

SAFETY DATA SHEET

Polyaluminium Chloride Solution, 18%

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name

Polyaluminium Chloride Solution, 18%

Other names / Synonyms

PAC, PACL, Polyaluminium Chloride Hydroxide Sulfate, Aluminium chloride hydroxide sulfate, Aluminium hydroxychlorosulfate

The product is formed by the action of hydrochloric and sulfuric acids on aluminium trihydroxide, to give a solution in water. Total aluminium content is 9.6% (18% as Al₂O₃); total strength as PAC is about 40%

Unique formula identifier (UFI)

DFP0-V07R-F009-E2E7

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses of the substance or mixture

Treatment of drinking water, has received approval by the European Committee for Standardisation. Treatment of waste water., Treatment of drinking water, European Committee Approval , Treatment of waste water Restricted to professional users.

Uses advised against

None known.

1.3. Details of the supplier of the safety data sheet

▼ Company and address

Industrial Chemicals Limited

Jupiter House,
Warley Hill Business Park,
The Drive,
Warley,
Brentwood,
Essex,
CM13 3BE
United Kingdom
+44 (0)1375 389000
+44 (0)1375 389110
www.icgl.co.uk

Only representative

Reach Monitor

Orient 78-84, 5^o, 2^a. 08172 Sant Cugat del Vallès.
Barcelona
Spain

E-mail

sds@icgl.co.uk

Revision

12/02/2024

SDS Version

6.0

Date of previous version

02/01/2024 (6.0)

1.4. Emergency telephone number

Contact The National Poisons Information Service (dial 111, 24 h service).
See section 4 "First aid measures".

SECTION 2: Hazards identification

Classified according to Regulation (EC) No. 1272/2008 (CLP) as retained and amended in UK law.

2.1. Classification of the substance or mixture

Met. Corr. 1; H290, May be corrosive to metals.

Eye Dam. 1; H318, Causes serious eye damage.

2.2. Label elements

Hazard pictogram(s)



Signal word

Danger

Hazard statement(s)

May be corrosive to metals. (H290)

Causes serious eye damage. (H318)

Precautionary statement(s)

General

-

Prevention

Wear face protection/protective gloves/protective clothing. (P280)

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing. (P305+P351+P338)

Immediately call a POISON CENTER/doctor. (P310)

Absorb spillage to prevent material damage. (P390)

Storage

Store in a container with a resistant inner liner. (P406)

Disposal

-

Hazardous substances

Aluminum chloride hydroxide sulphate

Additional labelling

UFI: DFP0-V07R-F009-E2E7

2.3. Other hazards

Additional warnings

This mixture/product does not contain any substances known to fulfil the criteria for PBT and vPvB classification.

This product does not contain any substances considered to be endocrine disruptors in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable. This product is a mixture.

3.2. Mixtures

Product/substance	Identifiers	% w/w	Classification	Note
Water	CAS No.: 7732-18-5 EC No.: 231-791-2 UK-REACH: Index No.:	60-80%		
Aluminum chloride hydroxide sulphate	CAS No.: 39290-78-3 EC No.: 254-400-7 UK-REACH: 01-9903480637-4-0001 Index No.:	35-45%	Met. Corr. 1, H290 Eye Dam. 1, H318	

See full text of H-phrases in section 16. Occupational exposure limits are listed in section 8, if these are available.

Other information

-

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

In the case of accident: Contact a doctor or casualty department – take the label or this safety data sheet. Contact a doctor if in doubt about the injured person's condition or if the symptoms persist. Never give an unconscious person water or other drink.

Inhalation

Upon breathing difficulties or irritation of the respiratory tract: Bring the person into fresh air and stay with him/her.

Skin contact

Upon irritation: rinse with water. In the event of continued irritation, seek medical assistance.

Eye contact

If in eyes: Flush eyes with plenty of water or salt water (20-30 °C) for at least 30 minutes and continue until irritation stops. Remove contact lenses. Make sure you flush under the upper and lower eyelids. Seek medical assistance immediately and continue flushing during transport.

Ingestion

If the person is conscious, rinse the mouth with water and stay with the person. Never give the person anything to drink.

In case of malaise, seek medical advice immediately and bring the safety data sheet or label from the product. Do not induce vomiting, unless recommended by the doctor. Have the person lean forward with head down to avoid inhalation of or choking on vomited material.

Burns

Not applicable.

4.2. Most important symptoms and effects, both acute and delayed

The product contains substances that cause serious eye damage. Contact with these substances can cause irreversible effects on the eye / serious eye damage.

4.3. Indication of any immediate medical attention and special treatment needed

IF exposed or concerned:

Get immediate medical advice/attention.

Information to medics

Bring this safety data sheet or the label from this product.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Not applicable.

5.2. Special hazards arising from the substance or mixture

Fire will result in dense smoke. Exposure to combustion products may harm your health. Closed containers, which are exposed to fire, should be cooled with water. Do not allow fire-extinguishing water to enter the sewage system and nearby surface waters.

If the product is exposed to high temperatures, e.g. in the event of fire, dangerous decomposition compounds are produced. These are:

Halogenated compounds

Sulphur oxides

Some metal oxides

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective clothing to prevent contact. Upon direct exposure contact The National Poisons Information Service (dial 111, 24 h service) in order to obtain further advice.

Hazchem Code: None

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid direct contact with spilled substances.
 Ensure adequate ventilation, especially in confined areas.
 Contaminated areas may be slippery.

6.2. Environmental precautions

Avoid discharge to lakes, streams, sewers, etc.
 Keep unauthorized persons away from the spill

6.3. Methods and material for containment and cleaning up

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.
 Wherever possible cleaning should be performed with normal cleaning agents. Avoid use of solvents.

6.4. Reference to other sections

See section 13 "Disposal considerations" on handling of waste.
 See section 8 "Exposure controls/personal protection" for protective measures.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid direct contact with the product.
 Smoking, drinking and consumption of food is not allowed in the work area.
 See section 8 "Exposure controls/personal protection" for information on personal protection.

7.2. Conditions for safe storage, including any incompatibilities

Containers that have been opened must be carefully resealed and kept upright to prevent leakage.
 Store in a container with a resistant inner liner.

Recommended storage material

Use containers made of the following materials: Suitable plastic material. Polyethylene-lined mild steel. Bundled mild steel tanks, or plastic drums/IBCs

Storage temperature

Corrosive

Notes on storage conditions and product stability Polyaluminium chloride solutions are stable indefinitely when stored under benign conditions (sealed vessel, constant temperature). However, some users may experience product instability, which can arise from two potential problems: 1) The product is designed to break down on contact with water, to allow water treatment to occur. As a result, water vapour condensing on inside tank surfaces may lead to colourless crystals forming when the water drops back into the bulk liquid. These crystals can only be dissolved using hot water. Condensation should thus be minimised by tank design and location. If possible, avoid tanks that are dark in colour, in direct sunlight, and off the ground, as these factors will lead to large day/night temperature fluctuations. 2) Long-term storage in open/vented vessels may result in evaporation of water, leading to over concentration of the PAC, and formation of a very fine, cream-coloured deposit. This deposit is easily dissolved in cold water. Industrial Chemicals Limited thus recommends that tanks be designed to minimise temperature effects, have a top hatch to allow routine quarterly inspection for any deposits, and have a bottom drain in case the need for washout occurs. In addition, when switching from the use of another water treatment chemical to PAC, the user is strongly recommended to wash out the tanks and dosing system to remove any incompatible materials before the PAC is unloaded. Some sedimentation can occur in this product. Even after filtering, slow sedimentation will occur. To avoid problems caused by this sedimentation, storage tanks should be cleaned every 1 to 2 years.

Corrosive storage.

Incompatible materials

Avoid contact with chlorites, hypochlorites, and sulfites Incompatible with other aluminium salts and iron salts. Special care must be taken regarding mixing with products previously used in order to avoid gel formation or precipitation

chlorites
 hypochlorites
 Iron Salts
 Aluminium Salts
 Strong acids

7.3. Specific end use(s)

This product should only be used for applications quoted in section 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Aluminum chloride hydroxide sulphate

Long term exposure limit (8 hours) (mg/m³): 2

The Control of Substances Hazardous to Health Regulations 2002. SI 2002/2677 The Stationery Office 2002. EH40/2005 Workplace exposure limits (Fourth Edition 2020).

DNEL

Aluminum chloride hydroxide sulphate

Duration:	Route of exposure:	DNEL:
Long term – Systemic effects - General population	Dermal	6.3 mg/kg bw/day
Long term – Systemic effects - Workers	Dermal	12.6 mg/kg bw/day
Long term – Systemic effects - General population	Inhalation	10.9 mg/m ³
Long term – Systemic effects - Workers	Inhalation	40.1 mg/m ³
Short term – Systemic effects - Workers	Inhalation	10 µg/m ³
Long term – Systemic effects - General population	Oral	6.31 mg/kg bw/day

PNEC

Aluminum chloride hydroxide sulphate

Route of exposure:	Duration of Exposure:	PNEC:
Freshwater		25 µg/L
Freshwater sediment		3.736 mg/kg
Intermittent release (freshwater)		74 µg/L
Marine water		2.5 µg/L
Marine water sediment		3.736 mg/kg
Predators		8.24 mg/kg
Sewage treatment plant		100 mg/L
Soil		4.94 mg/kg

8.2. Exposure controls

Compliance with the given occupational exposure limits values should be controlled on a regular basis.

General recommendations

Smoking, drinking and consumption of food is not allowed in the work area.

Exposure scenarios

There are no exposure scenarios implemented for this product.

Exposure limits

Professional users are subjected to the legally set maximum concentrations for occupational exposure. See occupational hygiene limit values above.

Appropriate technical measures

The formation of vapours must be kept at a minimum and below current limit values (see above). Installation of a local exhaust system if normal air flow in the work room is not sufficient is recommended. Ensure eyewash and emergency showers are clearly marked.

Ensure that eyewash stations and safety showers are located within easy reach.

Apply standard precautions during use of the product. Avoid inhalation of vapours.

Hygiene measures

In between use of the product and at the end of the working day all exposed areas of the body must be washed thoroughly. Pay special attention to hands, forearms and face.

Measures to avoid environmental exposure

No specific requirements.

Individual protection measures, such as personal protective equipment

Generally

Use only UKCA marked protective equipment.

Respiratory Equipment

No specific requirements

Skin protection

Recommended	Type/Category	Standards
-------------	---------------	-----------

Wear appropriate protection clothing, e.g. coveralls in polypropylene or working clothes in cotton or polyester.

-

-



Hand protection

Material	Glove thickness (mm)	Breakthrough time (min.)	Standards
----------	----------------------	--------------------------	-----------

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible.

Eye protection

Type	Standards
------	-----------

Chemical splash goggles

Face shield EN166



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

Liquid

Colour

Yellow, Pale Yellow

Odour / Odour threshold

Almost Odourless

pH

0.5-1.0

Density (g/cm³)

-

Relative density

1.39

Kinematic viscosity

30 cP (20 °C)

Particle characteristics

Does not apply to liquids.

Phase changes

Melting point/Freezing point (°C)

Below - 25°C

Softening point/range (waxes and pastes) (°C)

Does not apply to liquids.

Boiling point (°C)

Testing not relevant or not possible due to the nature of the product.

Vapour pressure

30 mmHg (0 °C)

Relative vapour density

Testing not relevant or not possible due to the nature of the product.

Decomposition temperature (°C)

Testing not relevant or not possible due to the nature of the product.

Data on fire and explosion hazards

Flash point (°C)

Testing not relevant or not possible due to the nature of the product.

Flammability (°C)

Testing not relevant or not possible due to the nature of the product.

Auto-ignition temperature (°C)

Testing not relevant or not possible due to the nature of the product.

Lower and upper explosion limit (% v/v)

Testing not relevant or not possible due to the nature of the product.

Solubility

Solubility in water

Miscible with Water (Dilute solutions hydrolyse to precipitate Al(OH)₃)

n-octanol/water coefficient (LogKow)

Testing not relevant or not possible due to the nature of the product.

Solubility in fat (g/L)

Testing not relevant or not possible due to the nature of the product.

9.2. Other information

Sensitivity to impact

metals generate hydrogen gas, which together with air can form explosive mixtures

Thermal stability

Stable under normal temperature conditions

Miscibility

Dilute solutions hydrolyse to precipitate Al(OH)₃

Oxidizing properties

Testing not relevant or not possible due to the nature of the product.

Other physical and chemical parameters

Avoid excessive heat for prolonged period of time

SECTION 10: Stability and reactivity

10.1. Reactivity

No data available.

10.2. Chemical stability

The product is stable under the conditions, noted in section 7 "Handling and storage".

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

None known.

10.5. Incompatible materials

Avoid contact with chlorites, hypochlorites, and sulfites Incompatible with other aluminium salts and iron salts. Special care must be taken regarding mixing with products previously used in order to avoid gel formation or precipitation

chlorites

hypochlorites

Iron Salts

Aluminium Salts

Strong acids

10.6. Hazardous decomposition products

The product is not degraded when used as specified in section 1.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008 as retained and amended in UK law

Acute toxicity

Based on available data, the classification criteria are not met.

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Serious eye damage/irritation

Causes serious eye damage.

Respiratory sensitisation

Based on available data, the classification criteria are not met.

Skin sensitisation

Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Carcinogenicity

Based on available data, the classification criteria are not met.

Reproductive toxicity

Based on available data, the classification criteria are not met.

STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

11.2. Information on other hazards

Long term effects

The product contains substances that cause serious eye damage. Contact with these substances can cause irreversible effects on the eye / serious eye damage.

Endocrine disrupting properties

This mixture/product does not contain any substances known to have hormone-disrupting properties in relation to health.

Other information

None known.

SECTION 12: Ecological information

12.1. Toxicity

No data available.

12.2. ▼ Persistence and degradability

Based on available data, the classification criteria are not met.

12.3. ▼ Bioaccumulative potential

Based on available data, the classification criteria are not met.

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This mixture/product does not contain any substances known to fulfil the criteria for PBT and vPvB classification.

12.6. Endocrine disrupting properties

This mixture/product does not contain any substances considered to have endocrine-disrupting properties in relation to the environment.

12.7. Other adverse effects

None known.

SECTION 13: Disposal considerations

Waste treatment methods

Product is covered by the regulations on hazardous waste. (*)

HP 4 - Irritant (skin irritation and eye damage)

Regulation (EU) No 1357/2014 of 18 December 2014 on waste as retained and amended in UK law.

EWC code

Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

Specific labelling

Contaminated packing

Packaging containing residues of the product must be disposed of similarly to the product.

SECTION 14: Transport information

	14.1 UN / ID	14.2 UN proper shipping name	14.3 Hazard class(es)	14.4 PG*	14.5 Env**	Other information:
ADR	3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Polyaluminium Chloride Solution)	Transport hazard class: 8	III	No	See below for additional information.
IMDG	3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Polyaluminium Chloride Solution)	Transport hazard class: 8	III	No	See below for additional information.
IATA	3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Polyaluminium Chloride Solution)	Transport hazard class: 8	III	No	See below for additional information.

* Packing group

** Environmental hazards

Additional information

ADR / See Table A, section 3.2.1 for any information on special provisions, requirements, or warnings in connection with transport. See section 5.4.3, for instructions in writing regarding mitigation of damages in relation to incidents or accidents during transport.

IMDG / See section 3.2.1, for any information on special provisions, requirements, or warnings in connection with transport.

IATA / See Table 4.2 for any information on special provisions, requirements, or warnings in connection with transport.

This product is within scope of the regulations of transport of dangerous goods.

Hazchem Code: None

14.6. Special precautions for user

Not applicable.

14.7. Maritime transport in bulk according to IMO instruments

No data available.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Restrictions for application

Restricted to professional users.

Demands for specific education

No specific requirements.

SEVESO - Categories / dangerous substances

Not applicable.

Additional information

Not applicable.

Sources

The Management of Health and Safety at Work Regulations 1999.

Regulation (EU) No 1357/2014 of 18 December 2014 on waste as retained and amended in UK law.

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (CLP) as retained and amended in UK law.

Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as retained and amended in UK law.

15.2. Chemical safety assessment

No

SECTION 16: Other information

Full text of H-phrases as mentioned in section 3

H290, May be corrosive to metals.
H318, Causes serious eye damage.

Abbreviations and acronyms

ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS = Chemical Abstracts Service
CE = Conformité Européenne (European conformity)
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
CSA = Chemical Safety Assessment
CSR = Chemical Safety Report
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EINECS = European Inventory of Existing Commercial chemical Substances
ES = Exposure Scenario
EUH statement = CLP-specific Hazard statement
EuPCS = European Product Categorisation System
EWC = European Waste Catalogue
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IARC = International Agency for Research on Cancer (IARC)
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OECD = Organisation for Economic Co-operation and Development
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
RRN = REACH Registration Number
SCL = A specific concentration limit
SVHC = Substances of Very High Concern
STOT-RE = Specific Target Organ Toxicity - Repeated Exposure
STOT-SE = Specific Target Organ Toxicity - Single Exposure
TWA = Time weighted average
UN = United Nations
UVBC = Unknown or variable composition, complex reaction products or of biological materials
VOC = Volatile Organic Compound
vPvB = Very Persistent and Very Bioaccumulative

Additional information

The classification of the substance/mixture in regard of health hazards are in accordance with the calculation methods given by Regulation (EC) No. 1272/2008 (CLP) as retained and amended in UK law.

▼ The safety data sheet is validated by

LWetton

Other

A change (in proportion to the last essential change (first cipher in SDS version, see section 1)) is marked with a blue triangle.

The information in this safety data sheet applies only to this specific product (mentioned in section 1) and is not necessarily correct for use with other chemicals/products.

It is recommended to hand over this safety data sheet to the actual user of the product. Information in this safety data sheet cannot be used as a product specification.

Country-language: GB-en