

MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT IDENTIFICATION

Product Name: **Aluminum Oxide – Titanium Oxide Powder**
 Product Item: 411116
 Product Code: HA 1112

Supplier: **HAI Advanced Material Specialists, Inc.**
1688 Sierra Madre Circle
Placentia, CA 92870
(714)-414-0575

Emergency Contact: 888-255-3924
 Chemical Family: Metal Oxide
 Formula: $Al_2O_3-TiO_2$
 Molecular Weight:-

SECTION 2 – HAZARDOUS INGREDIENTS

IMPORTANT! This section covers the material from which these products are manufactured. Dust and gases produced when spraying with normal use of these products are covered in Section 5.

Material or Component	CAS #	Concentration	OSHA PEL	ACGIH TLV	Other Limits *
Aluminum Oxide	1344-28-1	0.0-100.0%	15 mg/m ³	10 mg/m ³	5 mg/m ³ resp
Titanium dioxide	13463-67-7	0.0-50.0 %	15 mg/m ³	10 mg/m ³	5 mg/m ³ resp
Material or Component	RTECS #	OSHA STEL	OSHA CEIL	ACGIH STEL	ACGIH CEIL
Aluminum Oxide	BD1200000	No data	No data	No data	No data
Titanium dioxide	XR2275000	No data	No data	No data	No data

US EPA SARA TITLE III

Material or Component	CAS Number	Sec. 302 (EHS)	Sec. 304 RQ	Sec. 313 (TRI)
Aluminum Oxide	1344-28-1	No	No	Yes
Titanium dioxide	13463-67-7	No	No	No

SECTION 3 – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: [] Gas [] Liquid [X] Solid
 Melting Point: 2040°C
 Boiling Point: No data
 Specific gravity (water=1): No data
 Vapor pressure (mmHg): No data
 Vapor Density (Air=1): No data
 Evaporation rate (Butylacetate=1): No data
 Solubility in water: Insoluble

Percent volatile (vol.): No data
Corrosion Rate: No data
Appearance and odor: Gray powder, no odor.

SECTION 4 – FIRE AND EXPLOSION HAZARD DATA

Flash point: N/A Method Used: Unknown
Flammable limits: N/A
Explosive Limits: LEL: N/A UEL: N/A
Extinguishing Media: Non-combustible. USE: not applicable. Use suitable extinguishing medias for surrounding materials and type of fire.
Special fire fighting procedures: Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.
Unusual fire and explosion hazards: Aluminum Oxide: May have an exothermic reaction, above 200°C, with halocarbon vapors and may produce toxic hydrochloric acid and phosgene.
Titanium Oxide: May have a violent or incandescent reaction with metals at high temperatures

SECTION 5 – REACTIVITY DATA

Stability: Unstable [] Stable [X]
Conditions to avoid - Instability: None
Incompatibility – Materials to avoid: Aluminum Oxide: Chlorine trifluoride, ethylene oxide, halocarbons, oxygen difluoride, sodium nitrate and vinyl acetate.
Titanium Oxide: Strong acids.
Hazardous decomposition products: Aluminum Oxide: Aluminum, hydrochloric acid and phosgene.
Titanium Oxide: None recorded.
Hazardous polymerization: Will occur [] Will not occur [X]
Conditions to avoid – Hazardous polymerization: None
Product corrosive: Yes [] No [X]

SECTION 6 – HEALTH HAZARD DATA

Health Hazards (Acute and Chronic)

Aluminum Compounds: May have many commercial uses and are commonly found in industry. Many of these materials are active chemically and thus exhibit dangerous toxic and reactive properties. Inhalation of fine aluminum oxide particles is associated with Shaver's disease. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Titanium Compounds: There are no reported cases in the literature where titanium as such has caused human intoxication. The dusts of titanium or most titanium compounds may be placed in the nuisance category. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Inhalation: Acute: Aluminum oxide dust is toxic by inhalation. Inhalation of finely divided dust may cause irritation to the upper respiratory tract, mucous membrane, coughing, mucous production and shortness of breath.
Chronic: Inhalation of finely divided aluminum oxide dust may cause lung damage affecting breathing capacity. Titanium oxide may cause slight lesions in the lungs, lung fibrosis, bronchitis and emphysema.

Ingestion: Acute: No acute health effects recorded.
Chronic: No chronic health effects recorded.

Skin: Acute: Prolonged or repeated contact may cause irritation.
Chronic: No chronic health effects recorded.

Eye: Acute: Dust and powder may cause abbrasive irritation.
Chronic: No chronic health effects recorded.

Target Organs: May affect the lungs and respiratory system.

Carcinogenicity: NTP? [No] ARC Monographs? [No] OSHA Regulated? [No]

Carcinogenicity / other Information:

Aluminum Oxide other Toxicity Data: imp-rat TDLo: 200 mg/kg:NEO
ipl-rat TDLo: 90 mg/kg:ETA

Titanium Oxide other Toxicity Data: skn-hmn 300 ug/3D-1 MLD orl-rat LD50: >7,500 mg/kg
ihl-rat TCLO: 250 mg/m³/6H/2Y-I:CAR ims-rat TDLO: 360 mg/kg/2Y-I:NEO
ims-rat TD: 260 mg/kg/84W-I:ETA.

Recommended Exposure Limits

See "Section II"

LD 50 / LC 50

No toxicity data recorded

Signs and Symptoms of Exposure

Inhalation: May cause a red, dry throat, coughing, mucous production and shortness of breath.

Ingestion: No acute or chronic health effects recorded.

Skin: May cause redness, itching and burning.

Eye: May cause redness, itching, burning, and watering.

Medical Conditions Generally Aggravated by Exposure

Pre-existing respiratory disorders.

Emergency and First Aid Procedures

Inhalation: Remove victim to fresh air; keep warm and quiet; give oxygen if breathing is difficult and seek medical attention if symptoms persist.

Ingestion: Give 1-2 glasses of milk or water and induce vomiting; seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person.

Skin: Remove contaminated clothing; brush material off skin; wash affected area with mild soap and water; seek medical attention if symptoms persist.

Eye: Flush eyes with lukewarm water, lifting upper and lower eyelids, for at least 15 minutes. Seek medical attention if irritation persists.

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE/DISPOSAL

Steps to be Taken in Case Material is Released or Spilled

Wear appropriate respiratory and protective equipment specified in section 8-Control Measures. Isolate spill area and provide ventilation and extinguish. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

Waste Disposal Method

Dispose of in accordance with local, state and federal regulations.

RCRA WASTE ID CODE NA

Hazard Label Information

Store in cool, dry place.

Store in tightly sealed container.

Wash thoroughly after handling.

Precautions to be Taken in Handling

None.

Precautions to be Taken in Storing

None

Other Precautions

None

SECTION 8 - CONTROL MEASURES

Protective Equipment Summary - Hazard Label Information:

NIOSH approved respirator

Impervious gloves

Safety glasses

Respiratory Equipment (Specify Type)

NIOSH - approved respirator

Eye Protection

Safety glasses

Protective Gloves

Rubber or vinyl disposable gloves

Other Protective Clothing

Protective clothing not necessary for aluminum oxide

Ventilation

Local Exhaust: If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit (PEL, TLV).

Special: None

Mechanical (Gen): Recommended

Other: None

Work/Hygienic/Maintenance Practices

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels.

Use good housekeeping and sanitation practices.

Do not use tobacco or food in work area.

Wash thoroughly before eating and smoking.

Do not blow dust off clothing or skin with compressed air.

SECTION 9 – OTHER

Control of Substances Hazardous to Health Regulations

EH40 Occupational Exposure Limits

Maximum Exposure Limit: NE

Occupational Exposure Standard: 10 mg/m³ Total Inhalable Dust. 5 mg/m³ Respirable Dust

Land Transport (US DOT)

DOT Hazard Label: Not regulated by DOT

DOT Hazard Class: Not regulated by DOT

DOT Proper Shipping Name: Not Hazardous

HAI Advanced Material Specialists, Inc. requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents, and contractors of the information on this MSDS and any product hazard and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the product hazards and safety information.

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Abbreviations used: N/A=Not Applicable NE: Not Established