Aluminum oxide, Refractory Brushable Paint, Water-based

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

Product Description: Aluminum oxide, Refractory Brushable Paint, Water-based
Cat No.: 44887
Supplier: Alfa Aesar
Avocado Research Chemicals, Ltd.
Shore Road
Port of Heysham Industrial Park
Heysham, Lancashire LA3 2XY
United Kingdom
Office Tel: +44 (0) 1524 850506
Office Fax: +44 (0) 1524 850608

Emergency Telephone Number: Call Carechem 24 at
+44 (0) 1865 407333 (English only);
+44 (0) 1235 239670 (Multi-language)

E-mail address: uktech@alfa.com
www.alfa.com
Product Safety Department

Recommended Use: Laboratory chemicals.
Uses advised against: No Information available

SECTION 2. HAZARD IDENTIFICATION

Classification of the substance or mixture

| Substances/mixtures corrosive to metal | Category 1 |
| Skin Corrosion/Irritation              | Category 2 |
| Serious Eye Damage/Eye Irritation      | Category 1 |

Label Elements

Signal Word: Danger

Emergency Overview: Causes serious eye damage. Causes skin irritation. May be corrosive to metals.
Hazard Statements
H290 - May be corrosive to metals
H318 - Causes serious eye damage
H315 - Causes skin irritation

Precautionary Statements
Prevention
P234 - Keep only in original container
P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection

Response
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/ physician
P362 - Take off contaminated clothing and wash before reuse
P390 - Absorb spillage to prevent material damage

Storage
P406 - Store in corrosive resistant polypropylene container with a resistant inliner

Disposal
P501 - Dispose of contents/ container to an approved waste disposal plant

Physical and Chemical Hazards
May be corrosive to metals.

Health Hazards
Corrosive. Causes eye burns. Causes skin irritation. Causes serious eye damage.

Environmental hazards
Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants. Will likely be mobile in the environment due to its water solubility. The product is water soluble, and may spread in water systems.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>1344-28-1</td>
<td>55</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>37</td>
</tr>
<tr>
<td>Boehmite (Al(OH)₃)</td>
<td>1318-23-6</td>
<td>5</td>
</tr>
<tr>
<td>Nitric acid</td>
<td>7697-37-2</td>
<td>3</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

General Advice
If symptoms persist, call a physician.

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation
Move to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

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

Most important symptoms and effects
Causes eye burns. Causes severe eye damage.
Self-Protection of the First Aider
No special precautions required.

Notes to Physician
Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Not combustible.

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

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Ensure adequate ventilation. Use personal protective equipment.

Environmental Precautions
Should not be released into the environment. See Section 12 for additional ecological information.

Methods for Containment and Clean Up
Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

Refer to protective measures listed in Sections 8 and 13.

SECTION 7. HANDLING AND STORAGE

Handling
Wear personal protective equipment. Ensure adequate ventilation. Avoid ingestion and inhalation. Do not get in eyes, on skin, or on clothing.

Storage
Keep container tightly closed in a dry and well-ventilated place.

Specific Use(s)
Use in laboratories

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>China</th>
<th>Taiwan</th>
<th>Hong Kong</th>
<th>The United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>TWA: 4 mg/m³</td>
<td>-</td>
<td>TWA: 10 mg/m³</td>
<td>STEL: 30 mg/m³ 15 min</td>
</tr>
<tr>
<td></td>
<td>STEL: 8 mg/m³</td>
<td></td>
<td></td>
<td>STEL: 12 mg/m³ 15 min</td>
</tr>
<tr>
<td>Nitric acid</td>
<td>-</td>
<td>TWA: 2 ppm</td>
<td>TWA: 2 ppm</td>
<td>TWA: 10 mg/m³ 8 hr</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 5.2 mg/m³</td>
<td>TWA: 5.2 mg/m³</td>
<td>STEL: 4 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STEL: 1 ppm 15 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STEL: 2.6 mg/m³ 15 min</td>
</tr>
</tbody>
</table>
### Exposure Controls

#### Engineering Measures
None under normal use conditions. Ensure that eyewash stations and safety showers are close to the workstation location.

#### Personal protective equipment

<table>
<thead>
<tr>
<th>Eye Protection</th>
<th>Hand Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goggles (European standard - EN 166)</td>
<td>Protective gloves</td>
</tr>
</tbody>
</table>

#### Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

#### Environmental exposure controls
No information available.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| Appearance | Physical State | Odor
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Liquid Viscous liquid</td>
<td>No information available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Odor Threshold</th>
<th>No data available</th>
</tr>
</thead>
</table>

---

### Table: Component Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV TWA: 1 mg/m³</th>
<th>OSHA PEL (Vacated) TWA: 10 mg/m³</th>
<th>NIOSH IDLH (Vacated) TWA: 5 mg/m³ TWA: 15 mg/m³ TWA: 5 mg/m³</th>
<th>European Union STEL: 1 ppm 15 min STEL: 2.6 mg/m³ 15 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boehmite (Al(OH)₃)</td>
<td>TWA: 1 mg/m³</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitric acid</td>
<td>TWA: 2 ppm STEL: 4 ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### Table: Physical and Chemical Properties

| Appearance | Physical State | Odor
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Liquid Viscous liquid</td>
<td>No information available</td>
</tr>
</tbody>
</table>

---

### Table: Glove Material

<table>
<thead>
<tr>
<th>Gloves Material</th>
<th>Breakthrough Time</th>
<th>Glove Thickness</th>
<th>EU Standard</th>
<th>Glove Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural rubber</td>
<td>See manufacturers</td>
<td>-</td>
<td>EN 374</td>
<td>(minimum requirement)</td>
</tr>
<tr>
<td>Nitrile rubber</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neoprene</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PVC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### Table: glove comments

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves.
(Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

Skin and body protection
Long sleeved clothing

Respiratory Protection
No protective equipment is needed under normal use conditions.

Large scale/emergency use
Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

Recommended Filter type: Particle filter

Small scale/Laboratory use
Maintain adequate ventilation

---

### Table: Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
<th>European Union</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>TWA: 1 mg/m³</td>
<td>(Vacated) TWA: 10 mg/m³</td>
<td>(Vacated) TWA: 5 mg/m³ TWA: 15 mg/m³ TWA: 5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Boehmite (Al(OH)₃)</td>
<td>TWA: 1 mg/m³</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitric acid</td>
<td>TWA: 2 ppm STEL: 4 ppm</td>
<td>(Vacated) TWA: 2 ppm (Vacated) TWA: 5 mg/m³ (Vacated) STEL: 4 ppm (Vacated) STEL: 10 mg/m³ TWA: 2 ppm TWA: 5 mg/m³</td>
<td>IDLH: 25 ppm TWA: 2 ppm TWA: 5 mg/m³ STEL: 4 ppm STEL: 10 mg/m³</td>
<td>STEL: 1 ppm 15 min STEL: 2.6 mg/m³ 15 min</td>
</tr>
</tbody>
</table>
Aluminum oxide, Refractory Brushable Paint, Water-based

SECTION 10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions.

Hazardous Reactions

None under normal processing.

Hazardous Polymerization

No information available.

Conditions to Avoid

None known.

Materials to avoid

Strong bases. Water.

Hazardous Decomposition Products

Nitrogen oxides (NOx). Fumes of aluminum or aluminum oxide.

SECTION 11. TOXICOLOGICAL INFORMATION

Product Information

(a) acute toxicity;
Toxicology data for the components

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>&gt; 5000 mg/kg (Rat)</td>
<td></td>
<td>&gt; 2.3 mg/l 4 h</td>
</tr>
<tr>
<td>(OECD Guideline 401)</td>
<td></td>
<td></td>
<td>(OECD Guideline 403)</td>
</tr>
<tr>
<td>Water</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boehmite (Al(OH)O)</td>
<td>LD50 &gt; 5050 mg/kg (Rat)</td>
<td>LC50 &gt; 5.09 mg/L (Rat) 4 h</td>
<td></td>
</tr>
<tr>
<td>Nitric acid</td>
<td></td>
<td></td>
<td>LC50 = 2500 ppm. (Rat) 1 h</td>
</tr>
</tbody>
</table>

(b) skin corrosion/irritation;

Category 2

(c) serious eye damage/irritation;

Category 1
SAFETY DATA SHEET
Aluminum oxide, Refractory Brushable Paint, Water-based

(d) respiratory or skin sensitization;
Respiratory
No data available
Skin
No data available

(e) germ cell mutagenicity;
No data available

(f) carcinogenicity;
The table below indicates whether each agency has listed any ingredient as a carcinogen

<table>
<thead>
<tr>
<th>Component</th>
<th>EU</th>
<th>UK</th>
<th>Germany</th>
<th>IARC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td></td>
<td></td>
<td></td>
<td>Cat. 2</td>
</tr>
</tbody>
</table>

(g) reproductive toxicity;
No data available

(h) STOT-single exposure;
No data available

(i) STOT-repeated exposure;
No data available

Target Organs
None known.

(j) aspiration hazard;
No data available

Symptoms / effects, both acute and delayed
No information available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Fish</th>
<th>Water Flea</th>
<th>Freshwater Algae</th>
<th>Microtox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boehmite (Al(OH)O)</td>
<td>LC50: &gt; 100 mg/L, 96h</td>
<td></td>
<td>EC50: &gt; 100 mg/L, 48h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>semi-static (Oncorhynchus mykiss)</td>
<td></td>
<td>(Daphnia magna)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LC50: &gt; 100 mg/L, 96h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>semi-static (Pimephales promelas)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitric acid</td>
<td>LC50: = 72 mg/L, 96h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Gambusia affinis)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence and Degradability
Persistence
Miscible with water, Persistence is unlikely, based on information available.

Degradability
Not relevant for inorganic substances.

Bioaccumulative Potential
Bioaccumulation is unlikely

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
<th>Bioconcentration factor (BCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boehmite (Al(OH)O)</td>
<td></td>
<td>50 - 231</td>
</tr>
<tr>
<td>Nitric acid</td>
<td>-2.3</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Mobility in soil
The product is water soluble, and may spread in water systems. Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors
SECTION 13. DISPOSAL CONSIDERATIONS

Waste from Residues / Unused Products
Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging
Dispose of this container to hazardous or special waste collection point.

Other Information
Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not dispose of waste into sewer.

SECTION 14. TRANSPORT INFORMATION

Road and Rail Transport

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN1760</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>CORROSIVE LIQUID, N.O.S</td>
</tr>
<tr>
<td>Technical Shipping Name</td>
<td>(NITRIC ACID)</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>8</td>
</tr>
<tr>
<td>Packing Group</td>
<td>III</td>
</tr>
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</table>

IMDG/IMO

<table>
<thead>
<tr>
<th>UN-No</th>
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<tr>
<td>Proper Shipping Name</td>
<td>CORROSIVE LIQUID, N.O.S</td>
</tr>
<tr>
<td>Technical Shipping Name</td>
<td>(NITRIC ACID)</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>8</td>
</tr>
<tr>
<td>Packing Group</td>
<td>III</td>
</tr>
</tbody>
</table>

IATA

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN1760</th>
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</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>CORROSIVE LIQUID, N.O.S</td>
</tr>
<tr>
<td>Technical Shipping Name</td>
<td>(NITRIC ACID)</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>8</td>
</tr>
<tr>
<td>Packing Group</td>
<td>III</td>
</tr>
</tbody>
</table>

Special Precautions for User
No special precautions required

SECTION 15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>The Inventory of Hazardous Chemicals (2015 Edition)</th>
<th>List of dangerous goods GB 12268 - 2012</th>
<th>Taiwan Toxic Chemicals Substances Inventory</th>
<th>IECSC</th>
<th>EINECS</th>
<th>TSCA</th>
<th>DSL</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum oxide</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Water</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Boehmite (Al(OH)O)</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>215-284-3</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nitric acid</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>231-714-2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
National Regulations

SECTION 16. OTHER INFORMATION

Prepared By
Health, Safety and Environmental Department

Revision Date
13-Jul-2018

Revision Summary
SDS authoring systems update, replaces ChemGes SDS No. 2,072.

Training Advice
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Legend

CAS - Chemical Abstracts Service
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
WEL - Workplace Exposure Limit
ACGIH - American Conference of Governmental Industrial Hygienists
DNEL - Derived No Effect Level
RPE - Respiratory Protective Equipment
LC50 - Lethal Concentration 50%
NOEC - No Observed Effect Concentration
PBT - Persistent, Bioaccumulative, Toxic

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
OECD - Organisation for Economic Co-operation and Development
BCF - Bioconcentration factor

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japanese Existing and New Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals
TWA - Time Weighted Average
IARC - International Agency for Research on Cancer
PNEC - Predicted No Effect Concentration
LD50 - Lethal Dose 50%
EC50 - Effective Concentration 50%
POW - Partition coefficient Octanol:Water
vPvB - very Persistent, very Bioaccumulative

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
MARPOL - International Convention for the Prevention of Pollution from Ships
ATE - Acute Toxicity Estimate
VOC - Volatile Organic Compounds

Key literature references and sources for data
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Physical hazards
On basis of test data
Health Hazards
Calculation method
Environmental hazards
Calculation method

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