Safety Data Sheet

Alumina Trihydrate

Date of Preparation: 12/10/96
Revision: 3/15/19

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: Alumina Trihydrate
Synonyms: Alumina Hydrate, ATH, Aluminum Hydroxide, Trihydrate D’aluminia, Hydrate d’aluminia, Gibbsite, Hydroxide d’aluminum, Alumine hydrate, hydrated alumina, Trixyde d’aluminum, Aluminum Trihydroxide, Al₂O₃·3H₂O
Recommended Use: Additive, flame retardant, filler.
Uses advised against: None known
Manufacturer: The R. J. Marshall Company
26776 W. 12 Mile Road
Southfield, MI 48034-7807
Phone (248) 353-4100, Fax (248) 948-6460

Section 2 - Hazards Identification

Classification of the chemical in accordance with paragraph (d) of 1910.1200: Material is non-hazardous.

Classification of the substance or mixture:
Classification according to Regulation (EC) No 1272/2008 (CLP): Not classified
Classification according to Directive 67/548/EEC or Directive 1999/45/EC: Not classified

Hazard Pictogram: None
Hazard Statements: None
Precautionary Statements: None
Other hazards: Prolonged and excessive contact can cause irritation of the respiratory tract.

Section 3 - Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS Number</th>
<th>EC Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumina Trihydrate</td>
<td>21645-51-2</td>
<td>244-492-7</td>
<td>100%</td>
</tr>
</tbody>
</table>

REACH Registration #: 01-2119529246-39-XXXX
SVHC: None

Section 4 - First Aid Measures

Inhalation: If overcome by high dust concentrations, remove to a ventilated area.
Eye Contact: Flush eyes thoroughly for several minutes taking care to rinse under eyelids. Do not scrub. Abrasion may cause irritation. If discomfort continues, continue to wash with water. If irritation persists, consult a physician.
Skin Contact: Wash skin thoroughly with soap and water. Consult a physician if irritation persists.
Ingestion: If swallowed, dilute with large amounts of water. Seek medical advice.

Most important symptoms and effects, both acute and delayed: None
Indication of any immediate medical attention and special treatment needed: Treat symptomatically.

Section 5 - Fire-Fighting Measures

Suitable Extinguishing Media: Use extinguishing measures appropriate to the surrounding fire.
Unsuitable Extinguishing Media: Full water jet
Special hazards arising from the chemical: None.
Hazardous Combustion Products: None.
Fire-Fighting Instructions: Use self-contained breathing apparatus. Fire residues and contaminated firefighting water must be disposed of in accordance with local regulations.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures: Avoid dust formation. In case of inadequate ventilation wear respiratory protection.
Environmental precautions: Do not discharge into drains/surface water/groundwater.
Methods and materials for containment and cleaning up: Sweep up and dispose in accordance with local regulations.
Reference to other sections: See Sections 8 & 13.
Section 7 - Handling and Storage

Precautions for safe handling: Avoid generating dust during handling. Provide vacuuming if dust raised. Wash hands before breaks and after work. Use barrier skin cream.

Conditions for safe storage, including any incompatibilities: Keep container tightly closed. Store in dry place. Do not store with food.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TWA</td>
<td>STEL</td>
</tr>
<tr>
<td>Alumina Trihydrate</td>
<td>none estab.</td>
<td>none estab.</td>
</tr>
<tr>
<td>Particulates not otherwise classified</td>
<td>15 mg/m³ total, 5 mg/m³ respirable</td>
<td>none estab.</td>
</tr>
</tbody>
</table>

Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls:

Eye Protection: Safety glasses.

Hand Protection: Protective gloves are recommended.

Glove material: Nitrile rubber
Layer thickness: 0.11 mm
Breakthrough time: >480 min

Skin Protection: Protective clothing.

Other: Avoid contact with eyes and skin.
Do not inhale dust.
PPE should be selected specifically for the work place, depending on concentration and quantity handled.

Respiratory Protection: In the event of high concentrations use respirator with P1 filter for short term use.

Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: powder
Appearance and Odor: white odorless powder

Odor Threshold: not applicable
pH: 8-9 (20°C saturated solution)

Freezing/Melting Point: Decomposes before melting.

Boiling Point: 2980°C (5396°F)

Flash Point: Not applicable.
Flash Point Method: Not flammable.
Evaporation Rate: not applicable
Flammability: Not flammable.

Upper/lower flammability or explosive limits: not applicable

Oxidizing properties: None

Vapor Pressure: not applicable
Vapor Density (Air=1): not applicable
Relative Density: 2.42

Water Solubility: 0.00009 g/l (20°C/68°F)

Other Solubilities: Soluble in alkaline aqueous solutions or in HCL, H2SO4, and other strong acids in the presence of some water.

Partition coefficient: n-octanol/water; not applicable
Auto-ignition Temperature: Does not ignite.
Decomposition temperature: >200°C

Viscosity: not applicable

Section 10 - Stability and Reactivity

Reactivity: None known.
Chemical stability: Alumina trihydrate is stable at room temperature in closed containers under normal storage and handling conditions.

Possibility of hazardous reactions: No hazardous reactions known.

Conditions to avoid: Temperature >392°F (200°C).

Incompatible materials: Strong acids and bases. Alumina trihydrate reacts vigorously with strong acids and will dissolve in caustic solutions.

Hazardous decomposition products: not applicable
Section 11- Toxicological Information

Information on the likely routes of exposure:
Eye contact: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.
Inhalation: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat, and lungs.
Skin Contact: No known significant effects or critical hazards.
Ingestion: No known significant effects or critical hazards.

Symptoms related to the physical, chemical, and toxicological characteristics:
Eye contact: Adverse symptoms may include irritation and redness.
Inhalation: Adverse symptoms may include respiratory tract irritation and coughing.
Skin Contact: No specific data.
Ingestion: No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure:
Short term exposure: Not available
Long term exposure: Not available
Potential delayed effects: Not available

Numerical measures of toxicity:
Acute:

<table>
<thead>
<tr>
<th>Value</th>
<th>Species</th>
<th>Type</th>
<th>Test Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral &gt;2000 mg/kg bw</td>
<td>Rat</td>
<td>Acute</td>
<td>Aluminum hydroxide</td>
</tr>
<tr>
<td>Dermal Not applicable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation LC₅₀: 7.6 mg/l/4h</td>
<td>Rat</td>
<td>Acute</td>
<td>Analogue</td>
</tr>
<tr>
<td>Skin Corrosion Not corrosive</td>
<td>Rabbit</td>
<td>Acute</td>
<td>Analogue</td>
</tr>
<tr>
<td>Skin Irritation Not irritating</td>
<td>Rabbit</td>
<td>Acute</td>
<td>Analogue</td>
</tr>
<tr>
<td>Eye Irritation Not irritating</td>
<td>Rabbit</td>
<td>Acute</td>
<td>Analogue</td>
</tr>
<tr>
<td>Respiratory or Skin Sensitization</td>
<td>Non-sensitizing</td>
<td></td>
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</tbody>
</table>

Repeated dose toxicity:

<table>
<thead>
<tr>
<th>Value</th>
<th>Species</th>
<th>Type</th>
<th>Test Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral NOAEL: 30 mg/kg bw/day</td>
<td>Rat</td>
<td>Chronic</td>
<td>Analogue</td>
</tr>
<tr>
<td>Inhalation NOAEL: 70 mg/m³</td>
<td>Rat</td>
<td>Sub-chronic</td>
<td>Analogue</td>
</tr>
</tbody>
</table>

STOT-SE: No classification.
STOT-RE: No classification.
Carcinogenicity: No evidence of carcinogenic effects.
Mutagenicity: No evidence of any mutagenic effects.
Reproductive toxicity: No evidence of any reproductive toxicity effects.
Aspiration hazard: No classification.
Alumina Trihydrate is not listed as a carcinogen by NTP, IARC, OSHA, or ACGIH.

Section 12 - Ecological Information

Eco-toxicity:
Fish toxicity: LC₅₀>100 mg/l in Salmo trutta.
Invertebrate toxicity: EC₅₀>100 mg/l in Daphnia Magna
Algae toxicity: EC₅₀ >100 mg/l in Selenastrum capricornutum

Persistence and degradability: Not applicable for inorganic substances.
Bio-accumulative potential: Not applicable
Mobility in soil: Not applicable.
Results of PBT and vPvB assessment: This product does not meet the classification as PBT/vPvB.
Other adverse effects: None known.
Section 13 - Disposal Considerations

Disposal: Recycle if possible or landfill. This substance is inert and does not require special disposal methods. Follow applicable Federal, state, and local regulations.

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101): This product is not classified as dangerous under the transport regulations for road, rail, sea, or air transport.

UN Number: not classified as dangerous goods
UN proper shipping name: not classified as dangerous goods
Transport hazard classes: None
Packaging group: None
Environmental hazards: None
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: No hazardous goods.
Special precautions for user: None

Transport by land according to ADR/RID: Not applicable
Inland Navigation (ADN): Not applicable
Marine transport in accordance with IMDG: Not applicable
Air transport in accordance with IATA: Not applicable

Section 15 - Regulatory Information

EPA Regulations:
RCRA Hazardous Waste Number: Not listed (40 CFR 261.33)
RCRA Hazardous Waste Classification (40 CFR 261.??): Not classified
CERCLA Hazardous Substance (40 CFR 302.4) not listed
SARA Toxic Chemical (40 CFR 372.65): Not listed
SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed
SARA 311/312 Hazard: None

OSHA Regulations:
Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Not listed

Proposition 65: Not listed

Inventory Lists: This product is listed on the following inventory lists:

<table>
<thead>
<tr>
<th>TSCA</th>
<th>Australia AICS</th>
<th>Canada DSL</th>
<th>China IECS</th>
<th>Europe EINECS</th>
<th>Japan ENCS</th>
<th>Korea ECL</th>
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<tbody>
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<td>244-492-7</td>
<td>1-17</td>
<td>KE-00980</td>
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<table>
<thead>
<tr>
<th>Malaysia</th>
<th>New Zealand NZIoC</th>
<th>Swiss Giftliste</th>
<th>Philippines PICCS</th>
<th>Taiwan NECI</th>
<th>Canada WHMIS</th>
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<tr>
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<td>G-4621</td>
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International Regulations:
Regulation (EC) No 2037/2000 (Ozone Depleting Substances); Not applicable
Regulation (EC) No 850/2004 (Persistent Organic Pollutants): Not applicable
Regulation (EC) No 689/2008 (Export and Import of Dangerous Substances): Not applicable
Directive 2002/95/EC (RoHS): Not applicable
Directive 2002/96/EC (WEEE): Not applicable
Directive 1999/13/EC (VOC): Not applicable
Restrictions according to TITLE VIII of the Regulation (EC) No 1907/2006 (REACH): None

ADR: European agreement concerning the international transportation of hazardous goods by road
ADN: European agreement concerning the international transportation of hazardous goods by inland waterways
CAS: Chemical Abstracts Service
DSL: Domestic Substances List
EC50: Median effective concentration
ECL: Existing Chemicals List
IATA: International Air Transport Association
IECSC: Inventory of Existing Chemical Substances in China
Revision date 3/15/19  Alumina Trihydrate  MSDS No. 9605.52

IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IMDG: International Maritime Code for Dangerous Goods
LC50: Lethal concentration, 50%
LOAEL: Lowest observed adverse effect level
MARPOL: International Convention for the Prevention of Marine Pollution from Ships
NECI: National Existing Chemical Inventory
NOAEL: No observed adverse effect level
NZIoC: New Zealand Inventory of Chemicals
PBT: Persistent, Bio-accumulative, and Toxic Substance
PICCS: Philippine Inventory of Chemicals and Chemical Substances
RID: European agreement concerning the international transportation of hazardous good by rail
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
REACH: Registration, Evaluation, Authorization, and Restriction of Chemicals
RoHS: Restriction of Hazardous Substances
TLV®/TWA: Threshold limit value-time weighted average
TLV®/STEL: Threshold limit value-short-time exposure limit
TSCA: Toxic Substances Control Act (USA)
VOC: Volatile Organic Compounds
vPvB: very Persistent and very Bio-accumulative
WEEE: Waste Electrical and Electronic Equipment

Section 16 - Other Information

Prepared By: Stephanie Nichols
Revision Notes: updated throughout
Product Grades Available from the R. J. Marshall Company (this list may be incomplete):

<table>
<thead>
<tr>
<th>DF40</th>
<th>OFI</th>
<th>A202 (A,W)</th>
<th>AH170(A,C,V)</th>
<th>DGXW1</th>
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<tbody>
<tr>
<td>DF45</td>
<td>OFIII</td>
<td>A203H</td>
<td>AH190</td>
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<tr>
<td>DF74</td>
<td>OFV</td>
<td>A204(A,W)</td>
<td>AH255(A,W)</td>
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<td>DF80</td>
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<td>A205(A)</td>
<td>AH270(A,C,V,W)</td>
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<td>DF80S</td>
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<td>AH280(A,C,V,W)</td>
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<td>DF85</td>
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<td>A208(A)</td>
<td>AH285W</td>
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<td>DF111</td>
<td>OF136</td>
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<td>DFG</td>
<td>MX200</td>
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</tr>
</tbody>
</table>

Note: This includes all EXP ATH blends.

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