



MAL Magyar Alumínium Termelő és Kereskedelmi Zrt.

Date of issue: 2011-01-01
Date of revision: 2012-01-01
Revision No: 0003 2012

Safety data sheet: aluminium oxide
REACH-Registration No.: 01-2119529248-35-0114

*** Basically aluminium oxide is a non-hazardous substance. An MSDS is not mandatory required. The data sheet is provided on voluntary basis according to REACH Regulation (EC) No. 1907/2006. ***

Safety data sheet

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: aluminium oxide

Trade name : aluminium-oxide; alumina; calcined aluminas; ground aluminas; reactive aluminas; polishing aluminas

CAS name: aluminium oxide

CAS Number: 1344-28-1

EU name: aluminium oxide

EU Number: 215-691-6

IUPAC name: oxo(oxoalumanyloxy)alumane

Company product codes: ALO-.....

Substance type: mono constituent; inorganic substance

REACH-Registration No.: 01-2119529248-35-0114

1.2. Relevant identified uses of the substance or mixture and uses advised against

Feedstock, Ceramics, Refractories, Glass, Abrasives, Fillers, Water treatment, Industrial applications, Others: e.g. lubricants and greases, chemical reagents...

Uses advised against: Not known

1.3. Details of the supplier of the safety data sheet

Manufacturer:

Name: MAL Magyar Alumínium Termelő és Kereskedelmi Zrt.

Head-office: H-8400 Ajka, Gyártelep hrsz. 598/15

Country: Hungary

Company e-mail: timfold@mal.hu

Company homepage: www.mal.hu

Company telephone: (+36) 88 522 400

Company telefax: (+36) 88 311 634



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Safety Data Sheet contact: sds@mal.hu

1.4. Emergency telephone number

National Emergency contact:

Name: Egészségügyi Toxikológiai Tájékoztató Szolgálat

Address: 1096 Budapest, Nagyvárad tér 2.

Country: Hungary

Phone: +36 1 476 6464; +36 80 201 199

Telefax: +36 1 476 1138

E-mail: ettsz@okbi.antsz.hu

Homepage: www.okbi.hu

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008:

not classified, no H-phrases

Classification according to Directive 67/548/EEC:

not classified, no R-phrases

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008:

none / no signal word

Labelling according to Directive 67/548/EEC:

none / no signal word

Precautionary statements (recommendation):

In case of longer period or high level airborne dust respiratory tract mechanical irritation should be happened.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.



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P285 In case of inadequate ventilation wear respiratory protection.

P305 + P351 + P338 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

2.3. Other hazards

none

3. Composition/information on ingredients

3.1. Substances

Product name: aluminium oxide
CAS Number: 1344-28-1
EU Number: 215-691-6
Purity: > 95 % (w/w)

4. First aid measures

First aide personnel: pay attention to self- protection!

4.1. Description of first aid measures

Inhalation: Move to fresh air. Consult physician if necessary.
Skin contact: Mechanical (dry) removal, than rinsing with water.
Eye contact: Rinse with plenty of water. Consult physician if necessary.
Ingestion: Rinse mouth and give plenty of water to drink. Consult physician if necessary.
Advice to medical treatment: No special advice.

4.2. Most important symptoms and effects, both acute and delayed

None



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4.3. Indication of any immediate medical attention and special treatment needed

5. Firefighting measures

The substance is inflammable and non-explosive

5.1. Extinguishing media

Suitable extinguishing media: Use fire fighting media appropriate for surrounding materials
Unsuitable extinguishing media: None

5.2. Special hazards arising from the substance or mixture

None

5.3. Advice for firefighters

None

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid dust formation. In case of exposure to high level airborne dust wear a personal respirator in compliance the local bye-laws.
See section 8.

6.2. Environmental precautions

Avoid dispersal of spilled material and runoff. Avoid creating dusty conditions and prevent wind dispersal. Collect material for recycling if possible



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6.3. Methods and material for containment and cleaning up

The material can be taken up mechanically and disposed of observing the national regulations.

6.4. Reference to other sections

See: 2.2. Label elements; 7. Handling and storage; 8. Exposure controls/personal protection; 13. Disposal considerations

7. Handling and storage

7.1. Precautions for safe handling

General advice: Handle in accordance with good industrial hygiene and safety practice. Wear suitable personal working cloth and protective equipment.
Do not add wet alumina to electrolysis cells

Dust generation: Avoid dust formation. No special handling advice required

Eating, hygiene in work area: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

Precautions against fire and explosion: The substance is inflammable and non-explosive

7.2. Conditions for safe storage, including any incompatibilities

Condition of storage rooms and tanks: No any special precautions required.

Incompatible substances or mixtures: None

Further information of storage: Dry storage.

Packaging compatibilities: None



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7.3. Specific end use(s)

Feedstock, Ceramics, Refractories, Glass, Abrasives, Fillers, Water treatment, Industrial applications, Others: e.g. lubricants and greases, chemical reagents...

8. Exposure controls/personal protection

8.1. Control parameters

Components with specific control parameters as limit values: Occupational exposure limits (air): generally same as for nuisance dust

Observe the local by-laws in terms of dust.

(Germany: inhalable dust 10 mg/m³, respirable dust 3 mg/m³;

Great Britain: : inhalable dust 10 mg/m³, respirable dust 4 mg/m³;

USA: OSHA - Respirable fraction: 5 mg/m³, Total dust: 15 mg/m³;

Hungary: Egyéb inert porok - totális (belélegezhető): 10 mg/m³; respirábilis: 6 mg/m³)

Exposure limits for industrial workers:

Observe the local by-laws in terms of dust.

(Germany: inhalable dust 10 mg/m³, respirable dust 3 mg/m³;

Great Britain: : inhalable dust 10 mg/m³, respirable dust 4 mg/m³;

USA: OSHA - Respirable fraction: 5 mg/m³, Total dust: 15 mg/m³;

Hungary: Egyéb inert porok - totális (belélegezhető): 10 mg/m³; respirábilis: 6 mg/m³)

Exposure limits for professional workers :

Observe the local by-laws in terms of dust.

(Germany: inhalable dust 10 mg/m³, respirable dust 3 mg/m³;

Great Britain: : inhalable dust 10 mg/m³, respirable dust 4 mg/m³;

USA: OSHA - Respirable fraction: 5 mg/m³, Total dust: 15 mg/m³;

Hungary: Egyéb inert porok - totális (belélegezhető): 10 mg/m³; respirábilis: 6 mg/m³)



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Exposure limits for consumers: Not applicable

8.2. Exposure controls

Avoid dust formation. Appropriate local exhaust ventilation is recommended.

8.2.1. Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is recommended

8.2.2. Individual protection measures, such as personal protective equipment

(a) Eye / face protection: Safety glasses with side-shields

(b) Skin protection: No special protective equipment required. Wearing of closed work clothing is recommended

(b.1) Hand protection: Protective gloves

(b.2) Other: -

(c) Respiratory protection: Respiratory protection: During production process dust is generated; and if ventilation is inadequate, wear dust masks or respirators (P2; P3; FFP2 or FFP3)

(d) Thermal hazards: Not applicable

8.2.3. Environmental exposure controls

No special exposure controls required

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

(a) Appearance: white odourless powder

(b) Odour: odourless

(c) Odour threshold: -

(d) pH: Not applicable

(e) Melting point/freezing point: 2000 oC at 1013 hPa

(f) Initial boiling point and boiling range: 2980 oC at 1013 hPa



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- (g) Flash point: Not applicable
- (h) Evaporation rate: Not applicable
- (i) Flammability (solid, gas): Not flameable
- (j) Upper/lower flammability or explosive limits: Not applicable
- (k) Vapour pressure: 1 hPa at 2158 oC
- (l) Vapour density: Not applicable
- (m) Relative density: 3.99 g/cm³ at 20 oC
- (n) Solubility(ies): in water: very low (0.00002 g/L at 20 oC)
- (o) Partition coefficient n-octanol/water: Not applicable
- (p) Auto-ignition temperature: Not applicable
- (q) Decomposition temperature: Not applicable
- (r) Viscosity: Not applicable
- (s) Explosive properties: Not explosive
- (t) Oxidising properties: Not oxidizing

9.2. Other information

Granulometry: 0.1 - 250 micron

10. Stability and reactivity

10.1. Reactivity

The substance is not reactive

10.2. Chemical stability

The substance is stable under normal conditions

10.3. Possibility of hazardous reactions

No hazardous reactions known

10.4. Conditions to avoid

None

10.5. Incompatible materials

None



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10.6. Hazardous decomposition products

No hazardous decomposition products known

11. Toxicological information

Oral uptake < 0.1%. Nearly insoluble in lung fluids. Most absorbed aluminium oxide is rapidly excreted through urine. Main deposit in body is in bone structure.

11.1. Information on toxicological effects

It is recommended that aluminium oxide is not to be classified for acute oral, dermal and inhalation toxicity.

11.1.1. Substances

(a) acute toxicity:

Acute Oral: No bioaccumulation potential

Acute Inhalation: LD50 (rat) > 2000 mg/kg bw

Acute Dermal: LC50 (4 hs) : > 2.3 mg/L air

(b) skin corrosion/irritation: Not applicable

(c) serious eye damage/irritation: not eye irritant, OECD TG 405

(d) respiratory or skin sensitisation: No effects apart from mechanical irritation.

(e) germ cell mutagenicity: Landsteiner / Draize method, test substance is not a sensitizer

(f) carcinogenicity: Genetic toxicity: negative

(g) reproductive toxicity: no systemic carcinogenic effect from exposure to aluminium oxide

(h) STOT-single exposure: Negative. There is no evidence of any CMR effects

(i) STOT-repeated exposure: NOAEL (chronic, rat) 30 mg Al/kg bw/day as aluminium citrate

(j) aspiration hazard: LOAEC (subchronic, rat) 70 mg Al/m³ as aluminium oxide



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12. Ecological information

12.1. Toxicity

With regard to PBT AND VPVB ASSESSMENT, Annex XIII of the REACH Regulation (EC) No. 1907/2006 is not applicable to inorganic substances. As aluminium metal, powders and oxide are not bio-available, owing to their extreme insolubility in water, and small bioaccumulation factors (<250), hence they do not fulfil either of the PBT and vPvB criteria for classification.

Fish (Salmo Trutta) toxicity: LC/EC 50: > 100mg/l; pH 8

Invertebrate (Daphnia Magna) toxicity: LC/EC 50: > 100mg/l; pH 8

Algae (Selenastrum Capricornutum) toxicity: LC/EC 50: > 100mg/l; pH 8

12.2. Persistence and degradability

Not relevant. Not degradable

12.3. Bioaccumulative potential

Not bio accumulative

12.4. Mobility in soil

Not mobile under normal environmental conditions, may be leached from the ground at low pH (< 5.5) or high pH (> 8,5).

12.5. Results of PBT and vPvB assessment

Not PBT, vPvB substance

12.6. Other adverse effects

None

13. Disposal considerations

If it is possible reuse or recycle. The waste can be handled according to the local bye-laws



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13.1. Waste treatment methods

Recycling of the used, fully emptied packaging according to the local bye-laws.

14. Transport information

14.1. UN number

UN numbers are four-digit numbers that identify hazardous substances

UN number: Non hazardous material.

14.2. UN proper shipping name

Overland freight: Non hazardous material.

ADR/RID class: Non hazardous material.

Sea freight: Non hazardous material.

IMDG class: Non hazardous material.

Air freight: Non hazardous material.

ICAO/IATA class: Non hazardous material.

14.3. Transport hazard class(es)

Non hazardous material.

14.4. Packing group

Non hazardous material.

14.5. Environmental hazards

Non hazardous material.

14.6. Special precautions for user

Non hazardous material.

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

Non hazardous material.



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15. Regulatory information

This product is not classified and labelled in accordance with EC directives. No hazard symbol is necessary.

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

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Chemical Safety Report of aluminium oxide

Hungarian decree: 25/2000. (IX. 30.) EüM-SzCsM együttes rendelet a munkahelyek kémiai biztonságáról

Hungarian decree: 44/2000. (XII. 27.) EüM rendelet a veszélyes anyagokkal és a veszélyes készítményekkel kapcsolatos egyes eljárások, illetve tevékenységek részletes szabályairól

15.2. Chemical safety assessment

Chemical Safety Assessment (CSR) has been done.



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16. Other information

Exposure Scenario:

As a result of the hazard assessment and PBT/vPvB assessment it is found that SUBSTANCE aluminium oxide (CAS Number: 1344-28-19 does not meet the criteria for classification as hazardous (according to Directives 67/548/EEC and 1272/2008/EC) nor is it considered to be a PBT/vPvB. Exposure assessment and the subsequent step of risk characterisation is not required.

Marking of revision:

1. - Since 28. 06. 2011. the version 0002_2011 is valid. Because of important changes in form of Safety data sheet.
2. - Since 01. 01. 2012. the version 0003_2012 is valid. Change in Head-office address of Manufacturer (chapter 1.3)

Abbreviations and acronyms:

PBT - Persistent, Bioaccumulative and Toxic chemicals

vPvB - very Persistent, very Bioaccumulative

LD - Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.

LC - Lethal Concentration. The concentration of the chemical in air that kills 50% of the test animals in a given time (usually four hours) is the LC50 value.

UVCB substances - substances of unknown or variable composition, complex reaction products or biological materials

CMR effects - carcinogenicity, mutagenicity and toxicity for reproduction

CAS - Chemical Abstracts Service (division of the American Chemical Society)

OSHA - Occupational Safety and Health Administration (US)

ADR - Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)



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RID - Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations concerning the International Transport of Dangerous Goods by Rail)

IMDG: - International Maritime Code for Dangerous Goods

IATA - International Air Transport Association

IATA-DGR - Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO - International Civil Aviation Organization

ICAO-TI - Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS - Globally Harmonized System of Classification and Labelling of Chemicals

EINECS - European Inventory of Existing Commercial Chemical Substances

PNEC - Potential No Effect Concentration

DNEL - Derived No Effect Level

DOC - Dissolved Organic Compounds

Bwt - bodyweight

List of relevant H and P phrases:

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P285 In case of inadequate ventilation wear respiratory protection.

P305 + P351 + P338 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

Remarks:

This Safety Data Sheet contains our currently known information. The Safety Data Sheet was prepared according to our best knowledge, but only for information. Therefore the given data do not serve any guaranty or legal obligation concerning to characteristics of product.



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This Safety Data Sheet serves for help to the user in making his own decision about suitability of the product to his own usage goals.

Because the handling, storing, using and annihilation are out of our competence, we preclude the responsibility concerning to the handling, storing, using and annihilation of the product.

If the product is used as a component of an other product this Safety Data Sheet can not be used any more.

Standard commercial types:

calcined aluminas;

ALO-B15; ALO-Ex30; ALO-Ex31; ALO-Ex32; ALO-Ex325; ALO-Ex33; ALO-GB1; ALO-GB1-K; ALO-Ex34; ALO-Ex35 LS;

ground aluminas;

ALO-DN-10; ALO-DN-7P; ALO-G4-4G; ALO-DN-4F; ALO-DN-4S; ALO-DN-3S; ALO-KN-4F; ALO-KN-4S; ALO-EL-7P; ALO-EL-4F; ALO-EL-4S; ALO-EL-3S; ALO-G22-10; ALO-G2-2; ALO-G32-2; ALO-G5-4

reactive aluminas;

ALO-EL-2S; ALO-DN-2S; ALO-DN-21; ALO-DN-23; ALO-KN-2S; ALO-BN-2F; ALO-BN-2S;

polishing aluminas;

ALO-P90; ALO-P90-20; ALO-DF2; ALO-P90-06; ALO-P90-02; ALO-P95; ALO-DF223; ALO-P95-08; ALO-P95-06; ALO-P95-01; ALO-DFC; ALO-P54; ALO-DFM; ALO-P54-04

Any modification or change in the listing of commercial, standard types does not mean the revision of Safety Data Sheet, since concerning the merits remains unchanged.

Prepared by:

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