

### Material Safety Data Sheet

Product Name	CALCINED ALUMINA		
CAS NO	KE NO	UN NO	EC NO
1344-28-1	KE-01012		215-691-6

#### SECTION 1. IDENTIFICATION OF THE SUBSTANCE AND THE COMPANY

- Product NAME: CA-83F, CA-50F, CA-5M, SA-50D, SA-50S
- Application and limit the use :
  - Aluminum production, Synthetic Abrasives, Refractory's, Electric and Electronic Components
  - Limit the use : No data
- Information of Manufactory/Supplier/Distributor
  - Manufactory's Name : KC CORPORATION
  - Address : 85, Sandanseobu-ro, SamHo-Eup, YeongAm-Gun, JeonNam, KOREA
  - Tel : 82-70-7015-1073(Sales div), 82-61-460-7241(Customer support div)
  - Department responsible for information : Sales, Customer support div

#### SECTION 2. HAZARDS IDENTIFICATION

- Hazard Classification :
  - Germ cell mutagenicity : Category. 2
- Warning mark Classification
  - Figure Character :



- Signal : Danger
- Harmful Risk phrases :
  - H341 Suspected of causing genetic defects
- Precautions phrase
  - Precautions
    - P201 Obtain instructions before use.
    - P202 Do not handle until all safety precautions have been read and understood.
    - P280 Wear protective gloves / protective clothing / eye protection / face protection.
  - Measures
    - P308+P313 : Seek medical advice if you get exposure or suspected potential exposure.
  - Storage
    - P405 keep it in a storage under seal.
  - Waste disposal



P501 (In accordance with related regulations) dispose contents and containers.

3. Other Hazardous risk, which was not included in hazardous risk classification standard

- NFPA : Health=0, Fire=No data, Reaction=No data

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

1. Substance description : Aluminum Oxide
2. Synonyms :  $\alpha$ -Alumina
3. CAS No : 1344-28-1
4. Content : Over 99wt%

### SECTION 4. FIRST-AID MEASURES

1. Eye contact : Immediately flush eyes with plenty of water at least 20 minutes. Consult a doctor.
2. Skin contact : Remove contaminated clothing and shoes. Wash with soap and water over than 20 minutes.

In case irritation happens or it is prolonged, consult a doctor.

3. Inhalation : Immediately move individual away from exposure area.

In case inhalation is stopped, do artificial respiration.

In case inhalation is difficult, supply with oxygen.

In case of cough or other symptoms, consult a doctor.

4. Ingestion :

Conscious : Supply with 2~4 cups of water or milk at once.

Unconscious : Don't feed any food. Consult a doctor.

5. Emergency care and the doctor's Note : No data

### SECTION 5. FIRE AND EXPLOSION HAZARDS

1. Appropriate extinguishing media (or Inappropriate extinguishing media) :

◦ Appropriate extinguishing media : Alcohol foam, carbon dioxide or water spray, and dry sand when extinguishment by smothering

- Inappropriate extinguishing media : No data

- Large fire : No data

2. Special exposure hazards arising from the chemical substance.

- Pyrolysis product : Other decomposition products

- Fire & explosion risk : Fire risk could be ignored

3. Protection equipment for fire-fighter & preventive measures :

- Move container from fire area if you can do it without risk.
- Do not inhale substance or combustion products.
- Wear appropriate protective gear for rescuers.
- Extinguish the area and keep at a safe distance.
- Be aware that it may be melted and transported.
- Drill ditches for the disposal of digestive waters and keep them from scattering.
- Move containers from fire area if it is not hazardous.
- In case of tank fire, extinguish at maximum distance or use unmanned fire fighting equipment.



- In case of fire, cool containers with plenty of water even after extinguishing.
- In case of tank fire, if there is a high sound level in the pressure relief device or if the tank is discolored, immediately withdraw it.
- In case of tank fire, withdraw from flame tank.
- In the event of a large fire in a tank fire, use unmanned fire fighting equipment. Retreat and let it burn if it is not possible.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

1. Measures and gears to protect human bodies
  - In case workers are not dangerous, stop the leakage with dustproof masks, safety glasses, safety gloves, dustproof wears
  - Immediately wipe off spillage and follow protective precautions.
  - Remove all ignition sources.
  - Do not touch a damaged container or spill without adequate protection.
  - Cover with plastic sheet to prevent diffusion
  - Be aware of the materials and conditions to avoid
2. Measures to protect environment
  - o Atmosphere : To minimize the spreading, prevent scattering by using tent covering
  - o Soil : Although they do not cause pollutions, isolate spilled materials in the banks to prevent spreading by using some soil or sandbags
  - o Water : Although they do not cause pollutions, use inhalation hose in case of leakage
3. Purification & Removal methods
  - o Take away by using proper containers
  - o Repress raising dust

### SECTION 7. HANDLING & STORAGE

1. Safety Handling Tips
  - o Separate from prohibited mixture materials
  - o Prevent raising dust and scattering
  - o Do not eat or inhale
2. Safe storing methods
  - o Load products on the flat surfaces, do not load more than the number of 3 pallet-layers
  - o Keep in the low - humidity, good ventilation and dried place

### SECTION 8. EXPOSURE CONTROL & PERSONAL PROTECTION

1. Exposure standard of Chemical & biological
  - o Domestic : TWA 10mg/m<sup>3</sup>
  - o ACGIH : TLV TWA 10mg/m<sup>3</sup>
  - o Exposure standard of biological : No data
2. Appropriate Technical measures :
  - Establish waste limited ventilation equipments and control the appropriate speed of wind.
  - Check whether the exposure standard is appropriate or not.



### 3. Personal protection equipments

#### ○ Respiratory protection :

- Respiratory protection is required when the frequency of use is high or exposure is severe.
- Respiratory protection is classified as minimum to maximum concentration.
- Consider warning characteristics before use.
- Respiratory protection for dust, mist and fume.
- Any air-purifying respirator with a high-efficiency particulate filter.
- Respiratory protection with electric fan (dust, mist, fume filter medium).
- Self-contained breathing apparatus with a highly efficient particulate filter.
- When unknown concentration or other imminent danger to life or health, use air supplied respirator(Combined Airline Mask) or air respirator(full face)
- Wear a respirator that has been approved by the Korean Occupational Safety and Health Administration in accordance with the physicochemical properties of the particulate matter to be exposed.
- If the exposure level is lower than 100 mg / m<sup>3</sup>, wear a half face covered type respirator with the appropriate type of filter.
- If the exposure level is lower than 250 mg / m<sup>3</sup>, wear a loose-fitting hood / helmet type electric ventilation respirator with a suitable type of filter or a continuous flow dust mask.
- If the concentration is lower than 500 mg / m<sup>3</sup>, wear a face-shielded, electrically powered, or air-supplied continuous-flow / pressure-demanded,
- If the concentration is lower than 10,000 mg / m<sup>3</sup>, wear a face type or helmet / hood type with a suitable filter, or a pressure-demanded ventilation mask.
- If the concentration is lower than 100,000 mg / m<sup>3</sup>, wear self-contained breathing apparatus (SCBA) or self-contained breathing apparatus with pressure-demand self-contained breathing apparatus (SCBA) with appropriate filter
- Eye protection : Wear safety glasses for the protection against arsenic acid materials and hazardous liquid.  
Establish the eye-washing and emergency cleaning facilities (for shower) near by the place of work.
- Hand protection : Wear appropriate refractory gloves.
- Body protection : Wear a appropriate protection clothing.

## SECTION 9. PHYSICAL & CHEMICAL PROPERTIES

1. Form : White powder
2. Odor : Odorless
3. Odor ability : Not applicable
4. pH : Not applicable
5. Melting point : 2054°C
6. Boiling point : 3000°C
7. Flash point : Not applicable
8. Evaporation Rate : Not applicable
9. Flammability (Solid, Gas) : Not applicable
10. Flammability, explosion range : Not applicable
11. Vapor pressure : 1mmHg(2,158°C)
12. Solubility in water : <0.1mg/l(insolubility)
13. Vapor density : Not applicable



- 14. Specific gravity : 3.98 (25°C)
- 15. Partition coefficient (N-Octanol/Water) : Not applicable
- 16. Autoignition temperature : Not applicable
- 17. Decomposition temperature : Not applicable
- 18. Viscosity : Not applicable
- 19. Molecular Weight : 102

### SECTION 10. SAFETY & REACTIVITY

#### 1. Chemical stability :

- It can decompose at high temperature to generate toxic gas
- The container may explode on heating.
- Some can be burned, but not easily ignite
- Non-flammable. the substance itself does not burn but decomposes on heating, which may cause corrosive / toxic fumes

#### 2. Possibility of Hazardous reaction : Soluble a little in acid, alkaline

#### 3. Conditions to avoid : Heat source, spark, flame, etc.

#### 4. Materials to avoid : Halo carbon compound, Halogen, Flammable material, Oxidant

#### 5. Hazardous decomposition products : Generate other decomposition products by pyrolysis, Corrosive / toxic fumes, toxic gases

### SECTION 11. TOXICOLOGICAL INFORMATION

#### 1. Information about the route of exposure

- Inhalation through respiratory organs : Stimulus, metal, hume, heat, trouble of respiratory and lung
- Ingestion through mouth
- Skin contact : Urtication
- Eye contact : Mechanical irritation

#### 2. Delay by short-term and long-term exposure, acute effects and chronic effects :

##### ○ Acute toxicity :

- Oral : LD50> 10000 mg / kg Species: Rat (No deaths during observation (OECD Guideline 401)
- Dermal : No data
- Inhalation : Dust LC50> 2.3 mg / l 4 hr Species: Rat (No death, EPA 40 CFR 158, OECD Guideline 403, GLP)

##### ○ Skin corrosive or irritation : Observations at 24, 48, and 72 hours after 4 hours exposure to 0.5 g of rabbit (male)

resulted in no stimulation, OECD Guideline 404, GLP

##### ○ Severe eye damage or Irritation : Eye irritation test results for 72 hours in rabbits (male), unstimulated. (OECD

Guideline 405, GLP)

##### ○ Respiratory hypersensitivity : Respiratory sensitization tests on mice (male) revealed non-irritant

##### ○ Skin hypersensitivity : Skin sensitization tests on guinea pigs showed no irritancy (OECD Guideline 406, EPA OPPTS

870.2600, GLP)

##### ○ Carcinogenicity : No data

##### ○ Mutagens : Mammalian erythrocyte micronucleus test results in vivo in rats (female), Positive (OECD Guideline 474)

##### ○ Generative toxicity : Repeated Combination of Dose Toxicity Studies with Regeneration / Development Toxicity

Screening Tests on Rats (Female / Female), No observed adverse effects (OECD Guideline 422, GLP)

○ Target organ systemic toxicity (Single exposure) : Acute toxicity (oral) test results in rats (cancer), no treatment effect, LD50> 2000mg / kg bw (OECD TG 423, GLP)

○ Target organ systemic toxicity (Repeated exposure) : As a result of repeated oral toxicity (28 days) test using rats, LOAEL: 141 or 302 mg / kg, No significant effects were observed (OECD TG 407)

○ Draft hazard : No data

3. Measure of toxicity estimate (Acute toxicity estimate) : No data

### SECTION 12. ECOLOGICAL INFORMATION

1. Aquatic, terrestrial eco-toxicity :

○ Fish: LC50 0.108 mg / ℓ to 0.078 mg / ℓ 96 hr Pimephales promelas ( )

○ Crustaceans: LC50> 3.69 mg / ℓ 48 hr Ceriodaphnia dubia ( )

○ Algae: EC50> 0.024 mg / ℓ 96 hr Scenedesmus subspicatus ( )

2. Residual & resolubility : No data

3. Bioconcentration : No data

4. Soil mobility : No data

5. Other harmful effects :

Fish: Pimephales promelas, NOEC 28d 7.1 mg / L, ECHA,

Crustaceans: Daphnia magna, NOEC 28d 1.89 mg / L, ECHA,

Algae: Pseudokirchneriella subcapitata, 96hr NOEC ≥0.004mg / L, OECD Guideline 201, Alga, Growth Inhibition Test, GLP, poorly soluble substance, water solubility less than 1mg / L.

### SECTION 13. DISPOSAL CONSIDERATION

1. Disposal method : Use one of the following methods.

1). Solidify.

2). Reclaim in managed landfills that designated wastes can be landfilled.

3). Incinerate spent catalysts containing flammable materials.

4). In case of incinerating waste catalyst containing halogenated material, incinerate at high temperature.

2. Note : Pay attention the notice of waste disposal management regulations.

### SECTION 14. TRANSPORTATION INFORMATION

1. UN classification No. : Not applicable

2. UN Sea transport : Not applicable

3. UN Hazard level : Not applicable

4. Container Class : Not applicable

5. Marine pollutant : Not applicable

6. Safety Regulation

○ Fire emergency measures : Not applicable

○ Effluence emergency measures : Not applicable

### SECTION 15. REGULATORY INFORMATION

1. Restrictions by Industrial Safety and Health Law : Materials of Working Environment Measurement(Measurement Cycle: 6 months), Special Medical Examination(Examination Cycle: 12 months), Administering materials, Exposure criterion

### materials

2. Management law of hazardous chemicals : Not applicable
3. Dangerous Goods Safety Management law : Not applicable
4. Waste management law : Not applicable
5. Other domestic & foreign countries regulatory information
  - Residual organic pollutants management : Not applicable
  - EU classification information
    - EINECS : Not applicable
    - Danger phrase : Not applicable
    - Precautions phrase : Not applicable
  - U.S.A regulatory information
    - OSHA (29CFR1910.119) : Not applicable
    - CERCLA 103 (40CFR302.4) : Not applicable
    - EPCRA 302 (40CFR355.30) : Not applicable
    - EPCRA 304 (40CFR355.40) : Not applicable
    - EPCRA 313 (40CFR372.65) : Not applicable
  - Rotterdam Convention material : Not applicable
  - Stockholm Convention material : Not applicable
  - Montreal Protocols material : Not applicable

## SECTION 16. OTHERS INFORMATION

### 1. Provenance :

Industry toxication, Shin-kwang Publisher

TOXNET, U.S National Library of Medicine (<http://toxnet.nlm.nih.gov>)

Corporate Solution From Thomson Micromedex (<http://csi.micromedex.com>)

The Chemical Database, The Department of Chemistry at the University of Akron (<http://ull.chemistry.uakron.edu/erd>)

International Chemical Safety Cards(ICSC) (<http://www.nihs.go.jp/ICSC>)

ECB-ESIS (European chemical Substances Information System) (<http://ecb.jrc.it/esis>)

ECOTOX Database, EPA (<http://cfpub.epa.gov/ecotox>)

System of chemical material information, National environment agency (<http://ncis.nier.go.kr>)

Management system of hazardous material, national emergency management agency (<http://hazmat.nema.go.kr>)

IUCLID Chemical Data Sheet, EC-ECB

### 2. First edition issued : Dec 15, 2003

### 3. New edition issued : Dec 18, 2017

4. Other : This Material Safety Data Sheet was made for employee, buyers, or other people to do the safe handling of this material. Thus, please note that we can not guarantee or don't have any responsibility technically, legally for the use of special purpose or commercial applications and expression.