Aquatrade Water Treatment Chemicals (Pty) Ltd

Reg No: 2015/060029/07
Vat No: 4610268676

PO Box 357
Isando
1600

4a Spanner Road
Spartan
Kempton Park

Email: admin@aquatradesa.co.za
Website: www.aquatradesa.ca.za
Tel: 011 394 8762 / Fax: 011 394 0752

1 Identification

GHS Product Identifier

AQT 884

Other means of identification

CAS:	Mixture not listed in registry
EC:	Mixture not listed in registry
RTECS:	Mixture not listed in registry
ICSC:	Mixture not listed in registry
Chemical Family:	Mixture
Synonyms:	None
Proper Shipping Name:	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Chemical Formula:	Mixture

Recommended use of the chemical and restriction on use

AQT 884 is a cost effective liquid blend of multiple coagulants and flocculants suitable for use in many applications, including potable water production from water with high turbidity.

AQT 884 is ideally suited for application as:

- Municipal drinking water production.
- Industrial applications where coagulants are needed with flocculants.

Supplier's details

AQUATRADE WATER TREATMENT CHEMICALS (PTY) LTD

4A Spanner Road
Spartan, Kempton Park
Gauteng, South Africa
1619

PO Box 357
Isando
1600

www.aquatradesa.co.za Tel: +27 11 394 0752
SDS Enquiries only
sheq@aquatradesa.co.za Tel: +27 87 654 3326

Emergency phone number

E le Sar: +27 82 921 0643 (Available Mon - Fri, GMT 5:00 to 20:00)
Spilltech: +27 861 000 366 (Available 24/7)

2 Hazard(s) identification

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
Corrosive to Metals (Category 1), H290
Serious Eye Damage/Irritation (Category 1), H318
Aquatic Toxicity - Acute (Category 1), H400
Aquatic Toxicity - Acute (Category 2), H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS label elements

Danger

May be corrosive to metals

Causes serious eye damage

Very toxic to aquatic life

Toxic to aquatic life with long lasting effects

Keep only in original container.

Avoid release to the environment.

Wear protective gloves/protective clothing/eye protection/face protection.

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

Immediately call a POISON CENTER or doctor/physician.

Absorb spillage to prevent material damage.

Collect spillage.

Store in corrosive resistant container with a resistant inner liner.

Dispose of contents and container in accordance with local, regional, national, international regulations.

Other hazards which do not result in classification

PBT assessment does not apply.

3 Composition/information on ingredients

Description	CAS Number	EINECS Number	%	Note
Polyaluminium Chloride	1327-41-9	215-477-2	40 - 50	H290: May be corrosive to metals.H318: Causes serious eye damage.
1,2-Ethanediamine, polymer with 2-(chloromethyl) oxirane and N-methylmethanamine	42751-79-1		5 - 15	H315: Causes skin irritation. H319: Causes serious eye irritation. H335: May cause respiratory irritation. H410: Very toxic to aquatic life with long lasting effects

4 First-aid measures

Description of necessary first-aid measures

Inhalation

- Supply fresh air.
- Rinse mouth and nose with water.
- If symptoms persist, call a physician.

Eye contact

- Rinse immediately with plenty of lukewarm water, also under the eyelids, for several minutes.
- Consult a physician.

Skin contact

- Wash off with plenty of water and soap.
- Remove and wash contaminated clothing before re-use.
- If symptoms persist, call a physician.

Ingestion

- Call a physician immediately.
- DO NOT induce vomiting.
- Rinse mouth with water.
- Drink 1 or 2 glasses of water or milk.
- Never give anything by mouth to an unconscious person.

Most important symptoms/effects, acute and delayed

Acute effects
Possible eye, skin and respiratory tract irritation.

Chronic effects
May aggravate existing skin, eye, and lung conditions. Persons with kidney disorders have an increased risk from exposure based on general information found on aluminum salts.

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

Note to physicians
Aluminum soluble salts may cause gastroenteritis if ingested. Treatment includes the use of demulcents.

Note: Consideration should be given to the possibility that over-exposure to materials other than this product may have occurred.

5 Fire-fighting measures

Suitable extinguishing media

Suitable extinguishing media
Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons
No information available.

Specific hazards arising from the chemical

Hydrogen chloride may be released when heating above the decomposition temperature.

Special protective actions for fire-fighters

Firefighting measures
Product is a water solution and nonflammable. In a fire, this product may build up pressure and rupture a sealed container; cool exposed containers with water spray. Use self-contained breathing apparatus in confined areas; **avoid** breathing mist or spray.

Special protective equipment for firefighters

- In the event of fire, wear self-contained breathing apparatus.
- Fire fighters must wear fire resistant personnel protective equipment.

Explosion data
Sensitivity to Mechanical Impact
None.
Sensitivity to Static Discharge
None.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions

- Refer to protective measures listed in section “Handling and storage”.
- Wear protective suit and boots.
- If aerosols or mist are formed, use half mask with combination filter B/P2.

Environmental precautions

Environmental precautions

- Cover the drains to prevent the product from entering the environment.
- If the product contaminates rivers and lakes or drains inform respective authorities.
- Restrict the spread of the spillage by using inert absorbent material (sand, gravel).

Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Build dikes as necessary to contain flow of large spills.

Methods for cleaning up

Clear spills immediately. For small spills, use soda ash to neutralize, an inert material to absorb. Place contaminated materials into containers and store in a safe place to await proper disposal. **Caution**: Use of soda ash may generate carbon dioxide gas. Provide adequate ventilation to spill area.

7 Handling and storage

Precautions for safe handling

The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized. Wear gloves in a suitable material such as PVC, Neoprene or Natural rubber. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also consider the specific local conditions under which the product is used, such as the danger of cuts, abrasion and the contact time. Tightly fitting safety goggles must be worn. Eye wash bottles or emergency eye-wash fountains in the work place are recommended.

Conditions for safe storage, including any incompatibilities

Keep away from incompatible products. **Avoid** freezing. **Avoid** high temperatures.

Packaging material

- Plastic (PE, PP, PVC)
- Fiberglass-reinforced polyester
- Epoxy-coated concrete
- Titanium
- Acidproof or rubber-coated steel

Materials to avoid

- Non acid-proof metals (such as aluminium, copper and iron)
- Bases
- Unalloyed steel
- Galvanized surfaces

SANS 10263-0 Warehousing

8.4.3.2 Where flammable or **corrosive** substances are stored, the floor shall slope away from the storage area (primary collection area) to a secondary catch basin or sump of capacity at least 10 % of the total available storage volume of the fire section concerned. The secondary catch basin shall be within the fire section, and shall be such that it can be well ventilated. Care shall be taken in the design of such areas to prevent contamination of the soil or ground water.

9.7.2 Every type of storage area inside a warehouse shall be clearly demarcated, for example separate storage areas for poisons, flammables and **corrosives** shall display the relevant hazard class diamond (see table 1). The dimensions of the hazard class diamonds shall be at least 250 mm x 250 mm.

12.8.5 Storage of flammable liquids of class 3, toxic substances of division 6.1 and **Corrosives** of class 8

Nitro-methane class 3, UN No. 1261, shall be separated from substances of class 6.1, and cyanides of division 6.1 shall be separated from acids of class 8. Concentrated acids and bases shall be segregated by at least 1 m. Packaged flammable liquids of class 3, toxic substances of division 6.1 and **Corrosives** of class 8 that are of category 3 can be stored in the same area, provided that

1. they are kept above floor level, and
2. liquid dangerous goods of one class are not stored above dangerous goods of another class.

1**2.8.8.3** Toxic and infectious substances (see class 6 in SANS 10228) can contaminate firefighting water in the event of a fire, therefore:

a. Toxic and infectious substances shall be separated from other flammable products and aerosols.
b. Toxic and infectious substances shall be segregated from oxidizing substances, organic peroxides and **Corrosives** .
c. Flammable toxic and infectious substances shall be segregated from non-flammable toxic and infectious substances.

12.8.8.4 **Corrosives** (see class 8 in SANS 10228) that leak or spill from their packaging can cause serious damage to other packages, with potentially hazardous consequences.

Corrosives shall be segregated from toxic substances, infectious substances, aerosols, flammables, oxidizing substances and organic peroxides.

The provisions of above apply to the storage of the following quantities of dangerous goods.

Corrosives (acids and bases) Class 8

Corrosives (acids and bases) Class 8	
Category 1	> 50 kg
Category 2	> 200 kg
Category 3	> 1 000 kg

8 Exposure controls/personal protection

Control parameters

Occupational exposure limits (as 8-hour time-weighted averages) for aluminium and aluminium compounds in various countries.

Country - Organization	Aluminium compound	Level 8-hour TWA TLV as mg/m^3
Germany		
- DFG MAK-Kommission	metal-, oxide-, hydroxide-containing dusts	4 (inhalable fraction)
- AGS		1.5 (respirable fraction)
Norway	Welding fume	5
	Oxide	10 (total dust)
	Pyro Powder	5
	Soluble Salt	2
Sweden	Metal Oxide	5 (total dust)
		2 (respirable dust)
	soluble compounds	1 (total dust)
	potassium aluminium tetrafluoride	0.4 (inhalable dust)
	stearates	5 (total dust)
Denmark	metal oxide,powder dust	5 (total dust)
		2 (respirable dust)
	Metal Fume	5
	Soluble Salt	1
Finland	Welding Fume	1.5
	Soluble Compounds	2
	Fluoride	1
	Sulphate	1
Iceland	metal (powder, dust)	10
		5
	Oxide	10
	Fume	5
	Soluble Compound	2
USA	metal, insoluble compounds	1
- ACGIH	Metal	15 (total dust)
		5 (respirable fraction)
- OSHA		10 (total dust)
- NIOSH	Metal	5 (respirable dust)
	pyro powder	5
	Soluble Salts	2
European Union	Mostly listed as mg Al/m3	15-min TWA limit value of 2 mg F/m3
- SCOEL	For inorganic fluorides	equivalent to 0.9 mg Al/m3

Appropriate engineering controls

Local exhaust ventilation as necessary to maintain exposures to within applicable limits. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details. If there are no applicable or established exposure limit requirements or guidelines, general ventilation should be sufficient.

Individual protection measures

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors. Recommendations below is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye/face protection

Wear face-shield with safety glasses or safety goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU). Contact lenses should not be worn as they may contribute to severe eye injury.

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: 480 min

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: 480 min

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves.

Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9 Physical and chemical properties

Physical and chemical properties

Appearance (physical state, colour etc):	Clear light yellow liquid

Odour:	Odourless
Odour threshold:	No test data available
pH:	2 - 5
Melting point/freezing point:	No test data available
Initial boiling point and boiling range:	No test data available
Flash point:	No test data available
Evaporation rate:	No test data available
Flammability (solid, gas):	Non flammable
Upper/lower flammability or explosive limits:	Non explosive
Vapour pressure:	No test data available
Vapour density:	No test data available
Relative density:	1.19 - 1.21
Solubility(ies):	Soluble in water
Partition coefficient: n-octanol/water:	No test data available
Auto-ignition temperature:	No test data available
Decomposition temperature:	No test data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10 Stability and reactivity

Reactivity

No data available.

Chemical stability

Stable under normal conditions of use.

Possibility of hazardous reactions

None under normal processing.

Hazardous polymerization
No.

Conditions to avoid

None known.

Incompatible materials

Alkalis.

Hazardous decomposition products

Thermal decomposition may release toxic and/or hazardous gases such as aluminum, Cl2, and HCl.

11 Toxicological information

Toxicological (health) effects

Information - Workers
The substance (solution) may cause possible dermal and/or inhalatory local effects.
Based on the hazard assessment Long-term systemic effects are possible after oral and inhalatory exposure.
Oral exposure is not a relevant exposure route for Workers.

Inhalation
Inhalatory uptake is very unlikely to happen, as the substance will immediately start to irritate when it enters the inhalatory tract. However there is acute inhalation toxicity animal data that as a worst case (relevant amount of small inhalable particals) aerosols of aqueous substance may be inhaled. There are no systemic effects known after inhalation of the substance (solution).

Dermal exposure
Dermal load is unlikely, but assuming that the user will have reacted on the burning/itching skin sensitisation and will

automatically start using gloves. Substance (solution) with low pH 2 or less is corrosive to skin and eye. At concentrations lower than those that cause corrosion, the substance will have no effect on systemic toxicity. Dermal exposures should be regulated on the basis of risk to local effects (irritation and case by case corrosion) on the skin. Further tests on this compound are therefore not necessary; this data requirement is not triggered.

Eye exposure
May cause moderate eye irritation that can become severe with prolonged contact. Prolonged exposure to Aluminum salts may cause conjunctivitis.

Ingestion
May cause irritation of the mouth, throat and stomach. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Groups at extra risk
Individuals with renal failure may be at extra risk for aluminium toxicity.

Information - General Population
Human Health
The major route of exposure to aluminium for the the general population is through food. Mean concentrations of levels 5 to 10 mg/kg are found. Foods with very high mean concentrations included sources of natural origin e.g tea leaves, herbs and cocoa. Small amounts may come from food additives, and Al salts are also used in some pharmaceuticals, e.g over-the-counter medication against heartburn and effect enhances in injectable vaccins.

Aluminium in drinking water represents a minor source of exposure. Max of 20 % (from WHO Drinking Water Quality Guideline) of the provisional tolerable weekly intake (PTWI) is allocated to drinking-water.

A health –based value derived from JECFA PTWI would be 0.9 mg/l (round value). Based on an allocation of 20% of the PTWI to drinking-water and assuming a 60 kg adult drinking 2 litres of water per day. Practicable levels from drinking quality quideline of WHO are 0.1 mg/l aluminium for large and 0.2 mg/l aluminium for small water treatment facilities. The value is based on scientific risk assessment and has been reviewed in 2010, with no changes of 2006 Guideline. The provisional weekly tolerable intake (PTWI) value is 1 mg Al /kg bodyweight/week. This applies for all aluminium compounds and includes food and food additives. The JECFA (Joint Expert Committee on Food Additives of FAO/WHO) established the value in 2007 based on the lowest LOELs (Lowest Observable Effect Level) in a range of different dietary studies in mice, rats and dogs being in the region of 50 – 75 mg Aluminium/kg bodyweight. This scientific risk assessment is currently under review to cover latest scientific studies. A tolerable weekly intake (TWI) for aluminium is more appropariate to establish rather than a tolerable daily intak (TDI).

Based on several animal and human studies the estimated daily dietary exposure to aluminium in countries in Europe varied from mean values of 0.2 to 1.5 mg/kg/week up to 2.3 mg/kg bw/week. For the DNEL derivation the neurotoxicity effects form a key chronic animal study is relevant. The hazard assessment based on the chronic animal study data resulted that neurotoxic effects are more relevant then the reproductive/developmental effects. Further the alumnium citrate tested in this study is a worst case reprecentant for other aluminum salts. The neuromuscular effects are caused by the substance Aluminium citrate (Al3 + and the counter ion: citrate). The oral DNEL (Derived No Effect Level) long term-systemic for neurotoxic effects of 3.4 mg/kg bw/day (0.3 mg Al / kg bw/day) is in line with current international levels set for aluminium compounds in drinking water and intake by food.

Information on the likely routes of exposure

Workers - Hazard via inhalation route
Systemic effects
Long term exposure
Hazard assessment conclusion: DNEL (Derived No Effect Level)
Value: 20.2 mg/m^3
Most sensitive endpoint: neurotoxicity

DNEL related information
Overall assessment factor (AF): 25
Modified dose descriptor starting point: NOAEC

Symptoms related to the physical, chemical and toxicological characteristics

Nausea, vomiting, diarrhoea, and abdominal pain. Irritant to eye, skin and respiratory tract.

Delayed and immediate effects and also chronic effects from short and long term exposure

Skin corrosion/irritation
No information available,

Serious eye damage/eye irritation
No information available.

Sensitization
No information available.

Germ cell mutagenicity
No information available.

Carcinogenicity
This product does not contain any components in concentrations greater than or equal to 0.1% that are listed as known or suspected carcinogens by NTP, IARC, ACGIH, or OSHA.

Reproductive toxicity
No information available.

Specific target organ toxicity - Single exposure
No information available.

Specific target organ toxicity - Repeated exposure
No information available.

Aspiration hazard
No information available.

Numerical measures of toxicity (such as acute toxicity estimates)

For Active Ingredient
Aluminum chloride, basic
EC number: 215-477-2 | CAS number: 1327-41-9

The substance has no harmonized classification according to the Regulation (EC) No. 1272/2008 including ATP3.

Self classification:
Acute toxicity via Oral route
Based on the available data, the substance is:

- not classified according to the Regulation (EC) No. 1272/2008 as the LD_{50} is greater than 2000 mg/kg bw
- not classified according to the Directive 67/548/EEC as the LD_{50} is greater than 2000 mg/kg bw.

Acute toxicity via Dermal route
Based on the available data, the substance is:

- not classified according to the Regulation (EC) No. 1272/2008 as the LD_{50} is greater than 2000 mg/kg bw
- not classified according to the Directive 67/548/EEC as the LD_{50} is greater than 2000 mg/kg bw.

Acute toxicity via Inhalation route
No data available on the registered substance. However, based on the results of the study performed on analogue (CAS# 3290 -78 -3), the registered substance is not classified according to the Regulation (EC) No. 1272/2008 and the Directive 67/548/EEC criteria.

Interactive effects

No additional data available.

Where specific chemical data are not available

No additional data available.

Mixtures

No additional data available.

Mixture versus ingredient information

No additional data available.

Other information

No additional data.

12 Ecological information

Toxicity

Calculation of toxicity for mixture
The product has not been tested. The statement has been derived from products of a similar structure and composition.

Toxicity		Category
48-Hour Static Acute LC_{50} Mysidopsis bahia	> 100 mg/L	Not classifiable
96-Hour Static Acute LC_{50} Pimephales promelas	5.23 mg/L	2
48-Hour Static Acute EC_{50} Ceriodaphnia dubia	5.08 mg/L	2
48-Hour Static Acute NOEC Ceriodaphnia dubia	3.85 mg/L	2
EC_{50} Algae	No data	
EC_{50} Micro-organism	No data	

For Active Ingredient
Aluminum chloride, basic
EC number: 215-477-2 | CAS number: 1327-41-9

Available data indicate that aluminum salts are relatively non toxic in most waters with circumneutral pH and this was sufficient for the EU Classification and Labelling Committee (1999) to determine that there was no need for classification of aluminum chloride. Other aluminum compounds act similarly in water as aluminum chloride and are in many cases less soluble and non-hazardous.

Studies reported in the literature have extensively used test solutions (soluble salts) with aluminum concentrations above that of its solubility limit. Due to physical effects of precipitated material most of these studies are meaningless for the investigation of intrinsic toxicity. Aluminum ions released to surface waters quickly form insoluble aluminum hydroxides in mixing zones. Formation of the complex hydroxide causes the aluminum to drop out of solution very rapidly in neutral and alkaline waters.

The dissolved natural background concentrations of aluminum, in most cases, are at equilibrium therefore an addition of aluminum would lead to the precipitation of aluminum compounds from solution and not result in effects to aquatic life.

Calculation of acute aquatic toxicity as per GHS

Toxicity		Category
EC_{50} Fish	0.44 mg/l	1
EC_{50} Daphnia	3.24 mg/l	2
EC_{50} Algae	No data	Not classifiable
EC_{50} Micro-organism	No data	

Persistence and degradability

No test data for mixture.

For Active Ingredient
Aluminum chloride, basic
EC number: 215-477-2 | CAS number: 1327-41-9

Abiotic degradation

The endpoints "Phototransformation of an element in water, soil or air" are not relevant for substances that are assessed using a read-across approach on an elemental basis, i.e., based on the exposure and effects of aluminium, expressed as elemental Al.

The term “Hydrolysis” refers to the “Decomposition or degradation of a chemical by reaction with water,” and this as a function of pH (i.e., abiotic degradation). The need for testing may be waived if “The substance is highly insoluble in water”, or if “The substance is readily biodegradable”. These column 2 waivers are designed for organic substances and are therefore not relevant in the case of metals. For aluminium salts, hydrolysis is a meaningful endpoint but hydrolysis does not result in hydrolytic half-lives that can be used to determine the ultimate disappearance of the substance in the environment. Rather under specific environmental conditions an equilibrium between bioavailable and non-bioavailable aluminium will be reached. The specific and relative concentrations of these states in water are influenced by pH, dissolved organic carbon and to some extent, hardness.

The speciation of Aluminium is pH dependent. At low pH values, dissolved aluminum is present mainly in the aquo form (Al3+). Aluminum hydrolyses increasingly with increased pH and is poorly soluble in the neutral pH range between 6.0 and 8.0 due to the formation of less soluble hydroxide complexes (e.g., Al(OH)2+, Al(OH)2+). Its solubility is at a minimum near pH6.5 at 20°C and then increases as the anion, Al(OH)4– becomes more abundant.

In the presence of complexing ligands and under acidic (pH < 6) and alkaline (pH > 8) conditions, aluminium solubility is enhanced.

At 20°C and pH < 5.7, aluminum is present primarily in the forms Al3+ and Al(OH)2+. In the pH range 5.7 to 6.7, aluminum hydroxide species dominate, including Al(OH)2+ and Al(OH)2+, and then Al(OH)3. At a pH of approximately 6.5, Al(OH)3 tends to predominate over the other species. In this range, aluminium solubility is low. At pH > 6.7, Al(OH)4–becomes the dominant species.

Due to its size fluoride readily substitutes for OH- and has a strong affinity for Al under acidic conditions although this is limited by the relative low abundance of fluoride in the environment. Aluminium-hydroxide complexes predominate over aluminium-fluoride complexes under alkaline conditions.
Sulphate also complexes with aluminium under alkaline conditions (>pH 6). Nevertheless aluminium-sulphate complexes were found to represent only 5% of monomeric aluminium in lake studies. While all aluminium species described are present simultaneously at any pH value the relative proportion of these species will depend upon pH in aquatic systems.

Aluminium-organic complexes were a major component of monomeric Al over a wide range of pH from 4.3 to 7.0 and were found to positively correlate with increasing DOC concentrations as pH decreased.

The hydrolytic products of mononuclear aluminum combine to form polynuclear species in solution in aquifers. Aluminum starts to polymerize when the pH of an acidic solution is above 4.5: 2Al(OH)(H2O)52+Al2(OH)2(H2O)84++ 2H2O

Polymerization leads to larger structures, and ultimately to the formation of the Al13 polycation.

Biotic degradation

For inorganic substance like aluminium salts for which the chemical assessment is based on the elemental concentration (i. e., pooling all inorganic speciation forms together), biotic degradation is an irrelevant process, regardless of the environmental compartment that is under consideration: biotic processes may alter the speciation form of an element, but it will not eliminate the element from the aquatic compartment by degradation or transformation. This elemental-based assessment (pooling all speciation forms together) can be considered as a worst-case assumption for the chemical assessment.

Bioaccumulative potential

No test data for mixture.

For Active Ingredient

Aluminum chloride, basic
EC number: 215-477-2 | CAS number: 1327-41-9

The available evidence shows the absence of aluminium biomagnification across trophic levels both in the aquatic and terrestrial food chains. The existing information suggests not only that aluminium does not biomagnify, but rather that it tends to exhibit biodilution at higher trophic levels in the food chain.

Mobility in soil

No test data for mixture.

For Active Ingredient
Aluminum chloride, basic
EC number: 215-477-2 | CAS number: 1327-41-9

Adsorption/desorption
Due to its dynamic chemistry, the amount of aluminium associated with suspended particles is dependent on the chemical conditions. Factors that are known to affect aluminium speciation, such as pH and DOC, are also known to affect adsorption and desorption from particle surfaces.

To illustrate this further, the amount of aluminium associated with suspended particles was estimated by chemical simulation that included aqueous aluminium speciation (inorganic and organic), aluminium solubility, and complexation by NOM. For these simulations a NOM concentration of 4 mg/L (2 mg/L as DOC) and a total suspended solids (TSS) concentration of 1 mg/L were chosen to represent a reasonable lower bound for the range of values of these substances that would be expected in the environment.

Suspended particles were assumed to be composed primarily of silica (80%) with a small amount of clay (10%) and particulate organic matter (10%). Aluminium concentrations were set to the maximum allowable by solubility with amorphous gibbsite at a temperature of 20^{o}C. Under these conditions, the amount of aluminium bound to particles as a result of surface complexation (i. e. adsorption) was pH dependent, but was typically less than 8% of the total aluminium at pH 6, and was further reduced to below 1% at pH values above 7 (Figure 4.2.1. -2A). This distribution was similar in both soft and hard waters. The corresponding Log Kd values for this distribution are shown in Figure 4.2.1. -2B, with values between 3 and 5. Very similar results were obtained with higher DOC concentrations of 4 mg/L.

Other adverse effects

No additional data available.

13 Disposal considerations

Disposal methods

Waste disposal recommendations
Dispose of waste and container in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Remove for physico-chemical/biological treatment. **DO NOT** discharge into drains or the environment.

Ecology - waste materials
DO NOT release to the environment.

Empty Container
Avoid reuse of container. Consider re-filling. Rinse thoroughly before use, re-filling or discarding in chemical waste or return to supplier. Puncture container before discarding as waste.

14 Transport information

UN Number

TRANSPORTATION CLASSIFICATION	ADR/RID	ADN(R)	IMDG	ICAO/IATA

Identification Number	3265	3265	3265	3265
Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Transport Hazard Class(es)	8 	8 	8 	8 
Packing Group	III	III	III	III
Marine Pollutant	No	No	No	No
Emergency Response	**ERG**: 153	-	**EMS**: F-A, S-B	-
Special provisions Exempt Quantity or Quantity Limitations	Road 200Kg F: 5 Passenger Rail - 60L	-	-	Passenger -5L Cargo - 60L
P, B, L & O Provisions SANS 10231	-	-	-	-
Vessel Stowage Location 10(A) & Requirements 10(B)	10(A) - A 10(B) - 40	-	-	10(A) - A 10(B) - 40

UN Proper Shipping Name

Refer table above in section 14.1 "UN Number".

Transport hazard class(es)

Refer table above in section 14.1 "UN Number".

Packing group, if applicable

Refer table above in section 14.1 "UN Number".

Environmental hazards

Refer table above in section 14.1 "UN Number".

Special precautions for user

DO NOT load with Class 1.
Keep aluminium gas cylinders apart from caustic bases.
May be loaded with Class 8B if kept at least 1 metre apart.
Can be loaded with all other classes.
Goods of different classes must be segregated by an air space of at least 100mm or by an approved segregation device or non-dangerous goods.

P, B, L and O provisions as per SANS 10231:2006
None.

GUIDE 153: SUBSTANCES - TOXIC AND/OR CORROSIVE (COMBUSTIBLE)
FIRE
Small Fire

- Dry chemical, CO2 or water spray.

Large Fire

- Dry chemical, CO2, alcohol-resistant foam or water spray.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- DO NOT get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- **DO NOT** touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- **DO NOT** GET WATER INSIDE CONTAINERS.

FIRST AID

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **DO NOT** use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.

15 Regulatory information

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

SA NATIONAL LEGISLATION

Hazardous Substances Act 15 of 1973 and Regulations.
Occupational Health and Safety Act 85 of 1993 and Regulations.

SA NATIONAL STANDARDS

SANS 10228 : 2006 : Identification and Classification of Dangerous Goods for Transport by Road and Rail.
SANS 10231 : 2018 : Transport of dangerous goods - Operational requirements for road vehicles.
SANS 10234 : 2008 : Globally Harmonized System of classification and labelling of chemicals (GHS).
SANS 11014 : 2010 : Safety Data Sheets for chemical Products.

REACH Regulation (EC) No 1907/2006

This product contains only components that have been either pre-registered, registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH)., The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer´s/user´s responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

Seveso III: Directive 2012/18/EU

Listed in Regulation: Not applicable

Chemical safety assessment

Not assessed.

16 Other information

Other information

Full text of H & P - Statements referred to under section 2

Hazard statements

H290	May be corrosive to metals.
H318	Causes serious eye damage.
H400	Very toxic to aquatic life.

H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

P234	Keep only in original container.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face 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.
P310	Immediately call a POISON CENTER or doctor/physician.
P390	Absorb spillage to prevent material damage.
P391	Collect spillage.
P406	Store in corrosive resistant container with a resistant inner liner.
P501	Dispose of contents and container in accordance with local, regional, national, international regulations.

Labelling REGULATION (EC) No 1272/2008

Signal Word

Danger

Pictograms Hazard to Human

GHS05	Corrosive hazard
GHS09	Environmental hazard

Pictogram Hazard during Transport

Class 8	Corrosive substance

Training advice

Provide adequate information, instruction and training for operators.

Information Sources

1. European Chemicals Agency https://echa.europa.eu/registration-dossier/-/registered-dossier/16009/1
   https://echa.europa.eu/de/substance-information/-/substanceinfo/100.115.201

Compiled by R. van Rooyen, SHEQ Co-ordinator and E. Le Sar, Director.

MANUFACTURER/SUPPLIER DISCLAIMER:

IMPORTANT: This information is given without a warranty or guarantee. No suggestions for use are intended or shall be construed as a recommendation to infringe any existing patents or violate any national or local laws. Safe handling and use is the responsibility of the customer. Read the label before using this product. This information is true and accurate to the best of our knowledge.

Revision History

Revision	Date	Change
1.0	2019/07/25	Preparation of the safety data sheet according to SANS 11014:2010