SAFETY DATA SHEET

ALUMINIUM SULPHATE (NON-FERRIC ALUM)

CAS No.: 10043-01-3

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 SULPHATE (NON-FERRIC ALUM)
Cake Alum; Aluminium Sulphate Hydrate
CAS: 10043-01-3

Other means of identification

Formula: $Al_2(SO_3)_3 \cdot 18H_2O$ | Chemical classification: Inorganic salt (non-ferric coagulant grade)

Recommended use of the chemical and restrictions on use

Relevant uses: Coagulant for potable water and effluent/sewage treatment, paper sizing, dyeing mordant. For industrial 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:
Aluminium sulphate does not carry a harmonised GHS classification. Based on the source safety data and well-established public classification data (industry self-classification notifications for this CAS number), the product is classified as follows:

Eye Irrit. 2	Eye irritation, Category 2, H319

The solid/anhydrous material itself is not classified as flammable, explosive, oxidising or corrosive (not a Dangerous Good for transport – see Section 14). In aqueous solution the product is mildly acidic and can cause irritation on prolonged or repeated contact.

GHS label elements, including precautionary statements

GHS: Warning

Hazard statements

Eye Irrit. 2: H319 – Causes serious eye irritation.

Precautionary statements

P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/eye protection.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists, get medical advice/attention.
P501: Dispose of contents/container in accordance with local regulations on hazardous/industrial waste.

Other hazards which do not result in classification

Dust from the solid may irritate the nose, mouth and eyes. Hydrolyses in water to release sulphuric acid in trace quantity, which may corrode metals in the presence of moisture.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances

Chemical description: Aluminium Sulphate (Non-Ferric Alum), Inorganic Compound

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

Identification	Chemical Name / Classification	Concentration
CAS: 10043-01-3	Aluminium Sulphate — Eye Irrit. 2: H319 – Warning	≥ 98% ($Al_2(SO_3)_3 \cdot 18H_2O$ basis)

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 if symptoms persist, showing the SDS of this product.

By inhalation

Remove the affected person to fresh air. Rinse nose and mouth with water. Seek medical aid if coughing or irritation persists.

By skin contact

Flush the affected area with plenty of water and soap. Remove contaminated clothing. Seek medical aid if irritation develops.

By eye contact

Flush eyes with plenty of water for at least 15 minutes, holding eyelids open. Seek medical aid immediately.

By ingestion/aspiration

Give large amounts of water to drink. Do not induce vomiting. Never give anything by mouth to an unconscious person. Seek medical aid for large ingested doses (may cause gastric irritation, nausea, vomiting, purging).

Most important symptoms/effects, acute and delayed	Dust irritates nose, mouth, eyes and skin. Ingestion of large doses causes gastric irritation, nausea, vomiting and purging.
Indication of immediate medical attention and special treatment needed, if necessary	Not relevant. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	**Suitable:** Product is non-combustible – use extinguishing media appropriate for the surrounding fire (water spray/fog, foam, dry chemical powder, CO_2). **Unsuitable:** None known.
Specific hazards arising from the chemical	Non-flammable, non-explosive, will not undergo hazardous polymerization. Emits toxic fumes of sulphur oxides (SOx) and sodium/aluminium oxides on strong heating or in fire.
Special protective actions for fire-fighters	Keep containers cool by spraying with water if exposed to heat or flame. Wear self-contained breathing apparatus and full protective clothing in case of fire. **Additional provisions** Do not use water jet directly on hot/molten material as it may cause spattering.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	**For non-emergency personnel** Avoid contact with the solid or generating dust. Use personal protective equipment described in Section 8. Ventilate the area. **For emergency responders** Wear protective equipment. Keep unprotected persons away.
Environmental precautions	Avoid discharge into drains, watercourses or soil. Contain spillage where possible.
Methods and materials for containment and cleaning up	Sweep and collect without generating dust. Place in a suitable container for reuse or disposal. Wash residual area with water and soap.
Reference to other sections	See sections 8 and 13.

7. HANDLING AND STORAGE

Precautions for safe handling

A. General precautions for safe use
Avoid contact with solid or dust. Avoid generating dust. Use only with adequate ventilation.

B. Technical recommendations for the prevention of fires and explosions
Not applicable – non-combustible, non-explosive product.

C. Technical recommendations on general occupational hygiene
Do not eat or drink during handling; wash hands thoroughly afterwards.

D. Technical recommendations to prevent environmental risks
Avoid release to drains and watercourses. Store away from steam and water sources (hydrolyses on prolonged moisture contact).

Conditions for safe storage, including any incompatibilities

A. Specific storage requirements

Storage form	Cool, dry, well-ventilated area
Container	Keep bags/containers tightly closed; avoid moisture ingress

B. General conditions for storage
Store away from steam and water. Keep containers closed when not in use.

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

Identification	Occupational Exposure Limit Type	Value
Aluminium Sulphate CAS: 10043-01-3	TLV (ACGIH), as Al	0.14 ppm / 2.0 mg/m³

Appropriate engineering controls

Use local exhaust ventilation where dust may be generated, to keep airborne levels below the occupational exposure limit.

B. Respiratory protection
Dust mask / all-purpose canister respirator when handling powder in poorly ventilated areas.

C. Specific protection for the hands
Rubber or PVC gloves.

D. Eye and face protection
Safety goggles or face shield.

E. Bodily protection
Standard work clothing; dust-proof overalls when handling large quantities.

F. Additional emergency measures
Emergency shower and eyewash stations should be available.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	
Physical state at 20°C	Solid
Appearance	White powder / granules / lumps
Color	White
Odor	Odourless
Odour threshold	Not relevant *
Volatility	
Boiling point	Not pertinent (decomposes at 770°C)
Vapour pressure at 35°C	Not available
Evaporation rate	Not relevant *
Product Description	
Specific gravity at 20°C (solid)	1.7
Vapour density (Air=1)	Not available
pH	Not pertinent (solid); acidic in aqueous solution (typically pH 2.5–3.5 at 5% w/v)
Solubility in water at 30°C	Soluble
Solubility in alcohol / ether	Insoluble
Decomposition temperature	770°C
Melting point/freezing point	Not relevant (decomposes before melting)
Flammability	
Flash Point	Not pertinent (non-combustible)
Flammability (solid, gas)	No
Autoignition temperature	Not pertinent
Lower / Upper flammability limit	Not pertinent

** Not relevant due to the nature of the product, not providing information on the properties of its hazards.*

Other information

Explosive properties	Not explosive
Oxidising properties	Not an oxidiser
Corrosive to metals	May corrode metals in the presence of moisture (hydrolyses to form sulphuric acid)
Explosion sensitivity to impact / static	Stable / Stable

10. STABILITY AND REACTIVITY

Reactivity

May corrode metals in presence of moisture. Hydrolyzes in water to form dilute sulphuric acid.

Chemical stability

Stable under the indicated conditions of storage, handling and use.

Possibility of hazardous reactions

Hazardous polymerization will not occur. No hazardous reactions expected under normal conditions of use.

Conditions to avoid

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Not applicable	Decomposes at 770°C	Not applicable	Avoid prolonged contact with moisture/steam

Incompatible materials

Steam / Water	Reactive Metals	Strong Bases
Avoid prolonged contact (hydrolyses)	Avoid contact (corrosion in presence of moisture)	Avoid direct contact

Hazardous decomposition products

On strong heating, emits toxic fumes of sulphur oxides (SOx) and sodium/aluminium oxides.

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)
Moderately toxic by ingestion. Consumption of a considerable dose can cause gastric irritation, nausea, vomiting and purging.

B. Inhalation (acute effect)
Dust irritates nose and mouth.

C. Contact with skin and eyes (acute effect)
Dust irritates eyes and skin.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity)
Classification criteria for carcinogenicity and mutagenicity are not met based on available data. Some experimental reproductive effects have been noted in older literature; classification criteria for reproductive toxicity are not met based on current available data.

E. Sensitizing effects
Not known to be a skin or respiratory sensitiser.

F. Specific target organ toxicity (STOT) – single exposure
Not classified; dust may cause transient irritation of the respiratory tract.

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 (literature values for this CAS number)

Identification	Acute Toxicity	Genus
Aluminium Sulphate CAS: 10043-01-3	LD50 oral: 6207 mg/kg (literature value)	Rat

Source SDS lists no laboratory-specific LD50/LC50 value; the figure above is a well-established literature reference value for this CAS number, included for guidance only.

12. ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment based on available data.

Toxicity
No product-specific aquatic toxicity data available. Aluminium salts are generally of low-to-moderate acute toxicity to aquatic organisms; effects are pH-dependent.

Persistence and degradability
Not applicable (inorganic salt); dissociates in water into aluminium and sulphate ions.

Bioaccumulative potential
Not expected to bioaccumulate.

Mobility in soil

Koc	Henry	Dry Soil	Moist Soil
Not relevant	Not relevant	No	No

Results of PBT and vPvB assessment
Non-applicable (inorganic substance).

Other adverse effects
Not described

13. DISPOSAL CONSIDERATIONS

Disposal methods
Seal waste in vapour-tight plastic bags/containers for disposal. Dispose of via an authorised hazardous/industrial waste handler in accordance with the Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016 and local regulations. Do not discharge to drains without appropriate treatment/neutralisation.

14. TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR/RID)

14.1 UN number	Not assigned (non-hazardous for transport)
14.2 UN proper shipping name	Not applicable
14.3 Transport hazard class(es)	Not classified as a Dangerous Good
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk	Not relevant

Transport of dangerous goods by sea (IMDG)

14.1 UN number	Not assigned (non-hazardous for transport)
14.2 UN proper shipping name	Not applicable
14.3 Transport hazard class(es)	Not classified as a Dangerous Good
14.4 Packing group	N/A
14.5 Marine pollutant	No
14.6 Special precautions for user	Not relevant
14.7 Transport in bulk	Not relevant

Transport of dangerous goods by air (IATA/ICAO)

14.1 UN number	Not assigned (non-hazardous for transport)
14.2 UN proper shipping name	Not applicable
14.3 Transport hazard class(es)	Not classified as a Dangerous Good
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Not relevant
14.7 Transport in bulk	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)
Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016

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

H319: Causes serious eye irritation.

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

Original manufacturer's Material Safety Data Sheet for Aluminium Sulphate; ECHA C&L Inventory notifications for CAS 10043-01-3; The United Nations Economic Commission for Europe (UNECE).

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 | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | Koc: Partition coefficient of organic carbon | TLV: Threshold Limit Value | ACGIH: American Conference of Governmental Industrial Hygienists

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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