MSDS NO : AA00258-0000000017

1. Product and Company Identification

A. Product name : Sodium Ortho Silicate

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

○ Recommended Use : 32. Washing and cleaning products
48.Others (For cement, Inert fire protection, refractory, fabric, wood processing)

○ Usage Limits : No data available

C. Details of the supplier of the safety data sheet

○ Company : Youngjin co. ltd.

○ Address : 38, Ojeong-ro, Ojeong-gu, Bucheon-si, Gyeonggi, Korea

○ Department : Quality Control Department

○ Telephone : 82-32-674-4221

2. Hazards Identification

A. Hazards Identification Classification

- Acute Toxicity : dermal toxicity classification 4
- Skin corrosive or irritative substance[1] : classification 1
- Severe eye damage or Eye irritative substance : classification 1
- STOT SE(Specific target organ toxicity-single exposure[2]: classification 3

B. Warning marks

○ Pictorial symbol

○ Signal word: Danger

○ Hazardous expression

H302 Hazardous if swallowed.

H314 Causes severe burn to skin and damage to eyes

1) https://cameochemicals.noaa.gov/chemical/17567#section4 (2024.3.26.)

2) According to the Chemical Management Act Notice, if it is known to temporarily irritate the human respiratory system or airway, or if it is found to irritate the respiratory system as a result of animal testing (respiratory irritation)

H318 Causes severe damage to eyes.

H355 May cause respiratory irritation.

○ Precaution expression

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash thoroughly after handling

P270 While using this product, do not eat, drink, and smoke.

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

○ Respond

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

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

P310 Immediately call a POISON CENTER or doctor/physician.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P363 Wash contaminated clothing before reuse.

○ Storage

P402+P404 Store in a dry place. Use airtight container.

P405 Store locked up

○ Disposal

P501 Dispose of container in conformity with relevant regulations.

C. NFPA Rating (0-4 level): Health=3, Fire=0, Reactivity=0

3. Composition, Information on Ingredients

Chemical Name	Idiomatic name	Percent (%)	CAS No.
Sodium Ortho Silicate	Sodium Ortho Silicate	100%	13472-30-5

4. First Aid Measures

A. Eye Contact

- Take emergency medical service.

- Rinse cautiously with water for several minutes. If possible, remove contact lenses. Continue rinsing.

B. Skin Contact

- Prevent spread of contaminated area if skin contact is slight.
- Take emergency medical service.
- Wash contaminated clothing before reuse.
- In case of hot substance, soak or wash out exposed part with cold water to remove heat.
- Remove contaminated clothing and shoes, and isolate contaminated area.
- If on skin (or hair), take off immediately all contaminated clothing. Rinse skin with water/shower.

C. Inhalation

- Consult medical personnel immediately.

D. Ingestion

- If the person ingested or inhaled the material, do not mouth-to-mouth resuscitation and use proper medical respiratory equipment.
- If swallowed and uncomfortable, consult medical personnel.
- If swallowed, wash mouth out and do not induce vomiting.

E. Other medical notices.

- Let medical personnel recognize the material and take protective measure.
- Symptoms by Inhalation or contact may be delayed.

5. Explosion / Fire Fighting Measures

A. Appropriate (and inappropriate) Extinguishing Media

- Use alcohol foam, carbon dioxide or water spray.
- If extinguishing by smothering, use dry sand or earth.

B. Specific Hazards in Presence of Chemical Substances

- If boiled, container may explode.
- Toxicity: Inhalation, ingestion, skin contact can cause severe injuries and death.
- Nonflammable, but material can decompose and generate corrosive and toxic fume if boiled.
- Contact with molten material can cause severe skin and eye burn.
- Contact with metal causes inflammable hydrogen gas partly.
- As oxidizer, the material may ignite inflammable materials partly.
- While burning, thermal decomposition or combustion can generate irritative and highly

hazardous gas.

C. Precaution and Protective equipments for Fire Fighting

- Rescuer should use appropriate protective equipment.
- Dig a ditch to dispose fire fighting water and keep material not dispersed.
- Keep water out of container.
- If not dangerous, move container from fire area.
- Keep proper distance while extinguishing.
- Fire involving Tanks; After extinguish, cool down container with water spray for considerable time
- Fire involving Tanks; Step back immediately if pressure relief device makes loud sound or tank discolors.
- Fire involving Tanks; Extinguish fire in maximum range or use unmanned fire apparatus in case of tank fires.
- Fire involving Tanks; Do not approach tank in flames.

6. Accidental Release Measures

A. Require measures and protection to protect human body

- Remove all ignition sources.
- Clear spilth immediately, follow precaution of Personal Protection section.
- Keep water out of container.
- If not dangerous, stop any leakage.
- Do not touch broken container or leaked material without appropriate protective clothing.
- Take notice of material and condition to avoid.

B. Required measures to protect environment

- leaked material is corrosive and toxic, and can cause contamination.
- Prevent of inflow into waterway, drain, basement, or closed space.

C. Purification or removal method

- Absorb spilth with inactive material(e.g. dry sand or earth), put into chemical waste container.
- Absorb spilt liquid and wash out contaminated area with detergent and water.

7. Handling & Storage

A. Safe handling

- Do not inhale steam generated from heated material.

- Open cap carefully.
- Work in reference to Engineering Controls and Personal Protection
- Follow all precautions of MSDS/LABEL though container is emptied. Product residues can rest.
- While using this product, do not eat, drink, and smoke.
- Prevent long term or continuous skin contact.
- Do not enter storage area without appropriate ventilation.
- Wash thoroughly after handling.
- Use carefully taking notice of Handling & Storage.
- Pay attention to Conditions and Materials to Avoid.
- Use only in well ventilated place.

B. Safe Storage

- Drain the water out from an empty drum and close properly and put it back to drum regulator or place appropriately.
- Keep away from food and beverage.
- Store in locked storage.
- Pay attention to Conditions and Materials to Avoid.

8. Exposure Controls & Personal Protection

A. Chemical Exposure Limits, Biological Exposure Limit

○ Korean Regulation : No data available
○ ACGIH Regulation : No data available
○ Biological Exposure Limit : No data available

B. Engineering Controls

- Install local exhaust ventilation, use process isolation or other ways to comply tolerable standard.

C. Personal Protective Equipment

○ Respiratory Protection

- When Using Frequently or Severe Exposure Respirators are needed.
- Classified Minimum to Maximum Respiratory concentration. Consider Specifications before use.
- Respiratory protective Equipments for Dust, Smoke & Hume
- Air Filtering Respirators (Highly Effective Particle Filter)
- Powered Fan attached Respirators (Dust, Mist, Hume Filter)
- Self Contained Respirators attached with Highly Effective Particle Filter.

- In case of Unknown Concentration or Life or Health Emergency.
- Air Supplied Respirator(Multi Airline Mask).
- Air Respirator(Face piece)

○ Eyes Protection : Wear dust-proof safety goggles.
○ Hands Protection : Wear appropriate chemical-resistant gloves.
○ Body Protection : Wear appropriate chemical-resistant apron and boots.

9. Physical & Chemical Properties

A. Appearance: White powder.
B. Odor: None.
C. Odor Threshold : None
D. PH: 1% solution : pH 13.
E. Melting point/Freezing point: 1018℃ / No data available
F. Initial Boiling point and Boiling point range: N/A
G. Flash point: No data available.
H. Evaporation Rate: No data available.
I. Flammability (solid, gas): nonflammable
J. Low & Upper limit of Flammable or Explosion Range: N/A.
K. Vapor Pressure: 1.28mmHg
L. Solubility: (1) Solubility in water : 50% (25℃)
(2) Solubility : diluted Sodium Hydroxide
(3) Insolubility : Alcohol, Acids.
M. Vapor Density: N/A
N. Specific Gravity: 1.646(Water=1)
O. n-Octanol/water partition coefficient: 10.87
P. Auto-ignition Temp.: No data available.
Q. Decomposition Temp.: No data available.
R. Viscosity: No data available
S. Molecular Formular / Molecular Weight : $2Na_2O{\cdot}SiO_4 \cdot XH_2O$

10. Stability & Reactivity

A. Chemical stability and Possibility of hazardous reactions

- If boiled, container may explode
- Contact with metal causes inflammable hydrogen gas partly.
- Material is nonflammable and does not burn itself, but can decompose and generate corrosive and toxic fume if boiled.
- As oxidizer, the material may ignite inflammable materials partly.
- Contact with molten substance may cause severe burn to skin and eyes.
- Fire causes irritative, corrosive, toxic gas from material.
- Inhalation of material may be hazardous.
- Partly, solution may generate steam causing dizziness and suffocation.

B. Conditions to Avoid : Heat.

C. Materials to Avoid : Inflammable materials, reductive materials, metals.

D. Hazardous Decomposition Products

- While burning, thermal decomposition or combustion can generate irritative and highly poisonous gas.
- Corrosive and toxic fume.

11. Toxicological Information

A. Information about possible exposure route :

- Short-term exposure(in severe case) : difficulty in breathing, bilster,
- Short-term exposure(severe in some cases) : burn, nausea, vomit, stomachache
- Long-term exposure : Renal disorder.

B. Health effect

○ Acute oral toxicity:

- ORAL[3] : Rat, LD_{50} > 300~2,000mg/Kg
- SKIN : No data available.
- Inhalation : No data available.

○ Skin corrosivity or irritation[4] : According to the potential health risks of ERG 154; May be corrosive to Inhalation, skin, eyes and oral cavity.

○ Severe eye damage or irritation : No data available.

○ Respiratory sensitization : No data available

○ Skin sensitization : No data available.

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3) Ministry of Health, Labor and Welfare, Orthosilicate abstract, https://dra4.nihs.go.jp/mhlw_data/jsp/FileListPage.jsp?parameter_csno=13472-30-5 (2021. 4. 29.)

4) Department of Transportation, 2016 Emergency guidebook (2016. 4. 26) https://pubchem.ncbi.nlm.nih.gov/compound/26051#section=Hazards-Identification

○ Carcinogenesis
- Occupation Safety and Helath Act : No data available
- Ministry of Employment and Labor : No data available
- IARC : No data available
- OSHA : No data available
- ACGIH : No data available
- NTP : No data available
- EU : No data available
- CLP : No data available

○ Gamete Mutagenicity[5]: Does not induce structural aberration or polyploidy, does not induce genetic mutation.

○ Reproductive toxicity[6] : No effects were observed on the reproductive or developmental abilities of parent mice.
For parental male and female rats, NOAEL for systemic toxicity is 10 mg/kg/day, for reproductive and developmental toxicity. For parent and baby rats, 50mg/Kg/day.

○ Specific target organ toxicity (single exposure)[7] :
CAS NO (Sodium metasilicate anhydrous, 6834-92-0) respiratory tract irritation

○ Specific target organ toxicity (repeated exposure) : No data available

○ Aspiration Hazard : No data available

12. Ecological Information

A. Aquatic & Eco-toxicity:
- Fish : LC_{50} 171000000000000 ㎎/ℓ 96 hr
- Crustacean : $LC5_{50}$ 75300000000000 ㎎/ℓ 48 hr
- Algae : EC_{50} 22400000000000 ㎎/ℓ 96 hr

B. Residue property and degradability
- Residue property : log Kow 10.87
- Degradability : No data available

C. Bioaccumulative potential
- Bioaccumulation : BCF 3.162 (source of data : QSAR)

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5) NITE(Japan) https://dra4.nihs.go.jp/mhlw_data/home/file/file13472-30-5.html (2024.3.26.)

6) NITE(Japan) https://dra4.nihs.go.jp/mhlw_data/home/file/file13472-30-5.html (2024.3.26.)

7) Safe Work Australia

- Biodegradation : No data available

D. Movement in soil : No data available.

E. Other hazardous effect : No data available.

13. Disposal Considerations

A. Disposal method

- Dispose container/contents according to Waste Control Act(if specified).

B. Disposal Considerations

- Consider precautions in Waste Control Act(if specified).

14. Transport information

A. UN Number : No data available

B. UN proper shipping name : N/A

C. UN hazardous ranking : N/A

D. Un package group : N/A

E. Marine pollutant : No data available

F. Special precautions:

- In case of fire : N/A
- in case of leakage : N/A

15. Regulatory Information

A. Regulation by Occupation Safety and Health Act : N/A

B. The Chemicals Control Act : N/A

C. Dangerous Material Safety Management Regulation : N/A

D. Waste Control Act : Designated waste

E. Other regulation by Korea and foreign acts

- Korean Regulation

  Persistent organic pollutants control acts : N/A

- Foreign Regulation

  U.S.A management information(OSHA Regulation) : N/A

  U.S.A management information(CERCLA Regulation) : N/A

  U.S.A management information(EPCRA 302 Regulation) : N/A

U.S.A management information(EPCRA 304 Regulation) : N/A
U.S.A management information(EPCRA 313 Regulation) : N/A
U.S.A management information(Roterdame Protocol) : N/A
U.S.A management information(Stockholme Protocol) : N/A
U.S.A management information(Montreal Protocol) : N/A
EU classification information(Classification) : N/A
EU classification information(Risk Phases) : N/A
EU classification information(Safety Phrases) : N/A

16. Other Information

A. Data Source : Korean Occupation Safety and Health Act.
B. Date of establishment : June, 3, 1996.
C. Revision Number and recent revision date : Rev. No.7 /March, 26, 2024.
D. Others : None.