

SECTION 1 - IDENTIFICATION

COMPANY ADDRESS:

The Virtual Foundry, Inc
1471 US HWY 51
Stoughton, WI 53589
USA

EMERGENCY PHONE NUMBER: Information about the product can be obtained at (608) 509-7146 (Monitored 9am - 5pm Central Time USA Monday - Friday).
For all emergency calls, call the relevant emergency number for your country.

PRODUCT NAME: Sintering Refractory Ballast - Al2O3

PRODUCT USE: Sintering Refractory Ballast for sintering 3D printed metal parts.

SECTION 2 - HAZARDS IDENTIFICATION SUMMARY

CLASSIFICATION: Not a hazardous substance or mixture according to GHS.

SIGNAL WORD: Not Applicable

PHYSICAL HAZARDS: No information available.

HAZARD STATEMENTS: No information available.

OTHER HAZARDS: The product is not intended for applications in which it may come in contact with food or drinking water.

SECTION 3 - COMPOSITION, INFORMATION OF INGREDIENTS

Material Name	CAS No.	% by Weight
Aluminum Oxide	1344-28-1	100.0

SECTION 4 - FIRST AID MEASURES

IF SWALLOWED: Drink water as a precaution. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Seek medical attention immediately.

IF ON SKIN OR CLOTHING: Wash hands and contact skin with soap and water.

IF IN EYES: Rinse with water. Seek medical attention if irritation is persistent. Remove contact lenses.

IF INHALED: Dust may be generated and cause irritation. If use causes discomfort, move to a well ventilated area and seek medical attention.

MAIN SYMPTOMS: Redness, coughing and/or wheezing. Eye irritation may occur when in direct contact with eyes.

NOTE TO PHYSICIAN: Treat symptomatically.

SECTION 5 - FIRE FIGHTING MEASURES

FLAMMABILITY

AUTOIGNITION TEMPERATURE: No information available.

SUITABLE EXTINGUISHING MEDIA: Foam, water, carbon dioxide, or dry chemical.

UNSUITABLE EXTINGUISHING MEDIA: Not applicable.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: In case of fire, do not breathe in fumes. Fire may release hazardous fumes.

HAZARDOUS COMBUSTION PRODUCTS: None known.

SENSITIVITY TO MECHANICAL IMPACT: Not sensitive.

SENSITIVITY TO STATIC DISCHARGE: No information available.

FIRE FIGHTING INSTRUCTIONS AND FIRE FIGHTING EQUIPMENT: No information available.

ADDITIONAL INFORMATION: No information available.

PERSONAL PROTECTIVE EQUIPMENT: MSHA/NIOSH approved self-contained breathing apparatus or equivalent.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Standard personal protection equipment. Avoid contact with skin and eyes. Avoid dust formation. Sweep up to prevent slipping hazards.

ENVIRONMENTAL PRECAUTIONS: Should not be released into the environment; may be dangerous to birds and small animals. Do not flush into surface water or the sanitary sewer system. Do not allow material to contaminate the groundwater system.

METHODS FOR CLEANING UP: Sweep up or vacuum and put into an approved waste container for disposal.

SECTION 7 - HANDLING AND STORAGE

HANDLING: Avoid dust formation. Work in a ventilated area. Low hazard for usual handling.

STORAGE: Store in a cool, dry environment; keep away from heat, sparks, and flames.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS

Material Name	CAS No.	% by Weight	ACGIH TLV (Mg/M ³)	OSHA PEL (Mg/M ³)
Aluminum Oxide	1344-28-1	100.0	1.0	5.0

TLV: Threshold Limit Value over 8 hours of work.
 PEL: Permissible Exposure Limit

ENGINEERING CONTROLS

Engineering Measures: Use local exhaust as needed.

PERSONAL PROTECTIVE EQUIPMENT

Eye protection: Avoid contact with eyes. Wear safety glasses.

Skin protection: Wear appropriate protective clothing to minimize risk of injury to the skin from contact with dust or physical abrasion. Wear long sleeved/impervious clothing if contact is probable and skin is sensitive. Protect contact with skin; wash hands after handling. Coveralls should be made from fire resistive materials which tend to not accumulate static charges. They should be designed in such a way as to avoid accumulation of dust in cuffs, pockets, etc.

Respiratory protection: Process in a well-ventilated area; respirator recommended.

Hand protection: Wear insulated safety gloves; wash hands after handling.

Hygiene measures: Provide regular cleaning of equipment, work area and clothing. Handle in accordance with good industrial hygiene and safety practices. Do not eat, drink, or smoke when using this product. Wash hands before breaks and immediately after handling the product. Avoid contact with eyes. Do not breathe dust. Use personal protective equipment as required.

Special hazard: No information available.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Appearance:	Powder
Color:	White
Odor:	None
Odor Threshold:	No information available.
pH:	Not applicable
Melting/Freezing Point:	2,040 °C (3,704 °F)
Boiling Point:	2,980 °C (5,396 °F)
Flash Point:	No information available.
Evaporation Rate:	No information available.

Flammability:	Not flammable
Flammability Limits:	No information available.
Vapor Pressure:	Not applicable
Vapor Density:	Not applicable
Relative Density:	3.94g/cc
Water Solubility:	Insoluble
Solubility in other solvents:	No information available.
Chemical Stability:	No information available.
Partition Coefficient:	No information available.
Auto-Ignition Temperature:	No information available.
Decomposition Temperature:	No information available.
Viscosity:	No information available.

SECTION 10 - STABILITY AND REACTIVITY

REACTIVITY: Not reactive under normal conditions.

INCOMPATIBILITY: No information available.

CHEMICAL STABILITY: Stable under recommended storage conditions.

HAZARDOUS POLYMERIZATION: Will not undergo hazardous polymerization.

CONDITIONS & MATERIALS TO AVOID: Exothermic reaction with halogen-halogen compounds, Ethylene oxide, Fluorine, Hydrogen halides, vinyl acetate., Risk of explosion with nitrates, halogen oxides. Avoid exposure to moisture.

HAZARDOUS DECOMPOSITION PRODUCTS: No information available.

SECTION 11 - TOXICOLOGICAL INFORMATION

Principal routes of exposure: Skin contact.

PRODUCT INFORMATION:

Toxicity: The product contains one or more substances which are classified as toxic.

Material Name	Result	Species	Dose	Exposure
Aluminum Oxide	LD50 Oral	Rat	10,000mg/kg	-

Aluminum Oxide	LC 50 Inhalation	Rat, male and female	2.3mg/l	Aerosol
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Carcinogenic effects: This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Target organ effects: Eyes, Respiratory system.

Ingestion: May cause gastrointestinal discomfort if consumed in large amounts. Not an expected route of exposure.

Inhalation: Inhalation of dust in high concentration may cause irritation of the respiratory system.

Eye Contact: Dust contact with the eyes can lead to mechanical irritation.

Symptoms related to the physical, chemical, and toxicological characteristics: Redness. Coughing and/or wheezing.

Delayed, immediate, and chronic effects from short and long term exposure: May cause skin irritation and/or dermatitis.

Irritation: Product dust may be irritating to eyes, skin, and respiratory system.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity: Powder may be eaten by wildlife and should be swept up and placed in closed containers.

Persistence and degradability: Not readily biodegradable.

Bioaccumulation: Not expected to bioconcentrate or bioaccumulate.

Other adverse effects: This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS: Dispose in compliance with Federal, State, and local disposal laws for nonhazardous waste. Should not be released into the environment. Do not contaminate ponds, waterways or ditches with chemical or used containers. Contact the manufacturer with questions.

CONTAMINATED PACKAGING: Dispose in compliance with Federal, State, and local disposal laws for nonhazardous waste. Packaging may be reused.

SECTION 14 - TRANSPORT INFORMATION

DOT: Not regulated.
MEX: Not regulated.
ICAO: Not regulated.
IATA: Not regulated.
IMDG: Not regulated.
UN NUMBER: N/A.

Transportation In Bulk: Not Applicable.

Special Precautions For Transport: None.

SECTION 15 - REGULATORY INFORMATION

Regulatory requirements are subject to change and may differ between locations. It is the User's responsibility to ensure that all activities comply with all federal, state or provincial, and local laws and regulations. The following specific information is made for the purpose of complying with numerous national, federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

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.

SARA (TITLE III): Listed.

SARA (SECTION 313): Listed.

CALIFORNIA PROP. 65: Not Listed.

TSCA: Listed.

State Regulations:

Massachusetts: The following materials are listed: Aluminum Oxide.

Pennsylvania: The following materials are listed: Aluminum Oxide.

CLEAN AIR ACT, TITLE VI (1990): This product does not contain, nor was it manufactured using ozone depleting chemicals.

Inventory Status:

TSCA (USA): Listed*

DSL (Canada): Listed*

EINECS (Europe): Listed*

AICS (Australia): Listed*

ENCS (Japan): Listed*

IECS (People's Republic of China): Listed*

KECL (Korea): Listed*

TCSI (Taiwan): Listed*

*"Listed" indicates that all components of this product comply with the inventory requirements administered by the governing country.

SECTION 16 - OTHER INFORMATION, INCLUDING THE DATE OF PREPARATION OF THE LAST REVISION

LABEL REQUIREMENTS: Not expected to produce significant adverse health effects when the recommended instructions for use are followed.

NFPA HAZARD RATINGS	HEALTH	1
	FLAMMABILITY	0
	PHYSICAL HAZARD	0
	INSTABILITY	-
4=Severe 3=Serious 2=Moderate 1=Slight 0=Minimal		

HMIS HAZARD RATINGS	HEALTH	1
	FLAMMABILITY	0
	PHYSICAL HAZARD	0
	PERSONAL PROTECTION	X
	4=Severe 3=Serious 2=Moderate 1=Slight 0=Minimal	

DISCLAIMER: The information provided in this SDS is based on available data from reliable sources and is correct to the best of The Virtual Foundry, Inc's knowledge. The Virtual Foundry, Inc makes no warranty, express or implied, regarding the accuracy of the data or the results obtained from the use of this product. Nothing herein may be construed as recommending any practice or any product in violation of any law or regulations. The user is solely responsible for determining the suitability of any material or product for a specific purpose and for adopting any appropriate safety precautions. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

REVISED DATE:

March 2024