MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ARONCERAMIC C
GENERAL USE: Adhesive
PRODUCT DESCRIPTION: SODIUM SILICATE SYSTEM INORGANIC ADHESIVES
MANUFACTURER:
Company Name: TOAGOSEI CO., LTD.
Address: 1-14-1, Nishi Shimbashi, Minato-ku, Tokyo 105-0003, JAPAN
Telephone Number: OFFICE (TOKYO)+81-3-3597-7275
EMERGENCY TELEPHONE NUMBERS: OFFICE (TOKYO) +81-3-3597-7275
Importer:
Producer: TOAGOSEI CO., LTD.
1-14-1, Nishi Shimbashi, Minato-ku, Tokyo 105-0003, JAPAN
Telephone No.: +81-3-3597-7275    Fax No.: +81-3-3597-7353

2. HAZARDS IDENTIFICATION

IMPORTANT HAZARDS AND EFFECTS
Hazard classification: This material is subject to the GHS classification criteria.
SPECIFIC HAZARDS
HUMAN HEALTH HAZARDS: Causes severe skin burns and eye damage.
    May cause cancer.
    Cause damage to respiratory system.
    May cause damage to lungs through prolonged or repeated exposure.
    Cause damage to respiratory system and kidney through prolonged or repeated exposure.
SAFETY HAZARDS: Strong Alkali (pH12)
ENVIRONMENTAL HAZARDS: No information

[GHS CLASSIFICATION]

Physical hazards
Explosives Not applicable
Flammable gases Not applicable
Flammable aerosols Not applicable
Oxidizing gases Not applicable
Gases under pressure Not applicable
Flammable liquids Not classified
Flammable solids Not applicable
Self-reactive substances and mixtures Not applicable
Pyrophoric liquids Not classified
Pyrophoric solids Not applicable
Self-heating substances and mixtures                      Not classified
Substances and mixtures which, in contact with      Not classified
water, emit flammable gases
Oxidizing liquids                                        Not classified
Oxidizing solids                                          Not applicable
Organic peroxides                                         Not applicable
Corrosive to metals                                       Cannot be classified

Health hazards
Acute toxicity (oral)                                    Cannot be classified
Acute toxicity (dermal)                                  Cannot be classified
Acute toxicity (inhalation [gases])                      Not applicable
Acute toxicity (inhalation [vapors])                     Cannot be classified
Acute toxicity (inhalation [dust/mist])                  Cannot be classified
Skin corrosion/irritation                                Category 1
Serious eye damage/eye irritation                         Category 1
Respiratory sensitization                                Cannot be classified
Skin sensitization                                        Cannot be classified
Germ cell mutagenicity                                    Cannot be classified
Carcinogenicity                                           Category 1
Reproductive toxicity                                     Cannot be classified
Specific target organ/systemic toxicity (single
exposure)                                                 Category 1 (respiratory system)
Specific target organ/systemic toxicity (repeated
exposure)                                                 Category 1 (respiratory system, kidney)
                                                        Category 2 (lungs)
Aspiration hazard                                         Cannot be classified

Environmental hazards
Hazardous to the aquatic environment (acute
aquatic toxicity)                                         Cannot be classified
Hazardous to the aquatic environment (chronic
aquatic toxicity)                                         Cannot be classified

[**GHS LABEL ELEMENTS**]

Pictogram/Symbol:

Signal word:                                               Danger
Hazard statements:                                        Causes severe skin burns and eye damage.
                                                        Causes serious eye damage.
                                                        May cause cancer.
                                                        Cause damage to respiratory system.
                                                        Cause damage to respiratory system and kidney through prolonged or repeated exposure.
                                                        May cause damage to lungs through prolonged or repeated exposure.

Precautionary statements
Safety measures
- Do not eat, drink or smoke when handling this material.
- Do not handle until all safety precautions have been read and understood.
- Use personal protective equipment as required.
- Use only outdoor or in a well-ventilated area.
- Wear protective gloves/clothing and eye/face protection.
- Wash thoroughly after handling.
- Avoid release to the environment.

First aid measures
- Refer to the paragraph of '4. the emergency measures'.

Storage
- Refer to the paragraph of '7. handling in handling and keeping'.

Disposal
- Refer to the paragraph of '13. attention in abandonment'.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CHEMICAL FORMULA</th>
<th>COMPOSITION</th>
<th>CAS NUMBER</th>
<th>EINECS/ELINCS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumina</td>
<td>Al₂O₃</td>
<td>1–5%</td>
<td>1344-28-1</td>
<td>215-691-6</td>
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<tr>
<td>Zirconium compound</td>
<td>Trade Secret</td>
<td>1–5%</td>
<td>Trade Secret</td>
<td>Trade Secret</td>
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<tr>
<td>Metal Silicate</td>
<td>MO·SiO₂</td>
<td>10–20%</td>
<td>Trade Secret</td>
<td>Trade Secret</td>
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<tr>
<td>Silica sand</td>
<td>SiO₂ and others</td>
<td>50–60%</td>
<td>14806007</td>
<td>238-878-4</td>
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<tr>
<td>Water</td>
<td>H₂O</td>
<td>20–30%</td>
<td>7732-18-5</td>
<td>231-791-2</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES
- If inhaled: Remove victim to fresh air and ensure rest in a position that makes breathing easy. Consult a physician.
- In case of skin contact: Immediately wash skin thoroughly with plenty of water. Consult a physician if pain or erythema develops.
- In case of eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses if present and easy to do, and continue flushing. Consult an ophthalmologist immediately.
- If swallowed and victim is conscious: Rinse mouth and consult a physician immediately. Do not give anything by mouth to an unconscious person. Do not induce vomiting. Vomiting increases the risk of injury because the material is corrosive.
- Possible acute and late symptoms: No information

5. FIRE FIGHTING MEASURES
Extinguishing media: This material is nonflammable. Use extinguishing media appropriate for surrounding fire.
Prohibited extinguishing media: This material is nonflammable.
Specific hazards: This material is nonflammable.
Special fire fighting procedures: This material is nonflammable.
Personal protective equipment: This material is nonflammable.

6. ACCIDENTAL RELEASE MEASURES
Personal precautions, protective equipment and emergency procedures:
- Isolate spill area immediately for an appropriate distance in all directions.
- Prevent unauthorized entry.
- Workers must wear appropriate protective equipment (see 8. EXPOSURE CONTROLS / PERSONAL PROTECTION) to avoid contact with eyes and skin, and inhalation of mists or fumes.

Environmental precautions:
- Sweep up spilled material and place in a container.
- Do not release into the environment.
- Take great care not to allow the spill to spread into the environment via river systems etc.
- The collected material is neutralized.

Removal method:
- Large spill: Dike spill using soil, sand etc. to prevent it spreading, and collect in an empty container.
- Small spill: It dilutes with volumes of water, and it neutralizes with the diluted hydrochloric acid or diluted sulfuric acid. The supernatant solution processes the sink and precipitation as earth and stone.

7. HANDLING AND STORAGE

Handling

Technical measures: Follow the section Engineering measures in 8. EXPOSURE CONTROLS / PERSONAL PROTECTION, and wear personal protective equipment.

Local exhaust and general ventilation: Follow the methods for local exhaust and general ventilation, described in 8. EXPOSURE CONTROLS / PERSONAL PROTECTION.

Handling precautions:
- Do not eat, drink or smoke when handling this material.
- Do not handle until all safety precautions have been read and understood.
- Use personal protective equipment as required.
- Use only outdoor or in a well-ventilated area.
- Wear protective gloves/clothing and eye/face protection.
- Wash thoroughly after handling.
- Avoid release to the environment.

Storage

Storage conditions:
- Keep in a tightly closed container, and store in a cool, well-ventilated area.
- Keep away from strong acids, metals, food or feed.
- Store under lock and key.

Incompatibilities: See 10. STABILITY AND REACTIVITY.

Containers and packaging materials: The material corrodes mild steel, copper, aluminum and zinc, so store in a stainless steel or polyethylene container.

8. PERSONAL PROTECTION / EXPOSURE CONTROLS

Engineering measures:
- Install a hand wash basin, eye wash fountain and shower near the handling area. Indicate their locations clearly.
- Install a local exhaust ventilation system as well as a general ventilation system to prevent exposure to mists or vapors.

Exposure limit values:
- Control limits: No information
- Threshold limit values: No information
Personal protective equipment:
- Respiratory protection: Dust mask
- Hand protection: Wear appropriate protective gloves. Synthetic rubber gloves are recommended.
- Eye protection: Wear protective glasses. Wear chemical splash goggles.
- Skin and body protection: Wear the apron type simplicity protection clothes.

Occupational health measures: Wash hands thoroughly and gargle after handling

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color etc.): liquid (Slurry), White ~ Light brown
Odor: Odorless
pH: 12
Melting point/freezing point: No data
Boiling point/initial boiling point and boiling range: No data
Flash point: Nonflammable
Upper/lower flammability or explosive limits: Nonflammable
Vapor pressure (full pressure): Not applicable
Vapor density (air = 1): Not applicable
Specific gravity (relative density) (water = 1): 2.3 at 25°C
Solubility: Non-water solubility
Octanol/water partition coefficient: No data
Auto-ignition temperature: Nonflammable
Decomposition temperature: No data
Odor threshold: Not applicable
Evaporation rate (butyl acetate = 1): Not applicable
Flammability (solid, gas): Not applicable
Viscosity: 55,000 ~ 75,000 mPa·s (20°C)

10. STABILITY AND REACTIVITY

Stability: Stable under ordinary conditions of use and storage.
Hazardous reactivity:
- Incompatibilities: Acids
- Hazardous decomposition products: No information

11. TOXICOLOGICAL INFORMATION

Acute toxicity (oral) LD50 of alumina is more than 5,000mg/kg, but there is no information of LD50 for other components.
Acute toxicity (dermal) No information
Acute toxicity (inhalation [gases]) Not applicable
Acute toxicity (inhalation [vapors]) No information
Acute toxicity (inhalation [dust/mist]) No information
Skin corrosion/irritation Product is classified as Category 1, because the pH of it is about 12.
Serious eye damage/eye irritation Product is classified as Category 1, because the pH of it is about 12.
Respiratory sensitization No information
Skin sensitization: No information
Germ cell mutagenicity: No information
Carcinogenicity: Because silica sand is classified as Category 1 of IARC68 (1997), K of NTP and Category 1 of the Japan Society for occupational Health, it is classified as Category 1.
Reproductive toxicity: No information
Specific target organ/systemic toxicity (single exposure): Because silica sand classified as Category 1 (respiratory system) is contained 10% or more, it is classified as Category 1 (respiratory system).
Specific target organ/systemic toxicity (repeated exposure): Because silica sand classified as Category 1 (respiratory system, kidney) is contained 10% or more, it is classified as Category 1 (respiratory system, kidney). Because alumina classified as Category 1 (lungs) is contained 1% or more and less than 10%, it is classified as Category 2 (lungs).
Aspiration hazard: No information

12. ECOLOGICAL INFORMATION
Ecotoxicity: No information
Persistence and degradability: No information
Bioaccumulative potential: No information
Mobility in soil: No information
Other adverse effects: No information
Environmental standards: No information

13. DISPOSAL INFORMATION
Waste material: • Dispose of in accordance with the relevant regulations and local government standards.
• If disposal is to be carried out by an industrial waste disposal service provider authorized by the local prefectural government or local government, contact them for disposal.
• If the material is disposed of by a contractor, the nature of the material (hazard level, harmfulness, etc.) must be clearly described to the contractor.
Contaminated containers and packaging: • Clean and then recycle containers, or dispose of them in compliance with the relevant regulations and local government standards.
• Remove the contents completely before disposing of empty containers.

14. TRANSPORT INFORMATION
International regulations
Maritime restrictions: Observe IMO regulations.
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN Number</td>
<td>3266</td>
</tr>
<tr>
<td>Guide Number</td>
<td>154</td>
</tr>
<tr>
<td>Proper shipping name</td>
<td>Corrosive liquid, basic, inorganic, n.o.s.</td>
</tr>
<tr>
<td>Class Number</td>
<td>8</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
<tr>
<td>Marine pollutant</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Aviation restrictions</td>
<td>Observe ICAO/IATA regulations.</td>
</tr>
<tr>
<td>UN Number</td>
<td>3266</td>
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Special safety measures: It depends on the paragraph of attention in handling and keeping. Additionally, it depends on general notes concerning the chemical (detriment). It is noted not to damage the container (It doesn't throw out and do not drop). The lid of the container is sealed up and protected.

**15. REGULATORY INFORMATION**

REGULATORY INFORMATION:
- ENCS INVENTORY: Registered

**16. OTHER INFORMATION**

OTHER INFORMATION:

The information on this Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.