

Section 1: Identification of the substance/mixture and of the company/undertaking**Product identifier****Trade name or designation of the mixture** WHITE FUSED ALUMINUM OXIDE**Registration number** 01-2119529248-35-0141**Synonyms** AL, ALSD, ALHD, ALLD, ALZD and ALC**Date of first issue** 01-February-2012**Version number** 01**Revision date** -**Supersedes date** -**Relevant identified uses of the substance or mixture and uses advised against****Identified uses** Abrasives, Ceramics, Flooring, Surface Treatment and Refractory.**Uses advised against** -**Details of the supplier of the safety data sheet****Company identification** ELFUSA GERAL DE ELETROFUSÃO LTDA
501, Julio Michelazzo,
São João da Boa Vista, São Paulo – Brazil ZIP CODE 13872-900**Telephone** +55.19.3634.2300**Person responsible for the MSDS** qualidade@elfusa.com.br**Commercial** comercial@elfusa.com.br**Homepage** www.elfusa.com.br**Person Responsible for commercial introduction of the substance within European Community**

Elfusa Trading SL.

Mijas

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Access Code: 333691

Section 2: Hazards identification**Classification of the substance or mixture****Classification according to Directive 67/548/EEC or 1999/45/EC as amended**

This substance does not meet the criteria for classification according to Directive 67/548/EEC as amended.

Classification according to Regulation (EC) No 1272/2008 as amended

This substance does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

Hazard summary**Physical hazards** Not classified for physical hazards.**Health hazards** Not classified for health hazards. However, occupational exposure to the mixture or substance(s) may cause adverse health effects.**Environmental hazards** Not classified for hazards to the environment.**Specific hazards** Dust may cause eye, skin and respiratory tract irritation. Prolonged and repeated overexposure to dust can lead to pneumoconiosis.**Main symptoms** Irritation of eyes and mucous membranes. Irritation of nose and throat.**Label elements****Label according to Regulation (EC) No. 1272/2008 as amended****Hazard statements** The mixture does not meet the criteria for classification.

Precautionary statements

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.

Supplemental label information None.

Other hazards Not a PBT or vPvB substance or mixture.

Section 3: Composition/information on ingredients

Mixture

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Aluminium oxide	≥ 99	1344-28-1 215-691-6	01-2119529248-35-0141	-	#
Classification:	DSD: -				
	CLP: -				
Impurities: SiO ₂ +Fe ₂ O ₃ +Na ₂ O+CaO+MgO+TiO ₂	≤ 1	N/A -	-	-	
Classification:	DSD: -				
	CLP: -				

#: This substance has workplace exposure limit(s).

Composition comments This product is registered under the REACH Regulation 1907/2006 as a mono-constituent substance. 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.

Section 4: First aid measures

General information Get medical attention if any discomfort develops.

Description of 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 and effects, both acute and delayed Irritation of eyes and mucous membranes. Irritation of nose and throat.

Indication of any immediate medical attention and special treatment needed Treat symptomatically.

Section 5: Firefighting measures

General fire hazards The product is not flammable.

Extinguishing media

Suitable extinguishing media	Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable extinguishing media	No restrictions known.

Special hazards arising from the substance or mixture None known.

Advice for firefighters

Special protective equipment for firefighters	Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.
Special firefighting procedures	Move containers from fire area if you can do it without risk.

Section 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel 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.

For emergency responders Wear protective clothing as described in Section 8 of this safety data sheet.

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

Methods and material 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.

Reference to other sections For personal protection, see section 8. For waste disposal, see section 13.

Section 7: Handling and storage

Precautions for safe handling Provide adequate ventilation. Use work methods which minimise dust production. Avoid inhalation of dust and contact with skin and eyes. Wear appropriate personal protective equipment. Do not add wet alumina to electrolysis cells. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store in a dry place.

Specific end use(s) For detailed information, see section 15. Recommendations given in the exposure scenario for the uses are distributed and annexed as separate documents to this eSDS.

Section 8: Exposure controls/personal protection

Control parameters

Occupational exposure limits

Austria. MAK List

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	MAK	5 mg/m ³	Respirable fume.
	STEL	5 mg/m ³	Respirable fraction.
10 mg/m ³		Inhalable fraction.	
20 mg/m ³		Inhalable fraction.	
10 mg/m ³		Respirable fume.	

Components	Type	Value	Form
Aluminium oxide (1344-28-1)	MAK	5 mg/m ³	Respirable fume.
	STEL	5 mg/m ³	Respirable fraction.
10 mg/m ³		Inhalable fraction.	
20 mg/m ³		Inhalable fraction.	
10 mg/m ³		Respirable fume.	

Belgium. Exposure Limit Values.

Material	Type	Value
Aluminium oxide (1344-28-1)	TWA	10 mg/m ³

Components	Type	Value
Aluminium oxide (1344-28-1)	TWA	10 mg/m ³

Bulgaria. OELs. Regulation No 13 on protection of workers against risks of exposure to chemical agents at work

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	10 mg/m ³	Dust.

Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	1,5 mg/m ³	Respirable fraction.
		10 mg/m ³	Dust.
		1,5 mg/m ³	Respirable fraction.

Czech Republic. OELs. Government Decree 361

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	0,1 mg/m ³	Respirable dust.

Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	0,1 mg/m ³	Respirable dust.

Denmark. Exposure Limit Values

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TLV	5 mg/m3	Total
		2 mg/m3	Respirable.
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TLV	5 mg/m3	Total
		2 mg/m3	Respirable.

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances. (Annex of Regulation No. 293 of 18 September 2001)

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	4 mg/m3	Respirable dust.
		10 mg/m3	Total dust.
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	4 mg/m3	Respirable dust.
		10 mg/m3	Total dust.

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Material	Type	Value
Aluminium oxide (1344-28-1)	VME	10 mg/m3
Components	Type	Value
Aluminium oxide (1344-28-1)	VME	10 mg/m3

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	4 mg/m3	Inhalable dust.
		1,5 mg/m3	Respirable dust.
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	4 mg/m3	Inhalable dust.
		1,5 mg/m3	Respirable dust.

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	AGW	3 mg/m3	Respirable dust.
		10 mg/m3	Inhalable dust.
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	AGW	3 mg/m3	Respirable dust.
		10 mg/m3	Inhalable dust.

Greece. OELs (Decree No. 90/1999, as amended)

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	5 mg/m3	Inhalable
		10 mg/m3	Respirable.
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	5 mg/m3	Inhalable
		10 mg/m3	Respirable.

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	6 mg/m3	Respirable.
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	6 mg/m3	Respirable.

Iceland. OELs. Regulation 154/1999 on occupational exposure limits

Material	Type	Value
Aluminium oxide (1344-28-1)	TWA	10 mg/m3

Iceland. OELs. Regulation 154/1999 on occupational exposure limits

Components	Type	Value
Aluminium oxide (1344-28-1)	TWA	10 mg/m3

Ireland. Occupational Exposure Limits

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	4 mg/m3	Respirable dust.

Components	Type	Value	Form
		10 mg/m3	Total inhalable dust.

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	4 mg/m3	Respirable dust.

		10 mg/m3	Total inhalable dust.
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Italy. OELs

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	1 mg/m3	Respirable fraction.

Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	1 mg/m3	Respirable fraction.

Latvia. OELs. Occupational exposure limit values of chemical substances in work environment

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	6 mg/m3	Decomposition aerosol.

Components	Type	Value	Form
		4 mg/m3	

Aluminium oxide (1344-28-1)	TWA	6 mg/m3	Decomposition aerosol.
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		4 mg/m3	
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Lithuania. OELs. Limit Values for Chemical Substances, General Requirements (Hygiene Norm HN 23:2007)

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	5 mg/m3	Inhalable fraction.

Components	Type	Value	Form
		2 mg/m3	Respirable fraction.

Aluminium oxide (1344-28-1)	TWA	5 mg/m3	Inhalable fraction.
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		2 mg/m3	Respirable fraction.
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Norway. Administrative Norms for Contaminants in the Workplace

Material	Type	Value
Aluminium oxide (1344-28-1)	TLV	10 mg/m3

Components	Type	Value
Aluminium oxide (1344-28-1)	TLV	10 mg/m3

Poland. MACs. Minister of Labour and Social Policy Regarding Maximum Allowable Concentrations and Intensities in Working Environment

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	2,5 mg/m3	Fume, total dust.

		1,2 mg/m3	Respirable dust and/or fume.
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Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	2,5 mg/m3	Fume, total dust.

		1,2 mg/m3	Respirable dust and/or fume.
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Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)

Material	Type	Value
Aluminium oxide (1344-28-1)	TWA	10 mg/m3

Components	Type	Value
Aluminium oxide (1344-28-1)	TWA	10 mg/m3

Romania. OELs. Protection of workers from exposure to chemical agents at the workplace

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	STEL	5 mg/m3	Aerosol
	TWA	1,2 ppm	Aerosol
		2 mg/m3	Aerosol
		0,5 ppm	Aerosol
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	STEL	5 mg/m3	Aerosol
	TWA	1,2 ppm	Aerosol
		2 mg/m3	Aerosol
		0,5 ppm	Aerosol

Slovakia. OELs. Decree of the government of the Slovak Republic concerning protection of health in work with chemical agents

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	4 mg/m3	Inhalable fraction.
		1,5 mg/m3	Respirable fraction.
		0,1 mg/m3	
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	4 mg/m3	Inhalable fraction.
		1,5 mg/m3	Respirable fraction.
		0,1 mg/m3	

Spain. Occupational Exposure Limits

Material	Type	Value
Aluminium oxide (1344-28-1)	TWA	10 mg/m3
Components	Type	Value
Aluminium oxide (1344-28-1)	TWA	10 mg/m3

Sweden. Occupational Exposure Limit Values

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	5 mg/m3	Total dust.
		2 mg/m3	Respirable dust.
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	5 mg/m3	Total dust.
		2 mg/m3	Respirable dust.

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	STEL	24 mg/m3	Fume and respirable dust.
	TWA	3 mg/m3	Respirable dust.
		3 mg/m3	Fume and respirable dust.
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	STEL	24 mg/m3	Fume and respirable dust.
	TWA	3 mg/m3	Respirable dust.
		3 mg/m3	Fume and respirable dust.

UK. EH40 Workplace Exposure Limits (WELs)

Material	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	4 mg/m3	Respirable dust.
		10 mg/m3	Inhalable dust.
Components	Type	Value	Form
Aluminium oxide (1344-28-1)	TWA	4 mg/m3	Respirable dust.
		10 mg/m3	Inhalable dust.

Recommended monitoring procedures Follow standard monitoring procedures.

DNEL

Material	Type	Route	Value	Form
Aluminium oxide (1344-28-1)	Workers	Oral	3,29 mg/kg/day	Long term exposure systemic effects
		Inhalation	15,63 mg/m ³	Long term exposure local effects
Components	Type	Route	Value	Form
Aluminium oxide (1344-28-1)	Workers	Oral	3,29 mg/kg/day	Long term exposure systemic effects
		Inhalation	15,63 mg/m ³	Long term exposure local effects

PNEC

Material	Type	Route	Value
Aluminium oxide (1344-28-1)	Aqua (freshwater)	Not applicable	79,4 µg/l
	Sewage Treatment Plant	Not applicable	20 mg/l
Components	Type	Route	Value
Aluminium oxide (1344-28-1)	Aqua (freshwater)	Not applicable	79,4 µg/l
	Sewage Treatment Plant	Not applicable	20 mg/l

Exposure controls

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 OEL (occupational exposure limit), suitable respiratory protection must be worn.

Individual protection measures, such as personal protective equipment

General information

Use personal protective equipment as required. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the 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.

- Other

Wear suitable protective clothing.

Respiratory protection

In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter (type P2). Seek advice from local supervisor.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

Hygiene measures

Wash hands after handling. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practices. Follow up on any medical surveillance requirements.

Environmental exposure controls

Contain spills and prevent releases and observe national regulations on emissions.

Section 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance	White powder.
Physical state	Solid.
Form	Powder.
Colour	White.
Odour	Odourless.
Odour threshold	Not available.
pH	Not applicable.
Melting point/freezing point	2040 °C (3704 °F)
Boiling point, initial boiling point, and boiling range	Not available.
Flash point	Not applicable.
Auto-ignition temperature	Not applicable.
Flammability (solid, gas)	Non flammable.
Flammability limit - lower (%)	Not available.

Flammability limit - upper (%)	Not available.
Oxidising properties	Not oxidizing.
Explosive properties	Not explosive.
Explosive limit	Not applicable.
Vapour pressure	Not applicable.
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Relative density	3,97 at 20 °C
Solubility (water)	Insoluble
Partition coefficient (n-octanol/water)	Not applicable.
Decomposition temperature	Not available.
Bulk density	Not applicable.
Viscosity	Not applicable.
Percent volatile	Not available.
Other information	No relevant additional information available.

Section 10: Stability and reactivity

Reactivity	The product is non reactive under normal conditions of use, storage and transport.
Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	Hazardous polymerisation 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.

Section 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Ingestion	Ingestion may cause irritation and malaise.
Inhalation	Dust may irritate respiratory system.
Skin contact	Dust may irritate skin.
Eye contact	Dust may irritate the eyes.

Symptoms 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.

Product

Test results

Aluminium oxide (1344-28-1)	Acute Inhalation LC50 Rat: > 2,3 mg/l 4 hours Acute Oral LD50 Rat: > 5000 mg/kg
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Skin corrosion/irritation	May cause irritation through mechanical abrasion.
Serious eye damage/eye irritation	May cause irritation through mechanical abrasion.
Respiratory sensitisation	Not classified.
Skin sensitisation	Not a skin sensitiser.
Germ cell mutagenicity	Test data conclusive but not sufficient for classification.
Carcinogenicity	Test data conclusive but not sufficient for classification.
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.

Mixture versus substance information	Not available.
Other information	Prolonged and repeated overexposure to dust can lead to pneumoconiosis.

Section 12: Ecological information

Toxicity

Product	Test results
Aluminium oxide (1344-28-1)	EC50 Daphnia magna: > 100 mg/l 48 hours EC50 Green algae (Selenastrum capricornutum): > 100 mg/l 72 hours LC50 Salmo trutta: > 100 mg/l 96 hours
Persistence and degradability	The product is not biodegradable.
Bioaccumulative potential	The product is not bioaccumulating.
Mobility	The product is insoluble in water.
Environmental fate - Partition coefficient	Not applicable.
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.
Results of PBT and vPvB assessment	Not a PBT or vPvB substance or mixture.
Other adverse effects	Not expected to be harmful to aquatic organisms.

Section 13: Disposal considerations

Waste treatment methods

Residual waste	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.
EU waste code	16 05 09
Disposal methods/information	Dispose in accordance with all applicable regulations.

Section 14: Transport information

ADR

The product is not covered by international regulation on the transport of dangerous goods.

RID

The product is not covered by international regulation on the transport of dangerous goods.

ADN

The product is not covered by international regulation on the transport of dangerous goods.

IATA

The product is not covered by international regulation on the transport of dangerous goods.

IMDG

The product is not covered by international regulation on the transport of dangerous goods.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code No information available.

Section 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex I

Not listed.

Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex II

Not listed.

Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V

Not listed.

Directive 96/61/EC concerning integrated pollution prevention and control (IPPC): Article 15, European Pollution Emission Registry (EPER)

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(1). Candidate List

Not listed.

Other regulations	This substance does not meet the criteria for classification according to Regulation (EC) 1272/2008 (CLP Regulation) and Directive 67/548/EEC and their amendments respectively. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.
National regulations	Follow national regulation for work with chemical agents.
Chemical safety assessment	For this substance a chemical safety assessment has been carried out.

Section 16: Other information

List of abbreviations	DNEL: Derived No-Effect Level. PNEC: Predicted No-Effect Concentration. PBT: Persistent, bioaccumulative and toxic. vPvB: Very Persistent and very Bioaccumulative. DSD: Directive 67/548/EEC. CLP: Regulation No. 1272/2008. LD50: Lethal Dose, 50%. LC50: Lethal Concentration, 50%.
References	IUCLID Chemical safety report.
Information on evaluation method leading to the classification of mixture	The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.
Full text of any statements or R-phrases and H-phrases under Sections 2 to 15	None.
Training information	Follow training instructions when handling this material.
Disclaimer	The information in the sheet was written based on the best knowledge and experience currently available.
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