



Material Safety Data Sheet

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Section 1 - Product and Company Information

Product Name Aluminum oxide, nanopowder
Product Number 544833
Brand Aldrich Chemical

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS, MO 63103 US
Technical Phone: 314 771 5765
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Section 2 - Composition/Information on Ingredient

<u>Substance Name</u>	<u>CAS #</u>	<u>SARA 313</u>	<u>EC no</u>	<u>Annex I Index Number</u>
ALUMINA ACTIVATED	1344-28-1	Yes	215-691-6	

Formula Al₂O₃
Synonyms A 1 (Sorbent), Abramant, Abramax, Abrarex, Abrasit, Activated aluminum oxide, A1-3945 E 1/16", A1-4126 E 1/16", Alcoa F 1, Almite, Alon C, Aloxite, Alumina, alpha-Alumina, alpha-Alumina (ACGIH:OSHA), Aluminite 37, Aluminum oxide (Brockmann), Aluminum oxide (ACGIH), alpha-Aluminum oxide, beta-Aluminum oxide, gamma-Aluminum oxide, Aluminum sesquioxide, Alumite (oxide), Alundum (OSHA), Alundum 600, A1-0109 P, A1-3916 P, A1-3970 P, A1-1401 P(MS), A1-0104 T 3/16", A1-1404 T 3/16", A1-3438 T 1/8", A1-3980 T 5/32", A1-4028 T 3/16", Brockmann, aluminum oxide, Cab-O-grip, Catapal S, Catapal SB alumina, Compalox, Conopal, Diadur, Dialuminum trioxide, Dispal alumina, Dispal M, Dotment 324, Dotment 358, Dural, Exolon XW 60, F 360 (Alumina), Faserton, Fasertonerde, G 0 (Oxide), G 2 (Oxide), GK (Oxide), Hypalox II, Jubenon R, KA 101, Ketjen B, KHP 2, LA 6, Lucalox, Ludox CL, Martoxin, Microgrit WCA, Poraminar, PS 1 (Alumina), Q-Loid A 30, RC 172DBMALUMINA, SAPPHIRE

Section 3 - Hazards Identification

Emergency Overview
Target organ(s): Lungs, Bones.

HMIS Rating
Health: 0* Flammability: 0 Reactivity: 1

NFPA Rating
Health: 0 Flammability: 0 Reactivity: 1

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Inhalation Exposure

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

Dermal Exposure

In case of contact, immediately wash skin with soap and copious amounts of water.

Eye Exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

Conditions of Flammability

Material may have an exothermic reaction above 200°C with halocarbon vapors and may produce toxic hydrochloric acid and phosgene.

Autoignition Temp: N/A

Extinguishing Media

Suitable
Water spray, Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting

Protective Equipment

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s)

Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Methods for Cleaning Up

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling

User Exposure

Avoid inhalation. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage

Suitable

Keep tightly closed.

Special Requirements

Very hygroscopic.

Section 8 - Exposure Controls / PPE

Engineering Controls

Safety shower and eye bath. Mechanical exhaust required.

Personal Protective Equipment

Respiratory

Wear dust mask.

Hand

Protective gloves.

Eye

Chemical safety goggles.

Aldrich Chemical - 544833

Page 2

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General Hygiene Measures
Wash thoroughly after handling.

Exposure Limits

Country	Type	Value
Poland	NDS	2 MG/M3
Poland	NDSch	16 MG/M3
Poland	NDSP	-
	TLV	15 mg/m3

OSHA,

Exposure Limits, RTECS

Country	Source	Value
USA	MSHA Standard	
USA	OSHA,	PEL
New Zealand	OEL	8H TWA 15 MG/M3, TOTAL DUST

Remarks: check ACGIH TLV

Section 9 - Physical/Chemical Properties

Appearance

Physical State
Solid

Molecular Weight: 101.96 AMU

pH	9.4 - 10.1	20 °C
BP/BP Range	2,980 °C	
MP/MP Range	2,038 °C	
Freezing Point	N/A	
Vapor Pressure	1 mmHg	2,158 °C
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	4 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point °F	N/A	
Flash Point °C	N/A	
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Refractive Index	1.760 - 1.768	

Solubility

Solubility in Water: Insoluble.

N/A = not available

Section 10 - Stability and Reactivity

Stability

Stable

Stable.

Conditions to Avoid

Protect from moisture.

Materials to Avoid

Strong acids, Strong bases, Chlorine trifluoride, Ethylene oxide, Halocarbons, Oxygen difluoride, Sodium nitrate, Vinyl acetate.

Hazardous Decomposition Products

Hazardous Decomposition Products

Aluminum oxide.

Hazardous Polymerization

Hazardous Polymerization

Will not occur.

Section 11 - Toxicological Information

Route of Exposure

Skin Contact

May cause skin irritation.

Skin Absorption

May be harmful if absorbed through the skin.

Eye Contact

May cause eye irritation.

Inhalation

May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion

May be harmful if swallowed.

Target Organ(s) or System(s)

Lungs, Bones.

Signs and Symptoms of Exposure

Prolonged exposure can cause: Damage to the lungs. Exposure can cause: Coughing, chest pains, difficulty in breathing, Gastrointestinal disturbances.

RTECS Number: BD1200000

Irritation Data

Eyes - Rabbit:

Remarks: No irritation effect

Skin - Rabbit:

Remarks: No irritation effect

Chronic Exposure - Carcinogen

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Rat - Intrapleural: 90 MG/KG

Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Lungs, Thorax, or Respiration: Tumors.

Rat - Implant: 200 MG/KG

Result: Tumorigenic: Neoplastic by RTECS criteria. Tumorigenic: Tumors at site or application.

Rat - Implant: 200 MG/KG
Result: **Tumorigenic**: Equivocal tumorigenic agent by RTECS criteria. Tumorigenic: Tumors at site or application.

ACGIH Carcinogen List

Rating
A4

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material.
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: None
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

US Classification and Label Text

US Statements
Target organ(s): Lungs, Bones.

United States Regulatory Information

SARA Listed: Yes
Demimls: 0.1 %
Notes: This product is subject to SARA section 313 reporting requirements.

TSCA Inventory Item: Yes

Canada Regulatory Information

WHMIS Classification
This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes
NDSL: No

Section 16 - Other Information

Disclaimer

For R&D use only. Not for drug, household or other uses.

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

