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SAFETY DATA SHEET

Section 1- IDENTIFICATION		
COMPOSITION Al2O3		PRODUCT NAME Aluminum Oxide
SUPPLIER: Plasmaterials, Inc. 2268 Research Drive Livermore, CA 94550 Ph: 925-447-4030	RECOMMENDED USE: Laboratory Chemicals Scientific Research	EMERGENCY TELEPHONE NUMBERS US: 001-800-424-9300 Europe: 001-703-527-3887

Section 2- HAZARD(S) IDENTIFICATION	
Physical Hazards: Not Classified	Health Hazards: Not Classified
Environmental Hazards: Not Classified	OSHA Defined Hazards: Not Classified
LABEL ELEMENTS:	
Hazard Symbol: None	Signal Word: None
<p style="text-align: center;">HAZARD STATEMENTS</p> <p>-The substance does not meet the criteria for classification</p> <p style="text-align: center;">PRECAUTIONARY STATEMENTS</p> <p>-P264: Wash face, hands and any exposed skin thoroughly after handling -P270: Do not eat, drink or smoke when using this product -P420: Store away from incompatible materials -P501: Dispose of contents/container to an approved waste disposal plant</p> <p>Hazards not otherwise classified (HNOC): -None identified.</p>	

Section 3- COMPOSITION/INFORMATION ON INGREDIENTS		
COMPONENT	CAS-No	Molecular Weight
Aluminum Oxide	1344-28-1	101.96 g/mol

Section 4- FIRST AID MEASURES
<p>GENERAL ADVICE: Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.</p> <p>Inhalation: Remove victim from exposure to fresh air. Give oxygen if breathing is difficult. If not breathing, give artificial respiration. Consult a physician if symptoms develop or persist.</p> <p>Skin Contact: Wash off with soap and plenty of water. Consult a physician if irritation develops and/or persists.</p> <p>Eye Contact: Flush eyes with plenty of water, lifting upper and lower lids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops or persists.</p> <p>Ingestion: Rinse mouth with water. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.</p> <p>Most Important Symptoms/Effects: The most important known symptoms and effects are described in the labeling (see section 2) and/or in section 11. Dusts may irritate the respiratory tract, skin and eyes.</p> <p>Indication of any Immediate Medical Attention and Special Treatment Needed: No data</p>

available

Section 5- FIREFIGHTING MEASURES

Suitable Extinguishing Media:

Water fog, Foam, Dry Chemical Powder, Carbon Dioxide (CO₂)

Unsuitable Extinguishing Media:

Do not use water jet as an extinguisher, as this will spread the fire. Do not use halocarbon extinguisher

Specific Hazards Arising from the Chemical:

Gases hazardous to health may be formed

General Fire Hazards:

No unusual fire or explosion hazards noted

Protective Equipment & Precautions for Firefighters:

As in any fire, Firefighters must wear full face, self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective clothing to prevent contact with skin and eyes.

Specific Methods: Use standard firefighting procedures and consider the hazards of other involved materials. Use water spray to cool unopened containers.

Section 6- ACCIDENTAL RELEASE MEASURES

Personal Precautions: Keep unnecessary personnel away. Avoid dust formation. Avoid breathing vapors, mist or gas. Wear appropriate protective equipment and clothing during clean-up. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. For personnel protection see Section 8.

Environmental Precautions: Avoid discharge into drains, water courses or onto the ground

Methods for Containment & Clean Up:

- The product is immiscible with water and will spread on the water surface. Stop the flow of material, if this is without risk. Collect dust using a vacuum cleaner equipped with HEPA filter.
- Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Avoid generation of dusts during clean-up. Following product recovery, flush area with water.
- Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal.
- For waste disposal see Section 13.

Section 7- HANDLING AND STORAGE

Handling: Use care in handling and storage. Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Avoid prolonged exposure. Observe good industrial hygiene practices.

Storage: Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials.

-Strongly Hygroscopic; Storage Class (TRGS 510): 13: Non Combustible Solids

Section 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Occupational Exposure Limits/Components with Workplace Control Parameters:

Component	CAS-No.	Value	Control Parameters	Basis
Aluminum Oxide	1344-28-1	TWA	1 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
		Form	Respirable Fraction	
		PEL	5 mg/m ³	USA.OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
		Form	Respirable Fraction	
		PEL	15 mg/m ³	USA.OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
		Form	Total Dust	

		PEL	10 mg/m3	California Permissible Exposure Limits for Chemical Contaminants (Title 8, Article 107)
		PEL	5 mg/m3	California Permissible Exposure Limits for Chemical Contaminants (Title 8, Article 107)
		Remarks	The concentration and percentage of the particle used for this limit are determined from the fraction passing a size selector with the following characteristics: Aerodynamic Diameter in Micrometers (unit density sphere)..... Percent Passing Sector 0 -100 1 -97 2 -91 3 -74 4 -50 5 -30 6 -17 7 -9 8 -5 10 -1	
		TWA	1 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		Remarks	Lower Respiratory Tract Irritation Pneumoconiosis Neurotoxicity Not Classifiable as a Human Carcinogen Varies	

Biological Limit Values: No biological exposure limits noted for the substance

Control Parameters: Follow standard monitoring procedures

Personal Protective Equipment:

Eye/Face Protection: Wear safety glasses with side shields or goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin and Body Protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Wear suitable protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection: In case of insufficient ventilation, wear suitable respiratory equipment. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Thermal Hazards: Wear appropriate thermal protective clothing when necessary.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice. When using do not smoke. Keep away from food and drink. Wash thoroughly after handling and before eating, drinking and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

Section 9- PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Odor: No information available

Odor Threshold: No information available

pH: No information available

Melting Point/Range: 2,000°C / 3,632°F (Estimated)

Boiling Point/Range: 2,980°C / 5,396°F (Estimated)

Flash Point: No information available

Evaporation Rate: No information available

Flammability (solid,gas): No information available

Flammability or Explosive Limits:

<p>Upper: No data available Lower: No data available Vapor Pressure: No information available Vapor Density: No information available Relative Density: 4.00 g/cm³ at 20°C / 68°F Solubility: Insoluble Partition coefficient; n-octanol/water: No information available Auto Ignition Temperature: No information available Decomposition Temperature: No information available Viscosity: No information available Explosive Properties: No information available Oxidizing Properties: No information available</p>
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Section 10- STABILITY AND REACTIVITY
Reactive Hazard: Stable and non-reactive under normal conditions of use, storage and transport
Stability: Stable under normal conditions
Conditions to Avoid: Contact with incompatible materials
Incompatible Materials: Strong acids, strong bases, chlorine trifluoride, ethylene oxide, halogenated hydrocarbon, oxygen difluoride, sodium nitrate, vinyl compounds, oxygen, nitrates, halogens
Hazardous Decomposition Products: No information available
Hazardous Polymerization: No information available
Hazardous Reactions: No information available

Section 11- TOXICOLOGICAL INFORMATION
<p>Information on likely Routes of Exposure: Inhalation: Dusts may irritate respiratory system. Prolonged inhalation may be harmful Skin Contact: Dust or powder may irritate the skin Eye Contact: Dust may irritate the eyes Ingestion: Expected to be a low ingestion hazard</p> <p>Information on Toxicological Effects: Acute Toxicity: No information available Skin Corrosion/Irritation: Prolonged skin contact may cause temporary irritation Serious eye damage/irritation: Direct contact with eyes may cause temporary irritation Respiratory or Skin Sensitization: No information available Carcinogenicity: This product is not considered to be a carcinogen by IARC, ACGIH, NTP or OSHA. Germ Cell Mutagenicity: No information available Reproductive Effects: No information available Development Effects: No information available Specific Target Organ Toxicity – single exposure: No information available Specific Target Organ Toxicity – repeated exposure: No information available Aspiration Hazard: No information available Chronic Effects: Prolonged inhalation may be harmful Additional Information: -RTECS: BD1200000 Cough, chest pain, difficulty in breathing, gastrointestinal disturbance -Liver – Irregularities – Based on Human Evidence -To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.</p>

Section 12- ECOLOGICAL INFORMATION
<p>Toxicity: The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Persistence and Degradability: No information available Bioaccumulation/Accumulation: No information available</p>

Mobility in Soil: No information available
Results of PBT & vPvB assessment: PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.
Other Adverse Effects: No information available.

Section 13- DISPOSAL CONSIDERATIONS

Waste Disposal Methods: Collect and reclaim or dispose in sealed containers to a licensed disposal company. Dispose of contaminated packaging as unused product. Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 14- TRANSPORT INFORMATION

DOT: Not regulated as dangerous goods

IATA: Not regulated as dangerous goods

IMDG/IMO: Not regulated as dangerous goods

Section 15- REGULATORY INFORMATION

US Federal Regulations: This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt.D): Not regulated

U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not Listed

SARA 302 Extremely Hazardous Substance: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

SARA 304 Emergency Release Notification: Not regulated

SARA 313 (TRI Reporting): The following components are subject to reporting levels established by SARA Title III, Section 313:

Component	CAS No.	Revision Date
Aluminum Oxide	1344-28-1	1994-04-01

SARA 311/312 Hazardous Chemical: Yes (Chronic Health Hazard)

SARA Hazard Categories:

Immediate Hazard: No

Delayed Hazard: No

Fire Hazard: No

Pressure Hazard: No

Reactive Hazard: No

CERCLA Hazardous Substance List (40 CFR 302.4): Not Listed

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List: Not regulated

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130): Not regulated

Safe Drinking Water Act (SDWA): Not regulated

US California Proposition 65: This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.

US California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100): Not Listed

US Massachusetts Right To Know:

Component	CAS No.	Revision Date
Aluminum Oxide	1344-28-1	1994-04-01

US New Jersey Right to Know:

Component	CAS No.	Revision Date
Aluminum Oxide	1344-28-1	1994-04-01

US New Jersey Worker and Community Right to Know:

Component	CAS No.	Revision Date
Aluminum Oxide	1344-28-1	1994-04-01

US Pennsylvania Right to Know:

Component	CAS No.	Revision Date
Aluminum Oxide	1344-28-1	1994-04-01

US Pennsylvania Worker and Community Right to Know:

Component	CAS No.	Revision Date
Aluminum Oxide	1344-28-1	1994-04-01

US Rhode Island Right to Know:

Component	CAS No.	Revision Date
Aluminum Oxide	1344-28-1	1994-04-01

Section 16- OTHER INFORMATION

The above information is accurate to the best of our knowledge. However, since data, safety standards and government regulations are subject to change, the conditions of handling and use, or misuse are beyond our control, Plasmaterials, Inc. makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Users should satisfy themselves that they have all current data relevant to their particular use.

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The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

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