

# SAFETY DATA SHEET

## 1. Identification

<b>Product identifier</b>	<b>WHITE FUSED MULLITE</b>
<b>Other means of identification</b>	
<b>Synonyms</b>	MUB, MUW, MUBS, MUBZD
<b>Recommended use</b>	Ceramics and Refractory.
<b>Recommended restrictions</b>	-
<b>Manufacturer/Importer/Supplier/Distributor information</b>	
<b>Company Identification</b>	ELFUSA GERAL DE ELETROFUSÃO LTDA Julio Michelazzo, 501 - São João da Boa Vista, São Paulo - Brasil – ZIP CODE 13872-900
<b>Telephone</b>	+55.19.3634.2300
<b>Personal responsible for the SDS</b>	qualidade@elfusa.com.br
<b>Commercial</b>	comercial@elfusa.com.br
<b>Homepage</b>	www.elfusa.com.br
<b>Contact person</b>	Mr. Ruben Sinato
<b>Emergency telephone</b>	+55.11.99973.8421
<b>E-mail</b>	ruben.sinato@grupocurimbaba.com.br

## 2. Hazard(s) identification

<b>Physical hazards</b>	Not classified.
<b>Health hazards</b>	Not classified.
<b>OSHA defined hazards</b>	Not classified.
<b>Label elements</b>	
<b>Hazard symbol</b>	None.
<b>Signal word</b>	None.
<b>Hazard statement</b>	The product does not meet the criteria for classification.
<b>Precautionary statement</b>	
<b>Prevention</b>	Observe good industrial hygiene practices.
<b>Response</b>	Wash hands after handling.
<b>Storage</b>	Store away from incompatible materials.
<b>Disposal</b>	Dispose of waste and residues in accordance with local authority requirements.
<b>Hazard(s) not otherwise classified (HNOC)</b>	None known.
<b>Supplemental information</b>	None.

## 3. Composition/information on ingredients

### Substances

Chemical name	Common name and synonyms	CAS number	%
Mullite		1302-93-8	≥ 98
Impurities:			
Other Oxides Total	-	N/A	0.5-2.0

### Constituents

Chemical name	Common name and synonyms	CAS number	%
Aluminum oxide		1344-28-1	70 - 76
Silicon dioxide		7631-86-9	23 - 29

**Composition comments** All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. For more detailed chemical composition, refer to the certificate of analysis.

## 4. First-aid measures

<b>Inhalation</b>	Move to fresh air. Get medical attention if any discomfort continues.
<b>Skin contact</b>	Wash with soap and water. Get medical attention if irritation develops or persists.
<b>Eye contact</b>	Flush eyes thoroughly with water for at least 15 minutes. Get medical attention if irritation develops or persists.
<b>Ingestion</b>	Immediately rinse mouth and drink plenty of water. Get medical attention if irritation develops and persists.

**Most important symptoms/effects, acute and delayed**  
**Indication of immediate medical attention and special treatment needed.**  
**General information**

Irritation of eyes and mucous membranes. Irritation of nose and throat.  
 Treat symptomatically.  
 Get medical attention if any discomfort develops.

## 5. Fire-fighting measures

**Suitable extinguishing media**  
**Unsuitable extinguishing media**  
**Specific hazards arising from the chemical**  
**Special protective equipment and precautions for firefighters**  
**Firefighting equipment/instructions**  
**General fire hazards**

Use fire-extinguishing media appropriate for surrounding materials.  
 No restrictions known.  
 None known.  
 Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.  
 Move containers from fire area if you can do it without risk.  
 The product is not flammable.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**  
**Methods and materials for containment and cleaning up**  
**Environmental precautions**

Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet.  
 Recover and recycle, if practical. Sweep up or vacuum up spillage and collect in suitable container for disposal. Do not vacuum clean unless vacuum cleaners are equipped with HEPA filter.  
 Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

## 7. Handling and storage

**Precautions for safe handling**  
**Conditions for safe storage, including any incompatibilities**

Provide adequate ventilation. Use work methods which minimize dust production. Avoid inhalation of dust and contact with skin and eyes. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.  
 Store in a dry place.

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### U.S. – OSHA

Constituents	Type	Value
Silicon dioxide (CAS 7631-86-9)	TWA	6 mg/m <sup>3</sup> 20 mppcf

#### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Mullite (CAS 1302-93-8)	PEL	5 mg/m <sup>3</sup> 15 mg/m <sup>3</sup>	Respirable fraction. Total dust.
Constituents	Type	Value	Form
Aluminum Oxide (CAS 1344-28-1)	PEL	5 mg/m <sup>3</sup> 15 mg/m <sup>3</sup>	Respirable fraction. Total dust.

#### US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Mullite (CAS 1302-93-8)	TWA	5 mg/m <sup>3</sup> 15 mg/m <sup>3</sup> 50 mppcf 15 mppcf	Respirable fraction. Total dust. Total dust. Respirable fraction.
Constituents	Type	Value	Form
Silicon Dioxide (CAS 7631-86-9)	TWA	5 mg/m <sup>3</sup> 15 mg/m <sup>3</sup> 0.8 mg/m <sup>3</sup> 20 mppcf	Respirable fraction. Total dust.

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Mullite (CAS 1302-93-8)	TWA	1 mg/m <sup>3</sup>	Respirable fraction.
Constituents	Type	Value	Form
Aluminum Oxide (CAS 1344-28-1)	TWA	1 mg/m <sup>3</sup>	Respirable fraction.

#### U.S. NIOSH

Constituents	Type	Value	Form
Silicon Dioxide (CAS 7631-86-9)	REL	6 mg/m3	Unspecified.

**US. NIOSH: Pocket Guide to Chemical Hazards**

Constituents	Type	Value
Silicon Dioxide (CAS 7631-86-9)	TWA	6 mg/m3

<b>Biological limit values</b>	No biological exposure limits noted for the ingredient(s).
<b>Exposure guidelines</b>	No exposure standards allocated
<b>Appropriate engineering controls</b>	Provide sufficient ventilation for operations causing dust formation. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn.
<b>Individual protection measures, such as personal protective equipment</b>	
<b>Eye/face protection</b>	Wear goggles/face shield.
<b>Skin protection</b>	
<b>Hand protection</b>	Wear protective gloves. Suitable gloves can be recommended by the glove supplier.
<b>Others</b>	Wear suitable protective clothing.
<b>Respiratory protection</b>	In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. Seek advice from local supervisor.
<b>Thermal hazards</b>	Wear appropriate thermal protective clothing, when necessary.
<b>General hygiene considerations</b>	Wash hands after handling. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practice. Follow up on any medical surveillance requirements.

**9. Physical and chemical properties**

<b>Appearance</b>	
<b>Physical state</b>	Solid.
<b>Form</b>	Powder and grains.
<b>Color</b>	White and gray.
<b>Odor</b>	Odorless.
<b>Odor threshold</b>	Not available.
<b>pH</b>	7.5
<b>Melting point/freezing point</b>	3452 °F (1900 °C)
<b>Initial boiling point and boiling range</b>	Not available
<b>Flash point</b>	Not applicable
<b>Evaporation rate</b>	Not applicable
<b>Flammability (solid, gas)</b>	Non flammable
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit-lower (%)</b>	Not available
<b>Flammability limits-upper (%)</b>	Not available
<b>Explosive limit-lower (%)</b>	Not available
<b>Explosive limit-upper (%)</b>	Not available
<b>Vapor pressure</b>	Not available
<b>Vapor density</b>	Not available
<b>Relative density</b>	3.1
<b>Solubility (ies)</b>	
<b>Solubility (water)</b>	Insoluble
<b>Partition coefficient (n-octanol/water)</b>	Not applicable
<b>Auto-ignition temperature</b>	Not available
<b>Decomposition temperature</b>	Not available
<b>Viscosity</b>	Not available
<b>Other information</b>	
<b>Explosive properties</b>	Not explosive
<b>Oxidizing properties</b>	Not oxidizing

**10. Stability and reactivity**

<b>Reactivity</b>	The product is stable and non reactive under normal conditions of storage and transport.
<b>Chemical stability</b>	Stable at normal conditions.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur. Hazardous reactions do not occur.
<b>Conditions to avoid</b>	Moisture. Contact with incompatible materials.
<b>Incompatible materials</b>	None known.
<b>Hazardous decomposition products</b>	Decomposition of this product may yield metallic oxides.

## 11. Toxicological information

### Information on likely routes of exposure

Inhalation	Harmful if inhaled.
Skin contact	Dust may irritate skin.
Eye contact	Dust may irritate the eyes.
Ingestion	Ingestion may cause irritation and malaise.
<b>Symptoms related to the physical, chemical and toxicological characteristics</b>	Irritation of eyes and mucous membranes. Irritation of nose and throat.

### Information on toxicological effects

**Acute toxicity** Harmful if inhaled.

Components	Species	Test Results
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Silicon dioxide (CAS 7631-86-9)

**Acute**

*Oral*

LD50	Mouse	>= 15000 mg/kg
	Rat	>= 22500 mg/kg

Aluminum oxide (CAS 1344-28-1)

**Acute**

*Inhalation*

LC50	Rat	> 2,3 mg/l, 4 horas
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg

<b>Skin corrosion/irritation</b>	May cause irritation through mechanical abrasion.
<b>Serious eye damage/eye irritation</b>	May cause irritation through mechanical abrasion.
<b>Respiratory or skin sensitization</b>	
<b>Respiratory sensitization</b>	Not classified.
<b>Skin sensitization</b>	Not a skin sensitizer.
<b>Germ cell mutagenicity</b>	Test data conclusive but not sufficient for classification according CLP classification.
<b>Carcinogenicity</b>	Test data conclusive but not sufficient for classification.

### IARC Monographs. Overall Evaluation of Carcinogenicity

Silicon Dioxide (CAS 7631-86-9) 3 Not classifiable as to carcinogenicity to humans.

### NTP Report on Carcinogens

Not listed.

### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

**Reproductive toxicity** Test data conclusive but not sufficient for classification.

**Specific target organ toxicity-single exposure** Test data conclusive but not sufficient for classification.

**Specific target organ toxicity-repeated exposure** Test data conclusive but not sufficient for classification.

**Aspiration hazard** Not classified.

**Chronic effects** Prolonged and repeated overexposure to dust can lead to pneumoconiosis.

**Further information** Prolonged and repeated overexposure to dust can lead to pneumoconiosis.

## 12. Ecological information

**Ecotoxicity** This product has no known eco-toxicological effects. The product is not expected to be hazardous to the environment.

Product	Species	Test Results
Mullite		
<b>Aquatic</b>		
Algae	EC50 Green algae ( <i>Selenastrum capricornutum</i> )	> 100 mg/l 72 hours
Crustaceo	EC50 <i>Daphnia magna</i>	> 100 mg/l, 48 hours
Fish	LC50 <i>Salmo trutta</i>	> 100 mg/l, 96 hours

**Persistence and degradability**

The product is not biodegradable.

**Bioaccumulative potential**

The product is not bioaccumulating.

**Mobility in soil**

Aluminum oxide is not mobile in the environment, unless it comes into contact with an aqueous environment with a pH below 5.5 or above 8.5.

**Mobility in general**

The product is insoluble in water.

**Other adverse effects**

Not expected to be harmful to aquatic organisms.

**13. Disposal considerations****Disposal instructions**

Dispose in accordance with all applicable regulations.

**Hazardous waste code**

Not regulated.

**Waste from residues / unused products**

Recover and recycle, if practical. Dispose of in accordance with local regulations.

**Contaminated packaging**

Offer rinsed packaging material to local recycling facilities. Dispose of in accordance with local regulations.

**14. Transport information****DOT**

Not regulated as dangerous goods.

**IATA**

Not regulated as dangerous goods.

**IMDG**

Not regulated as dangerous goods.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not available.

**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. All components are on the U.S. EPA TSCA Inventory List.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not listed.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

Not listed.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**  
Immediate Hazard - No  
Delayed Hazard - No  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No

**SARA 302 Extremely hazardous substance**

Not listed.

**SARA 311/312 Hazardous chemical - Yes****SARA 313 (TRI reporting)**

Aluminum oxide (CAS 1344-28-1) ≥ 68 (% by wt.)

**Other federal regulations****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 Not regulated (SDWA)****US state regulations****US. Massachusetts RTK - Substance List**

Aluminum oxide (CAS 1344-28-1)

Silicon Dioxide (CAS 7631-86-9)

**US. New Jersey Worker and Community Right-to-Know Act**

Aluminum oxide (CAS 1344-28-1)  
 Silicon Dioxide (CAS 7631-86-9)

**US. Pennsylvania Worker and Community Right-to-Know Law**

Aluminum oxide (CAS 1344-28-1)  
 Silicon Dioxide (CAS 7631-86-9)

**US. Rhode Island RTK**

Aluminum oxide (CAS 1344-28-1)  
 Silicon Dioxide (CAS 7631-86-9)

**US. California Proposition 65**

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**International Inventories**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country (s).

**16. Other information, including date of preparation or last revision**

<b>Issue date</b>	14-March-2018
<b>Revision date</b>	05-September-2017
<b>Version</b>	5
<b>Disclaimer</b>	The information in the sheet was written based on the best knowledge and experience currently available.

**HMIS ratings**  
 Health = 0  
 Fire = 0  
 Physical Hazard = 0

**NFPA ratings**



**References**  
 American Conference of Governmental Industrial Hygienists. TLVs® E BEIs®  
 IARC - International Agency for Research on Cancer.  
 [ECHA] - European Chemical Agency  
 [NIOSH] - National Institute for Occupational Safety and Health  
 [OSHA] - Occupational Safety and Health Administration

**List of Abbreviations**  
 ACGIH - American Conference of Governmental Industrial Hygienists  
 CAS - Chemical Abstracts Service  
 EC - Effective concentration  
 LC - Lethal concentration  
 LD - Lethal dose  
 IARC - International Agency for Research on Cancer  
 PEL - Permissible Exposure Limit  
 TWA - Time Weight Average