

SODIUM ALUMINATE

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

SODIUM ALUMINATE  
Synonyms: Sodium aluminium oxide; Aluminate of soda; NaAlO<sub>2</sub>  
CAS: 1302-42-7

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Coagulant/coagulant aid in potable water and effluent treatment; raw material in the pulp and paper industry (Kraft process); construction (set accelerator/waterproofing admixture); intermediate in alumina and zeolite manufacture; water-glass production. For industrial user only.  
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

SURAJ CHEMICALS  
No 92, Govindappa Naicken Street, Shiva Complex, Chennai – 600001, Tamil Nadu, India  
Tel: +91 - 7092722822, +91 - 9840284032 / +91 - 44 - 25393652, 42130281  
Email: sales@surajchemicals.com | Website: www.surajchemicals.com  
GST No: 33ACEPV8190L1ZZ

1.4 Emergency phone number:

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:  
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The product (as solid or as its aqueous solution) is strongly alkaline (pH ≈ 13–14) and is classified as corrosive.

|               |                                      |
|---------------|--------------------------------------|
| Skin Corr. 1A | Skin corrosion, Category 1A, H314    |
| Eye Dam. 1    | Serious eye damage, Category 1, H318 |

2.2 GHS label elements, including precautionary statements:

GHS: Danger

Hazard statements:

H314 – Causes severe skin burns and eye damage.

Precautionary statements:

P260: Do not breathe dust/mist.  
P264: Wash exposed skin thoroughly after handling.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.  
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303+P361+P353: IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water/shower.  
P304+P340: IF INHALED: Remove person to fresh air and keep 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/doctor.  
P405: Store locked up.  
P501: Dispose of contents/container in accordance with local regulations.

2.3 Other hazards which do not result in classification:

Reacts exothermically and violently with acids. May react with certain metals (e.g. aluminium, zinc) under alkaline/moist conditions to liberate flammable hydrogen gas. Not a PBT or vPvB substance.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Sodium Aluminate  
In accordance with Annex 4.3.3 of the GHS, the product contains:

| Identification | Chemical Name / Classification                                    | Concentration                                                                                            |
|----------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| CAS: 1302-42-7 | Sodium Aluminate — Skin Corr. 1A: H314; Eye Dam. 1: H318 – Danger | Technical grade (solid ≈ 95–98%, or supplied as ≈ 35–45% w/w aqueous solution – see specification sheet) |

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

Request medical assistance immediately, showing the SDS of this product.

By inhalation:

Remove the affected person to fresh air and keep at rest. If breathing is difficult, give oxygen. Seek immediate medical attention.

By skin contact:

Remove contaminated clothing immediately. Flush affected skin with large amounts of water for at least 15–20 minutes. Do not apply neutralising chemicals. Seek immediate medical attention for burns.

By eye contact:

Rinse immediately and continuously with plenty of lukewarm water for at least 15–20 minutes, holding eyelids open. Remove contact lenses if present and easy to do. Seek immediate medical/ophthalmological attention.

By ingestion/aspiration:

Do NOT induce vomiting. Rinse mouth with water. Give water or milk to drink if the person is conscious and able to swallow. Seek immediate medical attention.

- 4.2 Most important symptoms/effects, acute and delayed:**  
Severe burns to skin, eyes and mucous membranes on contact; ingestion may cause burns to the mouth, throat, oesophagus and stomach. Effects may be delayed in deeper tissue injury.
- 4.3 Indication of immediate medical attention and special treatment needed, if necessary:**  
Treat as a chemical (alkali) burn. No specific antidote; manage symptomatically under medical supervision.

SECTION 5: FIRE-FIGHTING MEASURES

- 5.1 Suitable extinguishing media:**  
**Suitable:** Non-combustible; use extinguishing media suited to the surrounding fire (water spray, foam, dry chemical powder, carbon dioxide).  
**Unsuitable:** None known, though direct high-pressure water jet on hot/molten material should be avoided (steam/splash hazard).
- 5.2 Specific hazards arising from the chemical:**  
Not combustible, not explosive. May react with aluminium or zinc metal under moist/alkaline conditions, generating flammable/explosive hydrogen gas. Corrosive fume/mist may form if heated strongly in solution.
- 5.3 Special protective actions for fire-fighters:**  
Wear self-contained breathing apparatus and full chemical-resistant/acid-alkali resistant protective clothing. Avoid contact with the corrosive material and its runoff.
- Additional provisions:**  
Contain fire-fighting water/runoff; do not allow to enter drains or watercourses due to high alkalinity.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures:**  
**For non-emergency personnel:**  
Evacuate unnecessary personnel. Avoid contact with skin and eyes. Use the personal protective equipment described in Section 8. Ventilate the area.  
**For emergency responders:**  
Wear full acid/alkali-resistant protective clothing, gloves, boots and face shield/goggles as per Section 8. Act only if trained and equipped for corrosive-material response.
- 6.2 Environmental precautions:**  
Prevent entry into drains, watercourses and soil. The high alkalinity can be harmful to aquatic life and will raise the pH of receiving water significantly. Contain and notify the relevant authority in case of release to the environment.
- 6.3 Methods and materials for containment and cleaning up:**  
Dike/contain the spill. Solid: sweep up and collect in a dry, labelled container. Solution: absorb with inert, non-combustible absorbent or pump into a suitable container. Neutralise residues cautiously with dilute acid only under controlled, trained conditions, as this is strongly exothermic. Do not flush to drains.
- 6.4 Reference to other sections:**  
See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

- 7.1 Precautions for safe handling:**  
**A. General precautions for safe use:**  
Avoid all contact with skin and eyes. Avoid inhalation of dust/mist. Keep away from acids (violent exothermic reaction) and from aluminium/zinc metals (hydrogen gas evolution). Use closed handling systems or local exhaust ventilation where dust/mist may form.
- B. Technical recommendations for the prevention of fires and explosions:**  
Avoid storage/use in aluminium or galvanised (zinc-coated) equipment and containers under moist conditions, as this may generate flammable hydrogen gas. Use mild steel, PVC or other compatible materials of construction.
- C. Technical recommendations on general occupational hygiene:**  
Do not eat, drink or smoke during handling. Wash hands and exposed skin thoroughly after handling and before breaks/meals.
- D. Technical recommendations to prevent environmental risks:**  
Provide bunding/containment for bulk storage and transfer areas. Avoid uncontrolled discharge; neutralise effluent before disposal where required by local regulation.
- 7.2 Conditions for safe storage, including any incompatibilities:**  
**A. Specific storage requirements:**
- |                                      |                                                                       |
|--------------------------------------|-----------------------------------------------------------------------|
| Storage temperature (solution grade) | 5–35°C (avoid freezing; crystallisation may occur at low temperature) |
| Maximum shelf life                   | Typical value — refer to current specification sheet                  |
- B. General conditions for storage:**  
Store in tightly closed, corrosion-resistant containers in a cool, dry, well-ventilated area, segregated from acids, oxidisers and reactive metals. Keep solid grade protected from moisture (hygroscopic).
- 7.3 Specific end use(s):**  
Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

- 8.1 Control parameters:**  
No specific occupational exposure limit is established for sodium aluminate. Treat as an alkaline/corrosive dust or mist; exposure should be controlled to the lowest practicable level and contact avoided entirely per the corrosive classification.
- 8.2 Appropriate engineering controls:**  
Ensure adequate general and/or local exhaust ventilation to keep exposure below the occupational exposure limits (where established) and to keep dust concentrations as low as reasonably practicable. Eyewash station and safety shower should be available in the work area. Consult the manufacturer's information leaflet for storage, use, cleaning and maintenance of PPE.
- B. Respiratory protection:**  
Where dust/mist may be generated above acceptable levels, use a particulate respirator; for higher exposure, use an air-purifying respirator with appropriate cartridge, or supplied-air respirator.
- C. Specific protection for the hands:**  
Chemical-resistant gloves (e.g. PVC, neoprene or butyl rubber), tested for alkali resistance. Replace at any sign of degradation.
- D. Eye and face protection:**  
Chemical safety goggles and/or full face shield mandatory, given the serious eye damage hazard (H318).
- E. Bodily protection:**  
Chemical-resistant apron/coveralls and boots for handling solid or solution grades. Full protective suit for cleaning spills or tank entry.
- F. Additional emergency measures:**  
Emergency shower (ANSI Z358-1, ISO 3864-1:2011, ISO 3864-4:2011) and eyewash stations (DIN 12 899, ISO 3864-1:2011, ISO 3864-4:2011) should be available in the immediate work area.
- Environmental exposure controls:**  
Avoid release of the product to drains, soil and watercourses. See subsection 7.1.D and Section 12.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

- 9.1 Information on basic physical and chemical properties:**

| Appearance             |                                                                                                      |
|------------------------|------------------------------------------------------------------------------------------------------|
| Physical state at 20°C | Solid (white to off-white powder/granules) or liquid (colourless to pale-yellow solution), per grade |

|                                                  |                                                                                                     |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Appearance                                       | White/off-white solid, or clear to pale-yellow viscous liquid (solution grade)                      |
| Odor                                             | Odourless to faint alkaline odour                                                                   |
| Odour threshold                                  | Not relevant *                                                                                      |
| Volatility                                       |                                                                                                     |
| Boiling point at atmospheric pressure (solution) | > 100°C (solution grade)                                                                            |
| Vapour pressure at 20°C                          | Not relevant *                                                                                      |
| Evaporation rate at 20°C                         | Not relevant *                                                                                      |
| Product Description                              |                                                                                                     |
| Density / Relative density at 20°C               | ≈ 1.4–1.5 g/mL (solution grade); Typical value — refer to current specification sheet (solid grade) |
| Dynamic / Kinematic viscosity                    | Typical value — refer to current specification sheet                                                |
| pH (aqueous solution)                            | ≈ 13 – 14 (strongly alkaline)                                                                       |
| Partition coefficient n-octanol/water            | Not applicable (inorganic salt)                                                                     |
| Solubility in water at 20°C                      | Readily soluble (hydrolyses to sodium hydroxide and aluminium hydroxide on dilution/ageing)         |
| Decomposition temperature                        | Not relevant below melting point                                                                    |
| Melting point/freezing point (anhydrous solid)   | ≈ 1650°C (decomposes)                                                                               |
| Flammability                                     |                                                                                                     |
| Flash Point                                      | Non-applicable (inorganic solid/aqueous solution)                                                   |
| Flammability (solid, gas)                        | Non-flammable                                                                                       |
| Autoignition temperature                         | Non-applicable                                                                                      |
| Lower / Upper flammability limit                 | Non-applicable                                                                                      |
| Particle Characteristics                         |                                                                                                     |
| Median equivalent diameter (solid grade)         | Typical value — refer to current specification sheet                                                |

\* Not relevant due to the nature of the product, not providing information on the properties of its hazards. Molecular weight (NaAlO&sub2;): 81.97 g/mol.

9.2 Other information:

|                         |                                                                                           |
|-------------------------|-------------------------------------------------------------------------------------------|
| Explosive properties    | Not explosive                                                                             |
| Oxidising properties    | Not oxidising                                                                             |
| Corrosive to metals     | Corrosive to aluminium and zinc (liberates hydrogen gas); mild steel generally compatible |
| Heat of combustion      | Not relevant (non-combustible)                                                            |
| Surface tension at 20°C | Not relevant *                                                                            |
| Refraction index        | Not relevant *                                                                            |

SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity:**  
Reacts violently and exothermically with acids (neutralisation). Reacts with aluminium and zinc metal (and other amphoteric metals) under moist/alkaline conditions, liberating flammable hydrogen gas. Absorbs atmospheric carbon dioxide and moisture on prolonged exposure to air (solid grade), causing slow carbonation and caking.
- 10.2 Chemical stability:**  
Chemically stable under the indicated conditions of storage, handling and use when kept dry (solid) or in sealed containers (solution) and segregated from incompatible materials.
- 10.3 Possibility of hazardous reactions:**  
Contact with acids can cause a rapid, highly exothermic neutralisation reaction with heat and splashing/spattering. Contact with reactive metals can generate flammable gas in a confined space.
- 10.4 Conditions to avoid:**

| Shock/Friction | Contact with Air         | Increase in Temperature | Sunlight           | Humidity                                    |
|----------------|--------------------------|-------------------------|--------------------|---------------------------------------------|
| Not applicable | Slow carbonation (solid) | No specific hazard      | No specific hazard | Avoid (hygroscopic; solid cakes/hydrolyses) |

10.5 Incompatible materials:

| Acids                                       | Aluminium / Zinc Metal                 | Oxidising Agents | Ammonium Salts                              |
|---------------------------------------------|----------------------------------------|------------------|---------------------------------------------|
| Avoid contact (violent exothermic reaction) | Avoid contact (hydrogen gas evolution) | Avoid contact    | Avoid contact (ammonia liberation possible) |

- 10.6 Hazardous decomposition products:**  
Negligible under normal conditions. On contact with acids: heat and corrosive mist. On contact with aluminium/zinc: hydrogen gas (flammable).

SECTION 11: TOXICOLOGICAL INFORMATION

- 11.1 Information on toxicological effects:**  
Effects are predominantly due to the strong alkalinity (corrosivity) of the product rather than specific systemic toxicity:
- A. Ingestion (acute effect):**  
Causes severe chemical burns to the mouth, throat, oesophagus and stomach. May be fatal if a sufficient quantity is swallowed due to tissue damage/perforation.
- B. Inhalation (acute effect):**  
Dust/mist causes severe irritation/burns to the respiratory tract; may cause chemical pneumonitis if aspirated in quantity.
- C. Contact with skin and eyes (acute effect):**  
Causes severe skin burns. Causes serious, potentially irreversible eye damage, including corneal damage and blindness in cases of significant exposure.
- D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):**  
Classification criteria are not met based on available data. Not listed by IARC.
- E. Sensitizing effects:**  
Not classified as a skin or respiratory sensitiser based on available data.
- F. Specific target organ toxicity (STOT) – single exposure:**  
Classification criteria are not met based on available data beyond the corrosive effects described above.
- G. Specific target organ toxicity (STOT) – repeated exposure:**  
Classification criteria are not met based on available data.
- H. Aspiration hazard:**  
Classification criteria are not met based on available data.

Product-specific toxicological information:

| Identification                     | Acute Toxicity                                                                                           | Genus |
|------------------------------------|----------------------------------------------------------------------------------------------------------|-------|
| Sodium Aluminate<br>CAS: 1302-42-7 | LD50 oral: > 1000 mg/kg (limited by corrosive/lethal effect of alkalinity rather than systemic toxicity) | Rat   |
|                                    | LD50 dermal: Not established for this grade                                                              | –     |

SECTION 12: ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment under GHS criteria based on available data; however, release may cause significant pH elevation harmful to aquatic organisms.

12.1 Toxicity:

| Identification                     | Acute Toxicity                                                                           | Species        | Genus      |
|------------------------------------|------------------------------------------------------------------------------------------|----------------|------------|
| Sodium Aluminate<br>CAS: 1302-42-7 | LC50: Toxicity is pH-driven; effects occur primarily through alkalinity – see note above | Non-applicable | Fish       |
|                                    | EC50: Not established for this grade                                                     | Non-applicable | Crustacean |

12.2 Persistence and degradability:

Inorganic substance; the concept of biodegradability does not apply. Hydrolyses in water/diluted conditions to aluminium hydroxide and sodium hydroxide, which are neutralised/buffered by natural waters over time.

12.3 Bioaccumulative potential:

Not expected to bioaccumulate.

12.4 Mobility in soil:

| Koc                                   | Henry        | Dry Soil         | Moist Soil                                             |
|---------------------------------------|--------------|------------------|--------------------------------------------------------|
| Not relevant (ionic/hydrolysing salt) | Not relevant | Mobile (soluble) | Hydrolyses; aluminium largely immobilised as hydroxide |

12.5 Results of PBT and vPvB assessment:

Non-applicable (inorganic substance; PBT/vPvB criteria apply to organic substances).

12.6 Other adverse effects:

Uncontrolled release can raise the pH of receiving water significantly, which is harmful to aquatic life independent of specific chemical toxicity.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Neutralise cautiously with dilute acid under controlled conditions before disposal/discharge, as permitted by local regulation. Do not discharge directly to drains or watercourses. Dispose of as hazardous (corrosive) waste via a licensed waste contractor where neutralisation on-site is not feasible.  
Refer to national and local regulations on waste management. In India, dispose of in accordance with the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, as amended, through an authorised waste handler/recycler, or as advised by the State Pollution Control Board.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023 principles, as adapted for India):

|                                   |                                                                                            |
|-----------------------------------|--------------------------------------------------------------------------------------------|
| 14.1 UN number                    | UN1819 (solution grade) / UN3262 (corrosive solid, basic, inorganic, n.o.s. – solid grade) |
| 14.2 UN proper shipping name      | SODIUM ALUMINATE SOLUTION / CORROSIVE SOLID, BASIC, INORGANIC, N.O.S. (Sodium Aluminate)   |
| 14.3 Transport hazard class(es)   | 8                                                                                          |
| 14.4 Packing group                | III                                                                                        |
| 14.5 Environmental hazard         | No                                                                                         |
| 14.6 Special precautions for user | Physico-chemical properties: see section 9                                                 |
| 14.7 Transport in bulk            | Subject to applicable bulk-transport provisions for corrosive solids/solutions             |

Transport of dangerous goods by sea (IMDG):

|                                   |                                                                                |
|-----------------------------------|--------------------------------------------------------------------------------|
| 14.1 UN number                    | UN1819 / UN3262                                                                |
| 14.2 UN proper shipping name      | SODIUM ALUMINATE SOLUTION / CORROSIVE SOLID, BASIC, INORGANIC, N.O.S.          |
| 14.3 Transport hazard class(es)   | 8                                                                              |
| 14.4 Packing group                | III                                                                            |
| 14.5 Marine pollutant             | No                                                                             |
| 14.6 Special precautions for user | EmS Codes: F-A, S-B                                                            |
| 14.7 Transport in bulk            | Subject to applicable bulk-transport provisions for corrosive solids/solutions |

Transport of dangerous goods by air (IATA/ICAO):

|                                   |                                                                       |
|-----------------------------------|-----------------------------------------------------------------------|
| 14.1 UN number                    | UN1819 / UN3262                                                       |
| 14.2 UN proper shipping name      | SODIUM ALUMINATE SOLUTION / CORROSIVE SOLID, BASIC, INORGANIC, N.O.S. |
| 14.3 Transport hazard class(es)   | 8                                                                     |
| 14.4 Packing group                | III                                                                   |
| 14.5 Environmental hazard         | No                                                                    |
| 14.6 Special precautions for user | Physico-chemical properties: see section 9                            |
| 14.7 Transport in bulk            | Not relevant for packaged goods                                       |

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation (India):

Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 (as amended)  
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)  
The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996  
Public Liability Insurance Act, 1991  
Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

SECTION 16: OTHER INFORMATION

**Legislation related to safety data sheets:**

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

**Texts of the legislative phrases mentioned in sections 2 and 3:**

H314: Causes severe skin burns and eye damage.

*The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.*

**Advice related to training:**

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

**Principal bibliographical sources:**

United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS); European Chemicals Agency (ECHA) Classification & Labelling Inventory; United Nations Recommendations on the Transport of Dangerous Goods (Model Regulations).

**Abbreviations and acronyms:**

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | PG: Packing Group | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-Pow: Octanol-water partition coefficient | IARC: International Agency for Research on Cancer | STOT SE/RE: Specific Target Organ Toxicity, Single/Repeated Exposure | PBT/vPvB: Persistent, Bioaccumulative and Toxic / very Persistent, very Bioaccumulative

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

**END OF SAFETY DATA SHEET**