>
</tr>
<tr>
<td>Shipping Name</td>
<td>Not classified as dangerous for transport</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sea Transport (c)</th>
<th>Air Transport (ICAO / IATA) (c) (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN Number</td>
<td>None</td>
</tr>
<tr>
<td>Shipping Name</td>
<td>Not classified as dangerous for transport</td>
</tr>
</tbody>
</table>

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

(b) ORM-D may be applicable with the USA for package sizes < 30 kg (66 lbs).
(c) Consult with transport provider.
(d) Check relevant regulations for Special Provisions.

**Section 15 - REGULATORY INFORMATION**

Component Analysis
U.S. Federal Regulations

Brown Fused Alumina contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), and TSCA 12(b).

Aluminum oxide (1344-28-1)
SARA 313: 1.0 % de minimis concentration (fibrous forms)
Material Name: Brown Fused Alumina

SARA 311/312 Hazardous Categories
Acute Health: Yes Chronic Health: Yes Fire: No Pressure: No Reactive: No

TSCA Listed (Aluminum Oxide and Titanium Oxide)
CERCLA Hazardous Substance List Not Listed.
CAA Section 112 Hazardous Air Pollutants List Not Listed.
CAA Section 112r Accidental Release Prevention Not Listed.
SDWA Not Listed

U.S. California Proposition 65 – Carcinogens & Reproductive Toxicity: Crystalline silica and Titanium Dioxide Listed Substance

U.S. State Regulations
The following components appear on one or more of the following state hazardous substances list:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Amorphous Silicon Dioxide</td>
<td>60676-86-0</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Calcium oxide</td>
<td>1305-78-8</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Aluminum oxide</td>
<td>1344-28-1</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Titanium oxide</td>
<td>13463-67-7</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Magnesium oxide</td>
<td>1309-48-4</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Component Analysis – Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>US</th>
<th>CA</th>
<th>EU</th>
<th>AU</th>
<th>PH</th>
<th>JP</th>
<th>KR</th>
<th>CN</th>
<th>NZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron oxide</td>
<td>1309-37-1</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Amorphous Silicon Dioxide</td>
<td>60676-86-0</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Calcium oxide</td>
<td>1305-78-8</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Aluminum oxide</td>
<td>1344-28-1</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Titanium oxide</td>
<td>13463-67-7</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Magnesium oxide</td>
<td>1309-48-4</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

International Inventories
Canada
Domestic Substances List (DSL): Listed (Crystalline Silica and Titanium Dioxide)
WHMIS Classification: D2A (Class D Division 2 Subdivision A)

***Section 16 - OTHER INFORMATION***

Web Sites with information about health effects from occupational exposure to the chemical substances contained in this product and associated engineering controls and personal protective equipment:
OSHA Website: http://www.osha.gov
NIOSH Website: http://www.cdc.gov.niosh
ACGIH Website: http://www.acgih.org
ATSDR Website: http://www.astdr.cdc.gov/toxprofiles

Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; GHS – Globally Harmonized System of Classification and Labelling of Chemicals; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International
Safety Data Sheet

Material Name: Brown Fused Alumina


Other Information

Disclaimer: The information in this Safety Data Sheet is based on our current knowledge and experience concerning the product components. Supplier gives no warranty whatsoever, including the warranties of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser shall determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental, consequential or any other damages arising out of the use or misuse of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights.

End of SDS