Sodium Orthosilicate MSDS

1. Product Name and Identification

Product Name: Sodium Orthosilicate
Synonyms: Sodium Silicate, Disodium Orthosilicate
CAS Number: 13472-30-5
Recommended Uses: Industrial cleaner, Binding agent, Corrosion inhibitor
Manufacturer/Distributor Details:

- **Name:** [Insert Manufacturer/Distributor Name]
- **Address:** [Insert Address]
- **Emergency Contact Number:** [Insert Contact Number]

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2. Composition/Ingredients

Substance/Preparation: Substance
Chemical Name: Sodium Orthosilicate
CAS Number: 13472-30-5
Percent Composition: 100%

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3. Hazards Identification

Classification of the Substance or Mixture:

- **Skin Corrosion/Irritation:** Category 1
- **Serious Eye Damage/Irritation:** Category 1
- **Specific Target Organ Toxicity (Single Exposure):** Category 3 (Respiratory Irritation)

Hazard Statements:

- Causes severe skin burns and eye damage.
- May cause respiratory irritation.

Precautionary Statements:

- Avoid breathing dust or mist.
- Wear protective gloves, eye/face protection, and protective clothing.
- Wash thoroughly after handling.
- If exposed or concerned, seek medical assistance.

Pictograms:

- [Insert placeholder for corrosive and health hazard symbols]

Additional Notes: Dust or mist can irritate the respiratory tract when inhaled in high concentrations.

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4. First Aid Measures

General Information: Seek immediate medical attention for significant exposure.

Eyes: Rinse cautiously with water for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing and seek immediate medical attention.

Skin: Remove contaminated clothing and rinse skin thoroughly with water. If irritation or burn symptoms persist, seek medical attention.

Inhalation: Move the affected person to fresh air. If breathing is difficult, provide oxygen and seek medical attention immediately.

Ingestion: DO NOT induce vomiting. Rinse mouth with water and drink a large amount of water. Seek immediate medical attention.

Important Notes for Physicians: Treat based on symptoms; sodium orthosilicate is corrosive and can cause significant mucosal and tissue damage.

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5. Handling and Storage

Handling:

- Use in a well-ventilated area to minimize inhalation risks.
- Avoid contact with skin, eyes, or clothing.
- Do not eat, drink, or smoke while handling the material.

Storage:

- Store in a well-sealed container in a cool, dry, and well-ventilated area.
- Avoid exposure to moisture and incompatible materials.
- Keep away from acids and strong oxidizing agents.

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6. Exposure Controls/Personal Protection

Engineering Controls:

- Provide local or general exhaust ventilation to control airborne particulates.

Personal Protection Equipment (PPE):

- **Eye Protection:** Safety goggles or face shields.
- **Skin Protection:** Chemical-resistant gloves (e.g., nitrile or neoprene).
- **Respiratory Protection:** Use an approved respirator in case of airborne dust or mist.
- **Other:** Protective clothing to minimize skin exposure.

Hygiene Measures:

- Wash hands and exposed areas thoroughly after handling.
- Remove and wash contaminated clothing before reuse.

Recommended Workplace Exposure Standards:

- No established exposure limits, but dust levels should be minimized as a precaution.

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7. Physical and Chemical Properties

- **Appearance:** White powder or crystalline solid
- **Odor:** Odorless
- **Melting Point:** Decomposes at high temperatures
- **Boiling Point:** Not applicable
- **Flash Point:** Non-flammable
- **pH:** Approximately 12.0–13.0 (1% solution in water)
- **Solubility:** Soluble in water, forming an alkaline solution
- **Density:** Approx. 2.4 g/cm^3
- **Vapor Pressure:** Not applicable
- **Molecular Formula:** Na4SiO4
- **Molecular Weight:** 184.04 g/mol
- **Flammability:** Non-flammable

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8. Stability and Reactivity

Chemical Stability: Stable under normal handling and storage conditions.

Conditions to Avoid: Moisture, heat, and incompatible materials.

Materials to Avoid: Strong acids, reducing agents, and oxidizing agents.

Hazardous Decomposition Products: Reaction with acids may release heat and produce hazardous fumes, including silica and sodium compounds.

Polymerization: Will not occur.

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9. Toxicological Information

Acute Toxicity:

- Oral LD50 (Rat): Approx. 1150 mg/kg (moderate toxicity)

Skin Corrosion/Irritation: Causes severe irritation and burns.

Eye Damage/Irritation: Causes permanent eye damage if exposure is severe or prolonged.

Respiratory Effects: Dust or mist may irritate respiratory pathways; prolonged exposure can lead to coughing, wheezing, and breathing discomfort.

Chronic Effects: Repeated exposure may cause skin and respiratory irritation.

Carcinogenicity: Not classified as a carcinogen by IARC, NTP, or OSHA.

Other Information: Sodium orthosilicate is highly alkaline and poses serious corrosive risks if not handled with care.

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10. Disposal Considerations

Waste Disposal Methods:

- Dispose of product and container according to local, state, and federal regulations.
- Do not release into waterways, soil, or drains without proper neutralization.

Packaging Disposal:

- Fully rinse containers before recycling or disposal. Do not reuse containers.

Environmental Precautions: Sodium orthosilicate may alter pH levels if discharged into natural water systems. Dispose responsibly to minimize environmental impact.
