



## 1 Identification

### GHS Product Identifier

## AQT 803

### 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, INORGANIC, N.O.S.
Chemical Formula:	Mixture

### Recommended use of the chemical and restriction on use

**AQT 803** is a cost effective liquid polyaluminiumchloride suitable for use in most applications, including potable water production. Industrial water treatment.

### Supplier's details

## AQUATRADE WATER TREATMENT CHEMICALS (PTY) LTD

4A Spanner Road PO Box 357  
Spartan, Kempton Park Isando  
Gauteng, South Africa 1600  
1619

[www.aquatradesa.co.za](http://www.aquatradesa.co.za) Tel: +27 11 394 0752

### SDS Enquiries only

[sheq@aquatradesa.co.za](mailto: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

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

Keep only in original container.

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.

Store in corrosive resistant container with a resistant inner liner.

### 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	20 - 0	H290: May be corrosive to metals. H318: Causes serious eye damage.

## 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.

**12.8.8.3** 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

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

### 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 yellow liquid
Odour:	Odourless
Odour threshold:	No test data available
pH:	2 - 5
Melting point/freezing point:	- 12 °C / 10 °F
Initial boiling point and boiling range:	104 °C
Flash point:	No test data available
Evaporation rate:	No test data available
Flammability (solid, gas):	Not flammable
Upper/lower flammability or explosive limits:	Not explosive
Vapour pressure:	No test data available
Vapour density:	No test data available
Relative density:	1.23 - 1.26
Solubility(ies):	Soluble below pH 4
Partition coefficient: n-octanol/water:	No test data available
Auto-ignition 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 ambient and anticipated storage and handling conditions of temperature and pressure.

### 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, Cl<sub>2</sub>, 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 particulates) 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 appropriate 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 (Al<sup>3+</sup> + 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 <sup>3</sup>
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)**

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 LD50 is greater than 2000 mg/kg bw
- not classified according to the Directive 67/548/EEC as the LD50 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 LD50 is greater than 2000 mg/kg bw
- not classified according to the Directive 67/548/EEC as the LD50 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 available.

## **12 Ecological information**

### **Toxicity**

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.

## **Persistence and degradability**

### **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 ( $Al^{3+}$ ). 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 pH 6.5 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  $Al^{3+}$  and  $Al(OH)^{2+}$ . In the pH range 5.7 to 6.7, aluminum hydroxide species dominate, including  $Al(OH)_2^+$  and  $Al(OH)_3$ , 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:  $2Al(OH)(H_2O)_5^{2+} + Al_2(OH)_2(H_2O)_8^{4+} + 2H_2O$

Polymerization leads to larger structures, and ultimately to the formation of the  $Al_{13}$  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**

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

#### 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°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	3264	3264	3264	3264
Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
Transport Hazard Class(es)	8 	8 	8 	8 
Packing Group	III	III	III	III

<b>Marine Pollutant</b>	No	No	No	No
<b>Emergency Response</b>	<b>ERG:</b> 154	-	<b>EMS:</b> F-A, S-B	8L
<b>Special provisions</b> Exempt Quantity or Quantity Limitations	Road 200Kg F: 5 Passenger Rail - 60L	-	-	Passenger -5L Cargo - 60L
<b>P, B, L &amp; O Provisions</b> <b>SANS 10231</b>	None	-	-	-
<b>Vessel Stowage</b> <b>Location 10(A) &amp;</b> <b>Requirements 10(B)</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 154: SUBSTANCES - TOXIC AND/OR CORROSIVE (NON-COMBUSTIBLE)

#### Public Safety

- CALL Emergency Response Telephone Number 112 or 10177.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

#### Protective Clothing

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

#### Evacuation

##### Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

##### Fire

### Small fires

- Dry chemical, CO2 or water spray.

### Large fires

- 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

- 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 warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

### 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 : 2006 : 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.

##### Precautionary statements

P234 Keep only in original container.  
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.  
P406 Store in corrosive resistant container with a resistant inner liner.

#### Labelling REGULATION (EC) No 1272/2008

##### Signal Word

Danger

##### Pictograms Hazard to Human

GHS05 Corrosive 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>

Compiled by Aquatrade Water Treatment Chemicals (Pty) Ltd, 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	2018/08/16	Preparation of the safety data sheet according to SANS 11014:2010
2.0	2019/07/20	All sections. Correct product info obtained from ECHA