ALUMINA

Safety Data Sheet

According to the Hazard Communication Standard (HCS) (29 CFR 1910.1200)

SECTION 1: Identification

1.1. Identification

Product form : Substance

Trade name : ALUMINA

1.2. Recommended use and restrictions on use

Recommended use : Industrial use

Restrictions on use : Not to be used for any purpose other than the one the product was designed for

1.3. Supplier

Importer
Resonac America, Inc.
2150 North First Street, suite 350, San Jose, CA 95131
+1 408 873 2200（Monday - Friday 09:00 - 17:00 Pacific）

Manufacturer
Resonac Corporation
Tokyo Shiodome Building,
9-1 Higashishimbashi1-chome, Minato-Ku, Tokyo, 105-7325, Japan
rec_cera.div@resonac.com
+81-263-52-0182 (Shiojiri Plant, Monday – Friday 09:00 - 17:00)

1.4. Emergency telephone number

Country	Emergency number
USA	CHEMTREC, USA （Customer number：CCN10573） U.S.A. Domestic call: 1-800-424-9300 International call: +1-703-741-5970

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation	H335	May cause respiratory irritation.
Specific target organ toxicity — Repeated exposure, Category 1	H372	Causes damage to organs (lungs) through prolonged or repeated exposure (Inhalation).

2.2. GHS Label elements, including precautionary statements

Labelling elements according to OSHA HCS 2012

Symbol(s) :

Signal word (GHS US) : Danger

Hazard statement(s) : H335 - May cause respiratory irritation.
H372 - Causes damage to organs (lungs) through prolonged or repeated exposure (Inhalation).

Precautionary statements (GHS US) : P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.
P312 - Call a POISON CENTER or doctor if you feel unwell.
P314 - Get medical advice/attention if you feel unwell
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Name : ALUMINA

Name	Common Name (Synonyms)	Product identifier	%
Aluminum oxide	Alumina	(CAS-No.) 1344-28-1	≥ 98

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

inhalation : Remove person to fresh air and keep comfortable for breathing. Seek immediate medical advice.

skin contact : Rinse immediately and plentifully with water and take medical advice.

eye contact : Wash immediately with plenty water (during 20minutes), also under eyelids. Remove contact lenses, if present and easy to do. Continue rinsing. Ask for urgent medical help even if there are no visible symptoms.

ingestion : Rinse mouth with water, do not induce vomiting, call a doctor.

4.2. Most important symptoms and effects (acute and delayed)

No additional information available

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Non-limiting in particular.

Unsuitable extinguishing media : None to our knowledge.

5.2. Specific hazards arising from the chemical

No additional information available

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Incombustible and stable except for wrapping. No special precaution.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Wear suitable protective clothing, gloves and eye or face protection.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Avoid raising dust. Pay attention that products never flow out to river etc. and never cause influence to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Collect by vacuum cleaner.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Because a fine powder, operate with being based on Ordinance on Prevention of Hazards Due to Dust, and Industrial Safety and Health Law. Use only outdoors or in a well-ventilated area. Never touch, inhale and eat. Never inhale dust and fumes.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in dry protected location to prevent any moisture contact.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Aluminum oxide (1344-28-1)		
ACGIH	ACGIH TWA (mg/m³)	1mg/m³ (respirable particulate matter)
OSHA	OSHA PEL (TWA) (mg/m³)	15mg/m³ (total dust) 5mg/m³ (respirable fraction)
NIOSH	NIOSH REL (TWA) (mg/m³)	10mg/m³ (total dust) 5mg/m³ (respirable dust)

8.2. Appropriate engineering controls

Appropriate engineering controls : Use a sealed equipment, an instrument, or a local exhaust ventilation as possible.

8.3. Individual protection measures/Personal protective equipment

Hand protection : protective gloves

Eye protection : In case of dust production: protective goggles. protective glasses

Skin and body protection : Wear suitable protective clothing

Respiratory protection : Approved dust respirator

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

: white

: Odourless

Odor threshold : No data available

pH : No data available

Melting point / Freezing point : 2053 °C

Boiling point : 3000 °C

Flash point : No data available

Relative evaporation rate (butyl acetate=1) : No data available

Flammability (solid, gas) : Non flammable.

Vapor pressure : No data available

Relative vapor density at 20 °C : No data available

Relative density : No data available

Solubility : Insoluble in water and acid, and soluble infinitesimal in an alkali. And no data available in the case of other solvent.

Partition coefficient n-octanol/water (Log Pow) : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Explosion limits : No data available

Explosive properties : No data available

Oxidizing properties : Not oxidising.

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No specific test data related to reactivity available for this product or its ingredients.

10.2. Chemical stability

Stable in the atmosphere.

10.3. Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

10.4. Conditions to avoid

Avoid dust generation.

10.5. Incompatible materials

No specific data.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

Aluminum oxide (1344-28-1)	
Acute toxicity (Oral)	Rat LD50 >2000mg/kg (ECHA)
Acute toxicity (Inhalation: mist)	Rat LC50 (4hr) >2.3mg/L (ECHA)

Skin corrosion/irritation : Not classified

Aluminum oxide (1344-28-1)	
Skin corrosion/irritation	Rabbit, Skin irritation test: No irritation (ECHA)

Serious eye damage/irritation : Not classified

Aluminum oxide (1344-28-1)	
Serious eye damage/irritation	Rabbit, Eye irritation test: No irritation (ECHA)

Respiratory or skin sensitisation : Not classified

Aluminum oxide (1344-28-1)	
Skin sensitization	Guinea pig, Skin sensitization test: Negative (ECHA)
Respiratory sensitization	Mouse Intratracheal administration test No allergic inflammation in lung (ECHA)

Germ cell mutagenicity : Not classified

Aluminum oxide (1344-28-1)	
Germ cell mutagenecity	Rat, in vivo Micronucleus test (Oral): Negative (ECHA)
	(AlOH) Mouse Lymphoma assay: Negative (ECHA)
	(Nanomaterial) Rat, in vivo Micronucleus test /Chromosomal aberration test: Positive (ECHA)

Carcinogenicity : Not classified

Aluminum oxide (1344-28-1)	
Carcinogenicity	ACGIH Group 4 (Probably not carcinogenic to humans)
	Rat, 86-week Inhalation exposure test, Fibrous : No fibrosis or tumor (ECHA, ACGIH)
	Rat, Intrathoracic administration test, Whisker: No increase of pleural sarcoma; Non-fibrous: No incidence of tumor (DFGMAK, ACGIH)
	Rat, 1-year Inhalation exposure test: No incidence of carcinoma NOAEC＝50mg/m^3 (ECHA)

Reproductive toxicity : Not classified

Aluminum oxide (1344-28-1)	
Reproductive toxicity	(Aluminum citrate) Rat, One-generation reproductive toxicity test (drinking water administration): 1075mg/kg or higher; Urinary tract obstruction in parent animals, decreased grip strength of the extremities in offspring; 3225mg/kg; Delayed sexual maturation, parent animal toxicity and reproductive toxicity NOAEL=322.5mg/kg (ECHA)
	(Poly aluminum chloride) Rat, Combined repeated dose/reproductive toxicity test (administration in drinking water): No reproductive and developmental toxicity, NOAEL=1000mg/kg/day (ECHA)
	(Aluminum hydroxide) Rat, Prenatal developmental toxicity test (oral administration): No parent animal toxicity, pulmonary toxicity, or teratogenicity, NOAEL=266mg/kg/day (ECHA)

STOT-single exposure : May cause respiratory irritation.

Aluminum oxide (1344-28-1)	
Specific target organ toxicity (single exposure)	Rat, Oral toxicity test: 1000mg/kg; No toxic effects (ECHA)
	Rat, 4-hour inhalation toxicity test: 2.3mg/L; Closed eyes, wet nose and perioral region, darkening of the lungs, etc. (ECHA)
	Rat, Intratracheal toxicity test: 50mg; Mild inflammatory response (ECHA)
	Short-term inhalation exposure (high-concentration dust): Eye and upper airway irritation (ICSC)
	(Nanomaterial) Rat, 10-day inhalation toxicity test: 28mg/m^3; Inflammatory reaction in the lungs, 3mg/m^3; No inflammatory reaction (ECHA)

STOT-repeated exposure : Causes damage to organs (lungs) through prolonged or repeated exposure (Inhalation).

Aluminum oxide (1344-28-1)	
Specific target organ toxicity (repeated exposure)	Worker exposure (for 25years): Interstitial fibrosis in the lungs (EHC)
	Worker exposure in an aluminum factory: Dust; No pneumoconiosis (ACGIH); High-concentration mist (>1.0mg/m^3); Increases in wheezing and rhinitis, no embryonic dysfunction (ECHA)
	Rat/Rabbit, 28-week inhalation toxicity test: Structural and functional changes in the trachea or bronchi, chronic lung edema, death (RTECS)
	Rat, 6-month inhalation toxicity test: No pulmonary effects (ECHA)

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Ecotoxicity

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

Aluminum oxide (1344-28-1)	
Ecotoxicity	Fish (Brown trout) NOEC (96hr) >100mg/L (IUCLID)
	Crustacea (Daphnia magna) NOEC (48hr) >100mg/L (IUCLID)
	Algae (Pseudokirchnerella) NOEC (72hr) >100mg/L (IUCLID)

12.2. Persistence and degradability

Aluminum oxide (1344-28-1)	
Persistence and degradability	No data available

12.3. Bioaccumulative potential

Aluminum oxide (1344-28-1)	
Bioaccumulative potential	No data available

12.4. Mobility in soil

Aluminum oxide (1344-28-1)	
Ecology - soil	No data available

12.5. Other adverse effects

Hazardous to the ozone layer

Aluminum oxide (1344-28-1)	
Ozone	Not classified （No data available）

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container under national government /prefectural and city governments /cities, towns and villages regulations.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated

Transportation of Dangerous Goods

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

Aluminum oxide (1344-28-1)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Aluminum oxide (1344-28-1)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Aluminum oxide (1344-28-1)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Aluminum oxide (1344-28-1)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

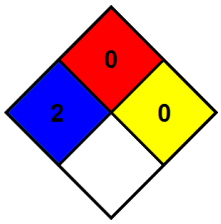
15.3. US State regulations

Aluminum oxide (1344-28-1)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Minnesota - Hazardous Substance List
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Environmental Hazardous Substances List
U.S. - Tennessee - Occupational Exposure Limits - TWAs
U.S. - Massachusetts - Toxics Use Reduction Act
U.S. - Vermont - Permissible Exposure Limits - TWAs
U.S. - Connecticut - Hazardous Air Pollutants - HLVs (8 hr)
U.S. - Washington - Permissible Exposure Limits - TWAs
U.S. - Connecticut - Hazardous Air Pollutants - HLVs (30 min)
U.S. - Washington - Permissible Exposure Limits - STELs
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Emission Levels (ELs)
U.S. - Idaho - Non-Carcinogenic Toxic Air Pollutants - Acceptable Ambient Concentrations
U.S. - New York - Occupational Exposure Limits - TWAs
U.S. - Michigan - Occupational Exposure Limits - TWAs
U.S. - Minnesota - Permissible Exposure Limits - TWAs
U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities
U.S. - New Jersey - Discharge Prevention - List of Hazardous Substances
U.S. - Oregon - Permissible Exposure Limits - TWAs
U.S. - Texas - Effects Screening Levels - Long Term
U.S. - Texas - Effects Screening Levels - Short Term
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

SECTION 16: Other information, including date of preparation or last revision

Issue date	:	05/08/2015
Revision date	:	19/06/2023
Version	:	4.2

NFPA health hazard	:	2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.
NFPA fire hazard	:	0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.
NFPA reactivity	:	0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating

Health	:	2 Moderate Hazard - Temporary or minor injury may occur
Flammability	:	0 Minimal Hazard - Materials that will not burn
Physical	:	0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.
Personal protection	:	E - Safety glasses, Gloves, Dust respirator

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