SAFETY DATA SHEET

ALUMINIUM CHLORIDE (ANHYDROUS)

CAS No.: 7446-70-0

This Safety Data Sheet is issued by Suraj Chemicals as the distributor/supplier of record, based on manufacturer and published GHS / regulatory reference data for this substance. Users should also consult the specific manufacturer's SDS where available.

1. IDENTIFICATION

GHS Product identifier

ALUMINIUM CHLORIDE, ANHYDROUS
Aluminium trichloride
CAS: 7446-70-0

Other means of identification

Not relevant

Recommended use of the chemical and restrictions on use

Relevant uses: Friedel-Crafts catalyst for petrochemical/organic synthesis, dye and pharmaceutical intermediate manufacture, water treatment (precursor to coagulants), flux in metallurgy. For industrial/commercial user only.

Uses advised against: All uses not specified in this section or in section 7.3.

Supplier's details

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2. HAZARDS IDENTIFICATION

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).

Skin Corr. 1B	Skin corrosion, Category 1B, H314
Eye Dam. 1	Serious eye damage, Category 1, H318
EUH014	Reacts violently with water

GHS label elements, including precautionary statements

GHS: Danger

Hazard statements

H314 – Causes severe skin burns and eye damage.
H318 – Causes serious eye damage.
EUH014 – Reacts violently with water.

Precautionary statements

P260: Do not breathe dust/fume.
P264: Wash hands 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): Take off 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.
P321: Specific treatment (see first aid measures).
P363: Wash contaminated clothing before reuse.
P405: Store locked up.
P501: Dispose of the contents/containers to a licensed hazardous waste contractor.

Other hazards which do not result in classification

Hygroscopic; reacts with atmospheric moisture and water to generate heat and hydrogen chloride (HCl) gas/fumes.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances

Chemical description: Aluminium Chloride, Anhydrous

In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 7446-70-0	Aluminium Chloride, Anhydrous — Skin Corr. 1B: H314; Eye Dam. 1: H318; EUH014 – Danger	≥98% (technical/anhydrous grade)

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

Mixtures

Non-applicable

4. FIRST AID MEASURES

Description of necessary first-aid measures

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

By inhalation

Remove the person affected from the area of exposure immediately, provide fresh air and keep at rest. In case of exposure to HCl fumes from hydrolysis, seek immediate medical assistance.

By skin contact

Remove contaminated clothing immediately. Wash/shower affected skin with plenty of water for at least 15 minutes. Seek immediate medical attention (H314 – severe burns).

By eye contact

Rinse eyes immediately and thoroughly with lukewarm water for at least 15–20 minutes, holding eyelids open. Remove contact lenses if present and easy to do. Seek immediate medical attention (H318).

By ingestion/aspiration

Do NOT induce vomiting. Rinse mouth with water (do not give large volumes of water without medical advice as reaction with water is exothermic/generates HCl). Seek immediate medical attention.

Most important symptoms/effects, acute and delayed

Acute and delayed effects are indicated in sections 2 and 11.

Indication of immediate medical attention and special treatment needed, if necessary

Treat as a chemical burn. Specific treatment: see label/manufacturer's information.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Suitable: Dry sand, dry chemical powder, dry lime. Do NOT use water directly on the product (violent reaction with water/moisture; generates HCl gas and heat)
Unsuitable: Water (direct application to the product); do not use a water jet on burning product

Specific hazards arising from the chemical

Non-flammable but reacts violently and exothermically with water/moisture, generating corrosive hydrogen chloride gas/fume and heat, which can be forceful enough to cause splattering.

Special protective actions for fire-fighters

Wear self-contained breathing apparatus and full acid-resistant protective clothing. Fight surrounding fire with appropriate media; avoid directing water streams onto the product itself. Use water spray only to cool adjacent, unaffected containers from a safe distance.

Additional provisions

Use water spray to cool fire-exposed containers. Prevent fire-fighting water from entering drains or watercourses. Approach the fire from upwind where possible.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Isolate the leak/spill area. Do not allow water or moisture to contact the spilled product. Use appropriate PPE (see section 8) and evacuate non-essential personnel.

For emergency responders

Wear protective equipment. Keep unprotected persons away. See section 8.

Environmental precautions

Avoid any contact with water/moisture during containment. Prevent product and reaction run-off (containing HCl) from entering drains, watercourses or soil. Notify the relevant authority in case of significant release.

Methods and materials for containment and cleaning up

Cover with dry sand, dry lime or other inert dry absorbent; do NOT use water. Sweep up carefully avoiding dust generation and place in dry, closed, labelled containers. Ventilate the area to disperse any HCl fume generated by incidental moisture contact.

Reference to other sections

See sections 8 and 13.

7. HANDLING AND STORAGE

Precautions for safe handling

A. General precautions for safe use

Handle under dry conditions at all times. Avoid contact with skin, eyes and clothing. Avoid breathing dust/fume. Keep containers tightly closed except when dispensing.

B. Technical recommendations for the prevention of fires and explosions

Not flammable; however, contact with water/moisture generates heat and corrosive HCl gas which can pressurise sealed, contaminated containers. Keep away from water sources during handling.

C. Technical recommendations on general occupational hygiene

Do not eat, drink or smoke while handling. Wash hands and exposed skin thoroughly after use.

D. Technical recommendations to prevent environmental risks

Prevent moisture ingress into storage/handling areas; contain and neutralise any accidental hydrolysis run-off before discharge.

Conditions for safe storage, including any incompatibilities

A. Specific storage requirements

Minimum Temp.	5°C
Maximum Temp.	30°C
Maximum time	12 Months (in original sealed, moisture-proof packaging)

B. General conditions for storage

Store in tightly sealed, moisture-proof containers in a cool, dry, well-ventilated place, isolated from water sources, strong bases and incompatible materials (see section 10.5). For additional information see subsection 10.5.

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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Substances whose occupational exposure limits have to be assessed in the workplace, per the Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987):

Identification	Occupational Exposure Limit Type	Value
Hydrogen Chloride (hydrolysis product) CAS: 7647-01-0	Short-term exposure limit (Ceiling)	5 ppm (general reference value)

Appropriate engineering controls

It is recommended to use localized extraction in the work area as a collective protection measure to avoid exceeding occupational exposure limits, in addition to individual protective equipment (PPE) as needed. Consult the manufacturer's information leaflet for storage, use, cleaning and maintenance of PPE. Provide local exhaust ventilation at points of dust/fume generation (e.g., bag opening, transfer points), especially where ambient humidity is significant.

B. Respiratory protection

Use a respirator with an acid-gas cartridge or self-contained breathing apparatus where dust/fume (including HCl from incidental hydrolysis) may be present; ensure adequate local exhaust ventilation.

C. Specific protection for the hands

Chemical-resistant gloves (e.g., neoprene, PVC or butyl rubber); replace at first sign of damage or contamination.

D. Eye and face protection

Chemical splash goggles and a face shield (H314/H318 – severe burn/eye damage hazard).

E. Bodily protection

Acid-resistant protective clothing, apron and footwear; avoid clothing that can trap moisture against the skin.

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.

Environmental exposure controls

Avoid environmental spillage of both the product and its container. See subsection 7.1.D.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	
Physical state at 20°C	Solid (powder/lumps)
Appearance	Crystalline powder, hygroscopic
Color	Yellowish-white to pale yellow (traces of iron may impart colour)
Odor	Pungent, HCl-like (due to hydrolysis by atmospheric moisture)
Odour threshold	Not established
Volatility	
Boiling point at atmospheric pressure	Sublimes at ~180°C
Vapour pressure at 20°C	Low; sublimes on heating
Evaporation rate at 20°C	Not relevant (solid)
Product Description	
Density / Relative density at 20°C	2.44 g/cm³ (literature)
Dynamic / Kinematic viscosity	Not applicable (solid)
Concentration	See section 3
pH	~2–3 (aqueous solution – strongly acidic due to hydrolysis; literature)
Vapour density at 20°C	Not relevant (solid)
Partition coefficient n-octanol/water 20°C	Not applicable (inorganic salt; hydrolyses in water)
Solubility in water at 20°C	Highly soluble; reacts/hydrolyses violently, generating heat and HCl gas
Decomposition temperature	Sublimes/decomposes ~180°C
Melting point/freezing point	192.4°C (under pressure; sublimes at atmospheric pressure)
Flammability	
Flash Point	Non-applicable (non-combustible solid)
Flammability (solid, gas)	Non-flammable
Autoignition temperature	Non-applicable
Lower / Upper flammability limit	Non-applicable
Particle Characteristics	
Median equivalent diameter	Available on request (grade dependent)

** Hygroscopic, corrosive solid – handle strictly under dry conditions.*

Other information

Explosive properties	Not relevant (non-explosive)
Oxidising properties	Non-oxidising
Corrosive to metals	Corrosive to most common metals in the presence of moisture (via HCl generation)
Heat of combustion	Not relevant (non-combustible)
Surface tension at 20°C	Not relevant (solid)
Refraction index	Not relevant (solid)

10. STABILITY AND REACTIVITY

Reactivity

Reacts violently and exothermically with water and atmospheric moisture, generating heat and hydrogen chloride gas (EUH014). Corrosive to many metals when moist.

Chemical stability

Stable when kept dry, sealed and away from moisture. Hygroscopic – absorbs atmospheric moisture readily, initiating hydrolysis.

Possibility of hazardous reactions

Contact with water/moisture is the principal hazardous reaction (exothermic, HCl gas evolution, potential spattering). Reacts violently with strong bases and certain organics (Friedel-Crafts reactivity).

Conditions to avoid

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Absorbs moisture from air (hygroscopic)	Sublimes/decomposes on heating	Stable	Reacts violently – keep strictly dry

Incompatible materials

Water / Moisture	Strong Bases	Strong Oxidising Agents	Organic Materials (Friedel-Crafts reactive)
Reacts violently – avoid all contact	Violent reaction	Avoid contact	Avoid contact

Hazardous decomposition products	Hydrogen chloride (HCl) gas/fume on contact with water or moisture; aluminium oxide/hydroxide residue.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result depending on the means of exposure:

A. Ingestion (acute effect)

Corrosive; causes severe burns to the mouth, throat, oesophagus and stomach if swallowed. Do not induce vomiting.

B. Inhalation (acute effect)

Dust and hydrolysis fumes (HCl) are corrosive to the respiratory tract; may cause severe irritation, coughing and, at high concentration, chemical burns to the airways.

C. Contact with skin and eyes (acute effect)

Causes severe skin burns (H314) and serious, potentially irreversible eye damage (H318) on contact, including via fume/dust contact with moist skin or eyes.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity)

Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data.

E. Sensitizing effects

Classification criteria for respiratory or skin sensitisation are not met based on available data.

F. Specific target organ toxicity (STOT) – single exposure

Corrosive/irritant effects on the respiratory tract are covered under section 11.B; not separately classified as STOT-SE based on available data.

G. Specific target organ toxicity (STOT) – repeated exposure

Classification criteria are not met based on available data.

H. Aspiration hazard

Not relevant (solid).

Product-specific toxicological information

Identification	Acute Toxicity	Genus
Aluminium Chloride, Anhydrous CAS: 7446-70-0	Not classified for acute oral/dermal toxicity based on available data; corrosive (Skin Corr. 1B/Eye Dam. 1) hazard dominates the toxicological profile	–

12. ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment under core GHS criteria; however, hydrolysis lowers pH sharply and can be locally harmful to aquatic life.

Toxicity

Identification	Acute Toxicity	Genus
Aluminium Chloride, Anhydrous CAS: 7446-70-0	Not established for this substance directly (rapid hydrolysis in water alters test conditions); aquatic effects are primarily pH-driven	Fish / Crustacean

Persistence and degradability

Hydrolyses rapidly and essentially completely in water to hydrated aluminium species and hydrochloric acid; concept of biodegradability is not applicable (inorganic).

Bioaccumulative potential

Not expected to bioaccumulate.

Mobility in soil

Koc	Henry	Dry Soil	Moist Soil
Not applicable	Not applicable	Reacts on contact with moist soil	Reacts on contact

Results of PBT and vPvB assessment

Non-applicable (inorganic substance).

Other adverse effects

Sharp local pH depression on hydrolysis can be acutely harmful to aquatic organisms; avoid any release to water bodies.

13. DISPOSAL CONSIDERATIONS

Disposal methods

Do NOT flush with water without controlled neutralisation. Carefully neutralise small residues with dilute alkali (e.g., soda ash/lime slurry) under controlled conditions with adequate ventilation, then dispose of the neutralised, hydrated residue via a licensed hazardous waste contractor in accordance with local regulations. Contaminated packaging should be handled with the same precautions as the product.

Refer to national and local regulations on waste management (Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016, as amended).

14. TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023)

14.1 UN number	UN2581
14.2 UN proper shipping name	ALUMINIUM CHLORIDE, ANHYDROUS
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; keep dry
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22)

14.1 UN number	UN2581
14.2 UN proper shipping name	ALUMINIUM CHLORIDE, ANHYDROUS
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 | Keep dry
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024)

14.1 UN number	UN2581
14.2 UN proper shipping name	ALUMINIUM CHLORIDE, ANHYDROUS
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; keep dry
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

15. REGULATORY INFORMATION

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

Manufacture, Storage and Import of Hazardous Chemicals Rules 1989
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

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.
H318: Causes serious eye damage.
EUH014: Reacts violently with water.

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 GHS (Rev. 8); ECHA Classification & Labelling Inventory; publicly available peer-reviewed and regulatory toxicological/ecotoxicological literature for this CAS number.

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 | COD: Chemical Oxygen Demand | BOD5: 5-day biochemical oxygen demand | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer

Disclaimer: 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.

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