

MATERIAL SAFETY DATA SHEET (MSDS)**Section 1. Chemical product & company identification**

PRODUCT NAME: BROWN ALUMINIUM OXIDE
 MOLECULAR FORMULA Al_2O_3
 HMIS HEALTH 1
 FLAMMABILITY 0
 PHYSICAL HAZARD 0
 Personal Protection E
 PREPARATION/REVISION DATE: 9.2008

Section 2. Composition/information on ingredients

CHEMICAL NAME: Aluminum Oxide (non-fibrous)
 CAS NO. 1344-28-1
 EINECS 215-691-6
 % BY WEIGHT 92.0 – 99.0
 OSHA PEL Total (TWA) 15 mg/m^3
 Respirable (TWA) 5 mg/m^3

CHEMICAL NAME: Titanium Dioxide
 CAS NO. 13463-67-7
 EINECS 236-675-5
 % BY WEIGHT 1.0 – 4.0
 OSHA PEL Total (TWA) 15 mg/m^3
 Respirable (TWA) 5 mg/m^3

CHEMICAL NAME: Silicon Dioxide (amorphous)
 CAS NO. 7631-86-9
 EINECS 231-545-4
 % BY WEIGHT 0.2 – 1.7
 OSHA PEL Total (TWA) $\frac{80 \text{ mg/m}^3}{\% SiO_2}$
 Respirable (TWA) 5 mg/m^3

CHEMICAL NAME: Iron Oxide
 CAS NO. 1309-37-1
 EINECS 215-168-2
 % BY WEIGHT 0.1 – 1.5
 OSHA PEL Total (TWA) 10 mg/m^3
 Respirable (TWA) 5 mg/m^3

Section 3. Hazard Identification/Potential Health Effects

Emergency Overview: Dust irritating to eyes and respiratory tract

EYE Mechanical eye irritant. May cause tearing and redness.
 SKIN Mechanical skin irritant. Prolonged contact may cause

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| SENSITIZATION | skin abrasion, redness, itching. |
| INGESTION | No data available |
| INHALATION | May cause nausea and vomiting. No long-term health effects are anticipated. |
| TARGET ORGANS | Dust may be slightly irritating to respiratory tract. May cause coughing or shortness of breath. |
| ACUTE EFFECTS of EXPOSURE | Eyes, skin, respiratory system |
| CHRONIC EFFECTS of EXPOSURE | Exposure may include persistent cough, shortness of breath. |
| SIGNS & SYMPTOMS of EXPOSURE | N/A |
| | Coughing, shortness of breath |

Section 4. First Aid Measures

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| EYES | Flush eyes with large amounts of water. If signs/symptoms persist, seek medical attention. |
| SKIN | Wash affected area with soap and water. If signs/symptoms persist, seek medical attention. |
| INHALATION | Remove person to fresh air. If signs/symptoms develop, seek medical attention. |
| INGESTION | Ingestion is an unlikely route of exposure. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention. |

Section 5. Fire Fighting Measures

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| COMBUSTIBLE PROPERTIES | None |
| EXTINGUISHING MEDIA | Extinguisher suitable for ordinary combustible materials. Class A extinguishing agents. |
| SPECIAL FIRE FIGHTING PROCEDURES | In fire conditions, fire-fighters should wear appropriate respiratory protection and full protective gear. |
| FIRE & EXPLOSION HAZARDS | Not applicable. None inherent in this product. |

Section 6. Accidental Release Measures

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| PERSONAL SAFETY PRECAUTIONS | Avoid creating dust. Avoid contact with skin and eyes. Use with adequate ventilation. |
| ENVIRONMENTAL PRECAUTIONS | Ensure material is properly disposed of. |
| CLEANUP MEASURES | Collect spilled material mechanically and place in a suitable, compatible, properly labeled container. Avoid creating any dust. Ensure adequate ventilation and dispose of material in accordance with all applicable local, state and federal laws. |

Section 7. Handling & Storage

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| HANDLING | Avoid contact with skin and eyes. Wash hands before eating. Prevent the formation of dust. Handle with adequate ventilation. |
| STORAGE | Normal Storage: Store in the original container in a cool, dry well ventilated area. Keep containers tightly sealed. |

Section 8. Handling & Storage

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| ENGINEERING CONTROLS | Provide sufficient mechanical ventilation to reduce airborne concentrations and minimize exposure. Maintain employee exposure below applicable permissible exposure limits. |
| HYGIENIC MEASURES | Do not inhale dust/smoke/mist. Avoid contact with skin and eyes. Wash hands before eating. |
| RESPIRATORY PROTECTION | Avoid breathing dust. Assess exposure concentrations of all materials involved in the workplace. If concentrations exceed the exposure limits listed in Section 2, Exposure Guidelines, or irritation or other symptoms are experienced, follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard 149 approved respirator. |
| EYE PROTECTION | Avoid eye contact. To minimize the risk of injury to eyes, always wear appropriate protective safety glasses or chemical safety goggles. |
| SKIN PROTECTION | Avoid skin contact. Wear appropriate protective clothing to minimize risk of injury to skin from contact with dust or physical abrasion. |

Section 9. Physical & Chemical Properties

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| FORMULA | Al ₂ O ₃ |
| PHYSICAL STATE | Solid-granular |
| BOILING POINT | N/A |
| MELTING POINT | N/A |
| pH at 20° | N/A |
| APPEARANCE | Brown to Black |
| ODOR | Odorless |
| FLASH POINT | N/A |
| DECOMPOSITION TEMPERATURE | N/A |
| VAPOR PRESSURE | N/A |
| VAPOR DENSITY | N/A |
| EXPLOSIVE PROPERTIES | None |
| SOLUBILITY | Insoluble |
| OXIDIZING PROPERTIES | N/A |
| SPECIFIC GRAVITY | 3.95 |
| BULK DENSITY | N/A |

Section 10. Stability & Reactivity

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| CHEMICAL STABILITY | Stable |
| THERMAL DECOMPOSITION | N/A |
| INCOMPATIBILITY | N/A |
| CONDITIONS TO AVOID | None known |
| HAZARDOUS DECOMPOSITION PRODUCTS | N/A |
| DANGEROUS REACTIONS | None known |
| HAZARDOUS POLYMERIZATION | Will not occur |

Section 11. Toxicological Information

CAS # 1344-28-1

COMPONENT ANALYSIS LD50/LC50

CARCINOGENICITY

EPIDEMIOLOGY

TERATOGENICITY

NEUROTOXICITY

MUTAGENICITY

REPRODUCTIVE EFFECTS

Data Not Available

Section 12. Ecological Information

ECOTOXICITY

Not Available

Section 13. Disposal Considerations

Solid or chemical waste generators must determine whether a discarded waste is classified as a hazardous waste. U.S. EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local waste regulations to ensure complete and accurate classification.

Section 14. Transportation Information

U.S. DOT

This product is not regulated by USDOT as a Hazardous Material (49 CFR 172.101). No UN code assigned. No placard required for transportation.

IMDG

Not regulated as a Hazardous Material.

ACAO/IATA

Not regulated as a Hazardous Material.

EU (ADR, RID)

Not regulated as a Hazardous Material.

Section 15. Regulatory Information

TSCA

Aluminum Oxide is listed on the TSCA inventory under CAS# 1344-28-1

RCRA

Aluminum Oxide is not classified as a hazardous material under RCRA or its regulations, 40 CFR 261.

CERCLA

Aluminum Oxide is not classified as a hazardous substance under CERCLA regulations, 40 CFR 302.

SARA

Aluminum Oxide is not an extremely hazardous substance in Section 302 and is not a toxic chemical subject to the requirements of 313.

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