

SAFETY DATA SHEET

1. Identification

Product identifier	MAGNESIUM ALUMINATE SPINELS
Other means of identification	
Synonyms	MAE-10, MAE-26, MAE-28, MAE-32, MAET-26
Recommended use	Refractory.
Recommended restrictions	-
Manufacturer/Importer/Supplier/Distributor information	
Company Identification	ELFUSA GERAL DE ELETROFUSÃO LTDA Julio Michelazzo, 501 - São João da Boa Vista, São Paulo - Brasil – ZIP CODE 13872-900
Telephone	+55.19.3634.2300
Personal responsible for the SDS	qualidade@elfusa.com.br
Commercial	comercial@elfusa.com.br
Homepage	www.elfusa.com.br
Contact person	Mr. Ruben Sinato
Emergency telephone	+55.11.99973.8421
E-mail	ruben.sinato@grupocurimbaba.com.br

2. Hazard(s) identification

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

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
Magnesium aluminum oxide		Mixture	≥ 97
Impurities:			
Other Oxides Total	-	N/A	≤ 3

Constituents

Chemical name	Common name and synonyms	CAS number	%
Aluminum oxide		1344-28-1	64.5 - 90.5
Magnesium oxide		1309-48-4	8.5 - 33

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

Inhalation	Move to fresh air. Get medical attention if any discomfort continues.
Skin contact	Wash with soap and water. Get medical attention if irritation develops or persists.
Eye contact	Flush eyes thoroughly with water for at least 15 minutes. Get medical attention if irritation develops or persists.
Ingestion	Immediately rinse mouth and drink plenty of water. Get medical attention if irritation develops and persists.
Most important symptoms/effects, acute and delayed	Irritation of eyes and mucous membranes. Irritation of nose and throat.

Indication of immediate medical attention and special treatment needed.

Treat symptomatically.

General information

Get medical attention if any discomfort develops.

5. Fire-fighting measures

Suitable extinguishing media

Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media

No restrictions known.

Specific hazards arising from the chemical

None known.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.

Firefighting equipment/instructions

Move containers from fire area if you can do it without risk.

General fire hazards

The product is not flammable.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

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.

Methods and materials for containment and cleaning up

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.

Environmental precautions

Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling

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.

Conditions for safe storage, including any incompatibilities

Store in a dry place.

8. Exposure controls/personal protection

Occupational exposure limits

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

Constituents	Type	Value	Form
Magnesium oxide (CAS 1309-48-4)	PEL	15 mg/m3	Total particulate
Aluminum Oxide (CAS 1344-28-1)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. ACGIH Threshold Limit Values

Material	Type	Value	Form
Magnesium aluminum oxide (CAS Mixture)	TWA	1 mg/m3	Respirable fraction.
Constituents	Type	Value	Form
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m3	Inhalable fraction.
Aluminum Oxide (CAS 1344-28-1)	TWA	1 mg/m3	Respirable fraction.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

No exposure standards allocated.

Appropriate engineering controls

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.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear goggles/face shield.

Skin protection

Hand protection

Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

Others

Wear suitable protective clothing.

Respiratory protection

In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. Seek advice from local supervisor.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

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

Appearance

Physical state

Solid.

Form	Powder and grains.
Color	Beige or white.
Odor	Odorless.
Odor threshold	Not available.
pH	6 - 9.5
Melting point/freezing point	3875°F (2135°C)
Initial boiling point and boiling range	Not available
Flash point	Not available
Evaporation rate	Not applicable
Flammability (solid, gas)	Non flammable
Upper/lower flammability or explosive limits	
Flammability limit-lower (%)	Not available
Flammability limits-upper (%)	Not available
Explosive limit-lower (%)	Not available
Explosive limit-upper (%)	Not available
Vapor pressure	Not applicable
Vapor density	Not applicable
Relative density	3 - 3.4
Solubility (ies)	
Solubility (water)	Not available
Partition coefficient (n-octanol/water)	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	Not available
Viscosity	Not applicable
Other information	
Bulk density	Not applicable
Explosive properties	Not explosive
Oxidizing properties	Not oxidizing

10. Stability and reactivity

Reactivity	The product is stable and non reactive under normal conditions of storage and transport.
Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur. Hazardous reactions do not occur.
Conditions to avoid	Moisture. Contact with incompatible materials.
Incompatible materials	None known.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Dust may irritate respiratory system.
Skin contact	Dust may irritate skin.
Eye contact	Dust may irritate the eyes.
Ingestion	Ingestion may cause irritation and malaise.
Symptoms related to the physical, chemical and toxicological characteristics	Irritation of eyes and mucous membranes. Irritation of nose and throat.

Information on toxicological effects

Acute toxicity	Dust may cause eye, skin and respiratory tract irritation.
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Product	Species	Test Results
Magnesium aluminum oxide (CAS Mixture)		
Acute		
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg
Constituents	Species	Test Results
Aluminum oxide (CAS 1344-28-1)		
Acute		
<i>Inhalation</i>		
LC50	Rat	> 2.3 mg/l, 4 horas
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg

Skin corrosion/irritation	May cause irritation through mechanical abrasion.
Serious eye damage/eye irritation	May cause irritation through mechanical abrasion.
Respiratory or skin sensitization	
Respiratory sensitization	Not classified.
Skin sensitization	Not a skin sensitizer.
Germ cell mutagenicity	Test data conclusive but not sufficient for classification.
Carcinogenicity	Test data conclusive but not sufficient for classification.
IARC Monographs. Overall Evaluation of Carcinogenicity	

Not listed.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

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.
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 regulated.

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 – No

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Aluminum oxide (CAS 1344-28-1)	1344-28-1	64.5 - 90.5

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)

Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Aluminum oxide (CAS 1344-28-1)
 Magnesium oxide (CAS 1309-48-4)

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

Aluminum oxide (CAS 1344-28-1)
 Magnesium oxide (CAS 1309-48-4)

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

Aluminum oxide (CAS 1344-28-1)
 Magnesium oxide (CAS 1309-48-4)

US. Rhode Island RTK

Aluminum oxide (CAS 1344-28-1)

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)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
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

Issue date 26-January-2012
Revision date 05-September-2017
Version 4

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available.

HMIS® ratings

Health = 1

Flammability = 0

Physical Hazard = 0

NFPA ratings**References**

IUCLID

Chemical safety report.

List of Abbreviations

LD50: Lethal Dose, 50%.

LC50: Lethal Concentration, 50%.