

# Safety Data Sheet

Material Name: ALUMINUM OXIDE

SDS ID: CMC00950

## \*\*\* Section 1 - PRODUCT AND COMPANY IDENTIFICATION \*\*\*

**Material Name:** ALUMINUM OXIDE

### Manufacturer Information

CMC Cometals  
CONTACT:  
2050 Center Avenue, Suite 250  
Ft. Lee, NJ 07024  
Mfg Contact: CMC Cometals

EMERGENCY

### Chemical Family

metal oxides

### Synonyms

ALUNDUM; ALUMINA; DIALUMINUM TRIOXIDE; ALUMINUM SESQUIOXIDE; ALPHA-ALUMINA; BETA-ALUMINA; GAMMA-ALUMINA; ALUMITE; ALMITE; MARTOXIN; BAIKALOX POLISHING CHEMICALS (BAIKOWSKI INTERNATIONAL CO.); TABULAR ALUMINA (ALCOA); ALUMINUM OXIDE (AL<sub>2</sub>O<sub>3</sub>); ALUMINUM TRIOXIDE; LINDE A,B,C (UNION CARBIDE CORPORATION); UCAR SF-6, SF-18, SF-2 (UNION CARBIDE CORPORATION); D ALUMINA POWDERS (UNION CARBIDE CORPORATION); 420003704; WESGO ALUMINA CERAMICS; AL<sub>2</sub>O<sub>3</sub>; RTECS: BD1200000

## \*\*\* Section 2 - HAZARDS IDENTIFICATION \*\*\*

### POTENTIAL HEALTH EFFECTS

#### Inhalation

**Short Term:** irritation, metal fume fever, difficulty breathing, lung damage

**Long Term:** same as effects reported in short term exposure

#### Skin

**Short Term:** itching

**Long Term:** no information is available

#### Eye

**Short Term:** mechanical irritation

**Long Term:** no information is available

#### Ingestion

**Short Term:** no information is available

**Long Term:** no information on significant adverse effects

## \*\*\* Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS \*\*\*

| CAS       | Component      | Percent | Symbol(s) | Risk Phrase(s) |
|-----------|----------------|---------|-----------|----------------|
| 1344-28-1 | ALUMINUM OXIDE | 100.0   | ---       | ---            |
|           | 215-691-6      |         |           |                |

### Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Aluminium compounds, Aluminum insoluble compounds, Aluminium oxides, Aluminum Oxide (135152-65-7).

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## \*\*\* Section 4 - FIRST AID MEASURES \*\*\*

### Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

### Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

### Eyes

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

### Ingestion

If a large amount is swallowed, get medical attention.

## \*\*\* Section 5 - FIRE FIGHTING MEASURES \*\*\*

See Section 9 for Flammability Properties

**NFPA Ratings: Health: 1 Fire: 0 Reactivity: 0**

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

### Flammable Properties

Negligible fire hazard.

### Extinguishing Media

Use extinguishing agents appropriate for surrounding fire.

### Fire Fighting Measures

Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

## \*\*\* Section 6 - ACCIDENTAL RELEASE MEASURES \*\*\*

### Occupational spill/release

Large spills: Collect spilled material in appropriate container for disposal. Avoid generating dust. Clean up residue with a high-efficiency particulate filter vacuum.

## \*\*\* Section 7 - HANDLING AND STORAGE \*\*\*

### Storage Procedures

Store and handle in accordance with all current regulations and standards. Store in a tightly closed container. Keep separated from incompatible substances.

## \*\*\* Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION \*\*\*

### Component Exposure Limits

#### ALUMINUM OXIDE (1344-28-1)

**ACGIH:** 1 mg/m<sup>3</sup> TWA (respirable fraction)

**OSHA (US):** 15 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)

**Mexico:** 10 mg/m<sup>3</sup> TWA

### Ventilation

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

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## PERSONAL PROTECTIVE EQUIPMENT

### Eyes/Face

Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

### Protective Clothing

Wear appropriate chemical resistant clothing.

### Glove Recommendations

Wear appropriate chemical resistant gloves.

### Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

Consider warning properties before use.

Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any air-purifying full-facepiece respirator equipped with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any powered, air-purifying respirator with a high-efficiency particulate filter.

Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

#### For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

## \*\*\* Section 9 - PHYSICAL AND CHEMICAL PROPERTIES \*\*\*

|                                      |                |                           |                  |
|--------------------------------------|----------------|---------------------------|------------------|
| <b>Physical State:</b>               | Solid          | <b>Appearance:</b>        | Not available    |
| <b>Physical Form:</b>                |                | <b>Odor:</b>              | Not Available    |
| <b>Odor Threshold:</b>               | Not available  | <b>Melting Point:</b>     | 2053 - 2072 °C   |
| <b>Boiling Point:</b>                | 2980 °C        | <b>Vapor Pressure:</b>    | 1 mmHg @ 2158 °C |
| <b>Vapor Density (air = 1):</b>      | Not applicable | <b>Density:</b>           | Not available    |
| <b>Specific Gravity (water = 1):</b> | 3.965 @ 25 °C  | <b>Water Solubility:</b>  | insoluble        |
| <b>Coeff. Water/Oil Dist:</b>        | Not available  | <b>Volatility:</b>        | <0.5 %           |
| <b>Molecular Weight:</b>             | 101.96         | <b>Molecular Formula:</b> | AL2-O3           |

### Solvent Solubility

**Slightly Soluble:** mineral acids, strong alkali

**Practically Insoluble:** nonpolar organic solvents

## \*\*\* Section 10 - STABILITY AND REACTIVITY \*\*\*

### Chemical Stability

Stable at normal temperatures and pressure.

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## Conditions to Avoid

Avoid generating dust.

## Materials to Avoid

halo carbons, halogens, combustible materials, oxidizing materials

ALUMINUM OXIDE (ALUMINA):

CHLORINATED RUBBER (HOT): Incompatible.

CHLORINE TRIFLUORIDE: Violent reaction and possible ignition.

ETHYLENE OXIDE: May initiate explosive polymerization.

HALOCARBONS: Exothermic reaction above 200 C.

HALOCARBONS + METALS: Exothermic reaction at ambient temperatures.

OXYGEN DIFLUORIDE: Exothermic reaction.

SODIUM NITRATE: May form explosive mixture.

VINYL ACETATE: Possible vigorous reaction.

## Decomposition Products

miscellaneous decomposition products

Thermal decomposition products: miscellaneous decomposition products.

## Possibility of Hazardous Reactions

Will not polymerize.

## \* \* \* Section 11 - TOXICOLOGICAL INFORMATION \* \* \*

### Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

**ALUMINUM OXIDE (1344-28-1)**

Oral LD50 Rat: >5000 mg/kg

### RTECS Acute Toxicity (selected)

The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

### Component Carcinogenicity

**ALUMINUM OXIDE (1344-28-1)**

**ACGIH:** A4 - Not Classifiable as a Human Carcinogen

**DFG:** Category 2 (considered to be carcinogenic for man, fibre dust)

### RTECS Irritation

The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

### Medical Conditions Aggravated by Exposure

respiratory disorders

### RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**ALUMINUM OXIDE (1344-28-1)**

200 mg/kg implant rat TD; 200 mg/kg implant rat TDLo; 90 mg/kg intrapleural rat TDLo

## HEALTH EFFECTS

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## Inhalation - Acute Exposure

METAL FUME FEVER: Metal fume fever, an influenza-like illness, may occur due to the inhalation of freshly formed metal oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur. Tolerance to fumes develops rapidly, but is quickly lost. All symptoms usually subside within 24-36 hours.

## Inhalation - Chronic Exposure

METAL FUME FEVER: There is no form of chronic metal fume fever, however, repeated bouts with symptoms as described above are quite common. Resistance to the condition develops after a few days of exposure, but is quickly lost in 1 or 2 days.

## Inhalation - Other Toxicity Information

ALUMINUM OXIDE (ALUMINA): Inhalation of high concentrations may cause coughing, shortness of breath, respiratory tract irritation due to mechanical action, unpleasant deposits in the nasal passages, and exacerbation of symptoms in persons with impaired pulmonary function. Humans exposed chronically to aluminum oxide, particle size approximately 1.2 microns, did not experience either systemic or respiratory adverse effects. Hydrated aluminum oxide, injected intratracheally, produced dense and numerous nodules of advanced fibrosis in rats, a reticulin network with occasional collagen fibers in mice and guinea pigs, and only a slight reticulin network in rabbits. A production process in which aluminum oxide (bauxite), iron, coke, and silica are fused at 2000 C poses a threat of Shaver's disease, a rapidly progressive and often fatal interstitial fibrosis of the lungs. See information on metal fume fever.

## Skin Contact - Acute Exposure

ALUMINUM OXIDE (ALUMINA): Contact may cause an irritant dermatitis accompanied by pruritis.

## Skin Contact - Chronic Exposure

ALUMINUM OXIDE (ALUMINA): No data available.

## Eye Contact - Acute Exposure

ALUMINUM OXIDE (ALUMINA): Dust may cause mechanical irritation with redness and possibly swelling of the conjunctiva.

## Eye Contact - Chronic Exposure

ALUMINUM OXIDE (ALUMINA): No data available.

## Ingestion - Acute Exposure

ALUMINUM OXIDE (ALUMINA): No data available.

## Ingestion - Chronic Exposure

ALUMINUM OXIDE (ALUMINA): Some aluminum compounds cause constipation.

## \*\*\* Section 12 - ECOLOGICAL INFORMATION \*\*\*

## Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

## \*\*\* Section 13 - DISPOSAL CONSIDERATIONS \*\*\*

## Disposal Methods

Dispose in accordance with all applicable regulations.

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## Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

### \*\*\* Section 14 - TRANSPORT INFORMATION \*\*\*

#### US DOT Information

No Classification assigned.

#### TDG Information

No Classification assigned.

#### ADR Information

No Classification assigned.

#### RID Information

No Classification assigned.

#### IATA Information

No Classification assigned.

#### ICAO Information

No Classification assigned.

#### IMDG Information

No Classification assigned.

### \*\*\* Section 15 - REGULATORY INFORMATION \*\*\*

#### U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

##### ALUMINUM OXIDE (1344-28-1)

SARA 313: 1.0 % de minimis concentration (fibrous forms)

#### SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: No Chronic Health: No Fire: No Pressure: No Reactive: No

#### U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

| Component      | CAS       | CA  | MA  | MN  | NJ  | PA  | RI  |
|----------------|-----------|-----|-----|-----|-----|-----|-----|
| ALUMINUM OXIDE | 1344-28-1 | Yes | Yes | Yes | Yes | Yes | Yes |

Not regulated under California Proposition 65

#### Canada

##### Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

##### ALUMINUM OXIDE (1344-28-1)

1 %

#### Germany Water Classification

##### ALUMINUM OXIDE (1344-28-1)

Number 1346, not considered hazardous to water

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## Component Analysis - Inventory

| Component      | CAS       | US  | CA  | EU  | AU  | PH  | JP  | KR  | CN  | NZ  |
|----------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ALUMINUM OXIDE | 1344-28-1 | Yes | DSL | EIN | Yes | Yes | Yes | Yes | Yes | Yes |

## \* \* \* Section 16 - OTHER INFORMATION \* \* \*

### Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

### Other Information

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