Chemifloc Ltd.

SAFETY DATA SHEET
PolyAluminium Chloride 18% Solution

Conforms to Regulation (EC) No.1907/2006 (REACH) with its amendment Regulation (EU) 2020/878

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

Identification of the substance or mixture

Product Name:	Polyaluminium Chloride Solution, 18%
Chemical Name:	Aluminium chloride hydroxide sulfate
Registration Number:	01-2119531540-51
Synonyms:	PAC, PACL Polyaluminium Chloride Hydroxide Sulfate, Aluminium Chloride Hydroxide Sulfate, Aluminium Hydrochlorosulfate
Date of first issue:	17 January 2011
Version number	06
Revision date:	31 March 2021
Supersedes date:	11 January 2018

Relevant identified uses of the substance or mixture and uses advised against:

Identified uses	Treatment of drinking water, has received approval by the European Committee for Standardisation. Treatment of waste water.
Uses advised against	None.

Details of the supplier of the safety data sheet

Manufacturer:
Chemifloc Ltd
Smithstown, Shannon,
Co. Clare,
Rep. of Ireland.
Tel: 00353 61 708699
Fax: 00353 61 708698
e-mail: info@chemifloc.ie

Emergency Telephone Number: 00353 61 708699

Section 2: Hazards Identification

Classification of the substance/mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classificatory applies.

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

Classification C;R34

The full text for all R-phrases is displayed in section 16.

Classification according to Regulation (EC) no 1272/2008 as amended

Physical Hazards

Corrosive to metals	Category 1	H290 – May be corrosive to metals

Health hazards

Serious eye damage/eye irritation	Category 1	H318 – Causes serious eye damage

Hazard summary

Physical hazards	Not classified for physical hazards.
Health hazards	Irritating to eyes. Occupational exposure to the substance may cause adverse health effects
Environmental hazards	Not classified for hazards to the environment.
Specific hazards	Not available
Main symptoms	Not available.

Label elements
Label according to Regulation (EC) No. 1272/2008 as amended

Contains: Aluminium chloride hydroxide sulfate

Signal word Danger

Hazard statements H318 - Causes serious eye damage
H290 - May be corrosive to metals

Precautionary statements

Prevention P280 – Wear eye/face protection

Response P305+351+338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+313 - If eye irritation persists: Get medical advice/attention.
P406 – Store in corrosive resistant container with a resistant inner liner.

Hazardous components which must be listed on the label:
39290-78-3 Aluminium chloride hydroxide sulfate
Further information The product is classified and labeled in accordance with EC directives or respective national laws.
Other hazards: H290 Corrosive to metals only applies if pH <2

Section 3: Composition/Information on Ingredients

Mixture
General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Aluminium chloride hydroxide sulfate	40	39290-78-3 254-400-7	01-2119531540-51-0010	-	#
Water	60	7732-18-5			

Classification: **DSD:** Xi;R41
CLP: Eye Dam. 1;H318

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

Section 4: First Aid Measures

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. No hazards which require special first aid measures.

Description of first aid measures

Inhalation Move to fresh air. Keep warm and at rest. Call a physician if symptoms develop or persist.

Skin contact Remove affected person from source of contamination. Remove contaminated clothing. Wash skin thoroughly with soap and water. Get medical attention promptly if symptoms occur after washing.

Eye contact Remove affected person from source of contamination. Remove any contact lenses and open eyelids wide apart. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention immediately. Continue to rinse.

Ingestion Never give anything by mouth to an unconscious person. Do not induce vomiting. Rinse mouth thoroughly with water. Get medical attention immediately.

Most important symptoms and effects, both acute and delayed Corrosive effects, May cause irreversible eye damage.

Indication of any immediate

medical attention and special treatment needed	Rinse with plenty of water.

Section 5: Firefighting measures

General fire hazards	Non-combustible, substance itself does not burn.
Extinguishing media	
Suitable extinguishing media	Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable extinguishing Media	None known.
Special hazards arising from the substance or mixture	The product itself does not burn. No unusual fire or explosion hazards noted. May decompose upon heating to produce corrosive and/or toxic fumes. Material is not combustible, but may release toxic vapours (hydrogen chloride, oxides of sulphur) when heated above 200°C. If fumes are present, use an approved full-face-respirator with acid cartridge. Use extinguishing media appropriate to the surrounding fire conditions.
Advice for firefighters	
Special protective equipment for firefighters	Wear self-contained breathing apparatus and protective clothing.
Special firefighting procedures	No unusual fire or explosion hazards noted.

Section 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Stay upwind.
For emergency responders	Not available.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
Methods and material for containment and cleaning up	Should not be released into the environment. Prevent entry into waterways, sewers, basements or confined areas. Large Spills: Dike the spilled material, where this is possible. Soak up with inert absorbent material. Cover with plastic sheet to prevent spreading. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth and place into containers. Sweep up or gather material and place in appropriate container for disposal. Following product recovery, flush area with water. After removal flush contaminated area thoroughly with water. Clean up in accordance with all applicable regulations. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste. After removal flush contaminated area thoroughly with water. This material and its container must be disposed of as hazardous waste. For waste disposal, see Section 13.
Reference to other sections	Not available.

Section 7: Handling and storage

Precautions for safe handling	Avoid spilling. Avoid contact with eyes. Avoid prolonged exposure. Wash hands thoroughly after handling**.** Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.
Conditions for safe storage,	Keep container tightly closed. Keep only in the original container. Store in corrosive

including any incompatibilities	resistant/container with a resistant inner liner. Keep out of the reach of children. Store in rubber lined mild steel or plastic tanks. Avoid freezing. Keep away from incompatible materials.
Materials for packaging:	Suitable material: plastic (PE, PP, PVC), Polyethylene-lined mild steel.
Materials to avoid:	Bases, non-acid proof metals (for example aluminium, copper and iron), Avoid contact with unalloyed steel or galvanized surfaces.
Other data:	Stable under recommended storage conditions.
Specific end use(s)	The specified uses for this material are shown in section 1 of this document.

Section 8: Exposure controls / personal protection

Control parameters

Occupational exposure limits

Ireland

United Kingdom

Components	Type	Value	Form
Aluminium salts	TWA	2 mg/m^3	Soluble aluminium salts

Biological limit values	No biological exposure limits noted for the ingredient(s).
Recommended monitoring procedures	Not available.

DNEL

Components	Type	Route	Value	Form
Aluminium salts	Industry	Oral	0.5 mg/kg bw/day	as Al
	Professional	Oral	0.3 mg/kg bw/day	as Al

PNEC	Not available.
Exposure Controls	
Appropriate engineering controls	Ventilation should be sufficient to effectively remove and prevent build-up of any dusts or fumes that may be generated during handling or thermal processing. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL, suitable respiratory protection must be worn.

Individual protection measures, such as personal protective equipment.

General information	Use personal protective equipment as required. Eye wash fountain is recommended. Keep working clothes separately.
Eye/face protection	Wear eye/face protection. (EN166)
Skin protection	
- Hand protection	PVC or other plastic material gloves. (EN374)
- Other	Normal work clothing (long sleeved shirts and long pants) is recommended.
Respiratory protection	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Thermal hazards	Not available

Section 9: Physical and chemical properties

Information on basic physical and chemical properties

General information (Appearance, odour)

Physical State	Aquous solution
Colour	Pale yellow.
Odour	Almost odourless.

Important health safety and environmental information

pH	0.5 – 1.0
Melting point/range	Below -25°C
Boiling point / range	not applicable, In accordance with column 2 of REACH Annex VII, the study does not need to be conducted.
Flash point	not applicable, In accordance with column 2 of REACH Annex VII, the study does not need to be conducted., inorganic compound

Flammibility (solid, gas)	does not sustain combustion.
Explosive properties	
- **Lower explosive limit**	not applicable
- **Upper explosive limit**	
Vapour Pressure	30 mm Hg @ 0C @ °C
Density	1.39 g/cm^3
Molecular Formula:	$Al(OH)_aCl_b(S0_4)_c$ with (a+b+2c) = 3, and a>1.05.
Viscosity	30 cP at 20C @ °C
Solubility(ies)	
- **Water solubility**	miscible in water. Diluted solutions hydrolyse to precipitate $Al(OH)_3$.
Partition coefficient (n-octanol/water)	not applicable, inorganic compound.
Thermal Decomposition	200°C.

Section 10: Stability and reactivity

Reactivity	In contact with some metals can generate hydrogen gas, which can form explosive mixtures with air.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Corrodes metals under influence of moisture.
Conditions to avoid	Avoid excessive heat for prolonged periods of time. Avoid contact with acids.
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.
Hazardous decomposition products	May release toxic vapours (hydrogen chloride, oxides of sulphur).
Thermal decomposition	200°C.

Section 11: Toxicological information

Information on toxicological effects

Human experience

Inhalation

May cause damage to mucous membranes in nose, throat, lungs and bronchial system.

Skin contact

May cause serious chemical burns to the skin.

Eye contact

Causes burns.

Ingestion

May cause burns in mucous membranes, throat, oesophagus and stomach.

Section 12: Ecological information

Toxicity

Remarks:
This material is not classified as dangerous for the environment.
Within pH range approx. 5 - 5.5, aluminium ions may be harmful to salmon species.
Aluminium salts must not be released to rivers and lakes in an uncontrolled way and pH variations around 5 - 5.5 should be avoided.
At pH values around neutral aluminium salts are not harmful to fish.

Persistence and degradability

Stability: Hydrolyses when diluted in water, forming Al(OH)3.

Bioaccumulative potential

This product is not bioaccumulating.

Mobility in soil

Mobility water solubility – soluble

Results of PBT and vPvB assessment

This mixture is not considered to be persistent, bioaccumulating nor toxic (PBT).
This mixture is not considered to be very persistent nor very bioaccumulating (vPvB).

Other adverse effects

Product is acidic, and will reduce the pH of water courses and drains, and cause damage to

flora and fauna. It should not be allowed to enter controlled waters in large quantities - in

such causes the National Rivers Authority should be contacted.

Section 13: Disposal considerations

Waste treatment methods

Product	Classified as hazardous waste. Must be disposed of in accordance with local and national regulations. Thoroughly cleaned packaging material may be recycled.
Contaminated packaging	Classified as hazardous waste. Must be disposed of in accordance with local and national regulations.

Section 14: Transport information

ADR/RID:

UN Number:	3264
Proper Shipping Name:	CORROSIVE LIQUID, N.O.S. (Polyaluminium Chloride Solution)
Transport hazard class(es)	8
Subsidiary class(es)	8
Packing group	II
Environmental hazards	No
Labels required	8
Special precautions for user	Not available.

IATA

UN Number:	3264
UN Proper Shipping Name:	CORROSIVE LIQUID, N.O.S. (Polyaluminium Chloride Solution)
Transport hazard class(es)	8
Subsidiary class(es)	8
Packing group	II
Environmental hazards	No
Special precautions for user	Not available.

IMDG

UN number	3264
UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Polyaluminium Chloride Solution)
Transport hazard class(es)	8
Subsidiary class(es)	8
Packing group	II
Marine pollutant	No
EmS No.	F-A, S-B
Special precautions for user	Not available.

ADR

IATA

IMDG

Section 15: Regulatory information

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

EU Regulations

Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex I
Not listed.

Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex II
Not listed.

Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V
Not listed.

Directive 96/61/EC concerning integrated pollution prevention and control (IPPC): Article 15, European Pollution Emission Registery (EPER)
Not listed.

Regulation (EC) No. No.1907/2006 (REACH) with its amendment Regulation (EU) 2020/878, Article 59(1). Candidate List
Not listed.

National regulations Not available.

Other regulations This Safety Data Sheet complies with the requirements of Regulation (EC) No.1907/2006 (REACH) with its amendment Regulation (EU) 2020/878. No restrictions identified other than those already covered in regulations.

Chemical Safety Assessment
A Chemical Safety Assessment has been carried out for the components of this mixture.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances(PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

Section 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

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

Text of R-phrases mentioned in Section 3

R34	Risk of serious damage to eyes.

Training advice Not available

Further information

Polyaluminium chloride solutions are used as chemicals for the treatment of drinking water, as approved by the European Committee for Standardisation under EN 883:2004. The Transport and Regulatory Information given are in accordance with EN 883:2004. However, that document indicates that polyaluminium chloride solutions fall under Packing Group I, as a "Substance presenting high danger". As part of the ongoing REACH registration process the 18% product has been reclassified and is assigned to Packing Group II (medium danger), because of the low pH measured.

Previously, polyaluminium chloride solutions from Chemifloc Limited (both 10% and 18%) were classified by as being Corrosive for both supply and transport. As part of the ongoing REACH registration process, the 10% formulation has been re-classified as being an Irritant, and non-hazardous for transport. No change has been made to the classification for the 18% solution.

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.

Chemifloc 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.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Please call for document accuracy if the revision date has exceeded 3 years.

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