



Be Right™

SAFETY DATA SHEET

Issue Date 05-Oct-2016

Revision Date 01-Dec-2016

Version 5

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1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Ammonia Cyanurate
Safety data sheet number M00128

Other means of identification

Product Code(s) 2653199

UN/ID no UN2680

Manufacturer Address

Hach Company
 P.O.Box 389 Loveland, CO 80539 USA
 (970) 669-3050

Emergency Telephone

(303) 623-5716 - 24 Hour Service (515)232-2533 - 8am - 4pm CST

2. HAZARDS IDENTIFICATION

GHS - Classification

| | |
|-----------------------------------|------------|
| Corrosive to metals | Category 1 |
| Acute toxicity - Oral | Category 5 |
| Skin corrosion/irritation | Category 1 |
| Serious eye damage/eye irritation | Category 1 |
| Aquatic Acute Toxicity | Category 3 |
| Chronic aquatic toxicity | Category 3 |

Label elements



Signal word - Danger

Hazard statements

H290 - May be corrosive to metals
 H303 - May be harmful if swallowed
 H314 - Causes severe skin burns and eye damage
 H412 - Harmful to aquatic life with long lasting effects

Precautionary statements

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P273 - Avoid release to the environment
P234 - Keep only in original container
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P310 - Immediately call a POISON CENTER or doctor
P390 - Absorb spillage to prevent material damage
P405 - Store locked up
P406 - Store in corrosive resistant stainless steel container with a resistant inliner
P501 - Dispose of contents/ container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable

Mixture

| Chemical Name | Formula | CAS No | EC No | Percent Range |
|---|-----------------------------|-----------|-----------|---------------|
| Trisodium citrate | $C_6H_5O_7Na_3$ | 68-04-2 | 200-675-3 | 80 - 90% |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*,R*)]-, disodium salt | $Na_2C_4H_4O_6 \cdot 2H_2O$ | 868-18-8 | 212-773-3 | 7 - 13% |
| Lithium hydroxide monohydrate | $LiOH \cdot H_2O$ | 1310-66-3 | - | 1 - 5% |
| Dichloroisocyanuric acid, sodium salt | $C_3HCl_2N_3O_3Na$ | 2893-78-9 | 220-767-7 | 1 - 5% |

4. FIRST AID MEASURES

Description of first aid measures

General advice

See section 8 for PPE that may be required during handling. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). If no local exhaust use approved fume hood and/or respirator. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. Remove from exposure, lie down. Immediate medical attention is required. IF IN EYES: Flush eyes for at least 15 minutes. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

Eye contact

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

Skin contact

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a physician immediately.

Ingestion

IF SWALLOWED: Rinse Mouth. Do NOT induce vomiting. Call a physician immediately.

Self-protection of the first aider First aider: Pay attention to self-protection. Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. 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.

Most important symptoms and effects, both acute and delayed

Symptoms See Section 11: TOXICOLOGICAL INFORMATION.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Fire-fighting Measures

Flammable properties

During a fire, irritating and highly toxic gases may be generated by thermal decomposition. Not classified as flammable according to GHS criteria.

Suitable Extinguishing Media

Dry chemical. Carbon dioxide. Water.

Unsuitable extinguishing media

Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical

The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating and toxic gases and vapors. In the event of fire and/or explosion do not breathe fumes.

Hazardous combustion products May emit toxic and corrosive fumes.

Protective equipment and precautions for firefighters

Wear self-contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Evacuate personnel to safe areas. Do not touch or walk through spilled material. Ventilate affected area. Use personal protective equipment as required.

Environmental precautions Do not allow into any sewer, on the ground or into any body of water. Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. See Section 12 for additional ecological information.

Methods for containment Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Take necessary precautions in observance of pertinent physical hazards. Neutralize spill if necessary. Soak up with inert absorbent material. Take up mechanically, placing in appropriate containers for disposal. Clean contaminated surface thoroughly. Dispose of in accordance with local, state and federal regulations or laws.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Absorb spillage to prevent material damage.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep out of the reach of children. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers. Keep/store only in original container.

Flammability class Not applicable

Incompatible materials None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Legend See section 16 for terms and abbreviations

Engineering Controls If no local exhaust use approved fume hood or self-contained breathing apparatus. If no local exhaust use approved fume hood and/or respirator. Showers. Eyewash stations.

Personal Protective Equipment

Eye/face protection Wear tight sealing safety goggles and/or face protection shield. Avoid contact with eyes.

Skin and body protection Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection Do not breathe gas/fumes/vapor/spray. If no local exhaust use approved fume hood and/or respirator. In case of inadequate ventilation wear respiratory protection.

General Hygiene Considerations

Avoid breathing (dust, vapor, mist, gas). Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wear suitable gloves and eye/face protection. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Keep away from food, drink and animal feeding stuffs. Regular cleaning of equipment, work area and clothing is recommended. Handle in accordance with good industrial hygiene and safety practice. Avoid prolonged or repeated contact with skin. Take off all contaminated clothing and wash it before reuse.

Environmental exposure controls Do not allow into any sewer, on the ground or into any body of water. Local authorities should be advised if significant spillages cannot be contained.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Solid

Gas Under Pressure Not classified according to GHS criteria

Appearance powder **Color** white

Odor Chlorine **Odor threshold** No data available

| <u>Property</u> | <u>Values</u> | <u>Remarks • Method</u> |
|-------------------------|-------------------|-------------------------|
| Molecular weight | No data available | |
| pH | 12.33 | 5% Solution; |

| | | |
|--|---|---|
| Melting point/freezing point | > 240 °C / 464 °F | |
| Boiling point / boiling range | No data available | |
| Evaporation rate | Not applicable | |
| Vapor pressure | 0.375 mm Hg / 0.05 kPa at 20 °C / 68 °F | Estimation based on theoretical calculation |
| Vapor density (air = 1) | Not applicable NaN (air = 1) | |
| Specific gravity (water = 1 / air = 1) | 1.783 | |
| Partition Coefficient (n-octanol/water) | Not applicable | |
| Soil Organic Carbon-Water Partition Coefficient | Not applicable | |
| Autoignition temperature | No data available | |
| Decomposition temperature | No data available | |
| Dynamic viscosity | Not applicable | |
| Kinematic viscosity | Not applicable | |

Solubility(ies)

Water solubility

| <u>Water solubility classification</u> | <u>Water solubility</u> | <u>Water Solubility Temperature</u> |
|--|-------------------------|-------------------------------------|
| Soluble | No data available | 25 °C / 77 °F |

Solubility in other solvents

| <u>Chemical Name</u> | <u>Solubility classification</u> | <u>Solubility</u> | <u>Solubility Temperature</u> |
|----------------------|----------------------------------|-------------------|-------------------------------|
| Acid | Soluble | > 1000 mg/L | 25 °C / 77 °F |

Other Information

| | |
|---|---|
| Metal Corrosivity | Classified as corrosive to metal according to GHS criteria |
| GHS Metal Corrosivity Classification | Category 1, H290 |
| Steel Corrosion Rate | 0 mm/yr / 0 in/yr |
| Aluminum Corrosion Rate | 20.4 mm/yr / 0.8 in/yr |
| Volatile Organic Compounds (VOC) Content | Not applicable. |
| Bulk density | Not applicable |
| Explosive properties | Not classified according to GHS criteria. |
| Explosion data | No data available |
| Upper explosion limit | No data available |
| Lower explosion limit | No data available |
| Flammable properties | During a fire, irritating and highly toxic gases may be generated by thermal decomposition. Not classified as flammable according |

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to GHS criteria.

Flammability Limit in Air

Upper flammability limit: No data available

Lower flammability limit: No data available

Flash point Not applicable

Method No information available

Oxidizing properties Not classified according to GHS criteria.

Reactivity properties Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

10. STABILITY AND REACTIVITY

Reactivity properties Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

Stability Stable under normal conditions.

Special dangers of the product None reported.

Conditions to avoid Heat, flames and sparks.

Incompatible materials None known based on information supplied.

Hazardous Decomposition Products Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Possibility of Hazardous Reactions None under normal processing.

Explosive properties

Not classified according to GHS criteria.

Upper explosion limit No data available

Lower explosion limit No data available

Autoignition temperature

No data available

Sensitivity to Static Discharge

None reported.

Sensitivity to Mechanical Impact

None reported.

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

| | |
|----------------------------|--|
| Product Information | Corrosive to skin. Corrosive to eyes. May be harmful if swallowed. |
| Inhalation | Causes burns. Corrosive by inhalation. |
| Eye contact | Corrosive to the eyes and may cause severe damage including blindness. Causes burns. |

| | |
|--|--|
| Skin contact | Cause severe skin burns and eye damage. |
| Ingestion | Ingestion causes burns of the upper digestive and respiratory tracts. May be harmful if swallowed. |
| Aggravated Medical Conditions | Eye disorders. Skin disorders. Respiratory disorders. |
| Toxicologically synergistic products | None known. |
| Toxicokinetics, metabolism and distribution | See ingredients information below. |

| Chemical Name | Toxicokinetics, metabolism and distribution |
|--|---|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | Citric Acid is an important component of the Krebs Cycle. |

Product Acute Toxicity Data

Test data reported below

Oral Exposure Route

| Endpoint type | Reported dose | Key literature references and sources for data |
|-------------------------|---------------|--|
| Rat LD ₅₀ | 3613 mg/kg | Outside testing |

Dermal Exposure Route

No data available

Inhalation (Dust/Mist) Exposure Route

No data available

Inhalation (Vapor) Exposure Route

No data available

Inhalation (Gas) Exposure Route

No data available

The following values are calculated based on chapter 3.1 of the GHS document

| | |
|--------------------------------------|------------|
| ATEmix (inhalation-dust/mist) | 39.34 mg/L |
|--------------------------------------|------------|

Ingredient Acute Toxicity Data

Oral Exposure Route

If available, see data below

| Chemical Name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|----------------------------|---------------|---------------|-----------------------|---|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | Rat LD ₅₀ | > 8000 mg/kg | None reported | None reported | IUCLID (The International Uniform Chemical Information Database) |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*, R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | Mouse LD ₅₀ | 4360 mg/kg | None reported | None reported | EPA (United States Environmental Protection Agency) |
| Lithium hydroxide monohydrate (1 - 5%) CAS#: 1310-66-3 | Rat LD ₅₀ | 225 mg/kg | None reported | None reported | IUCLID (The International Uniform Chemical Information Database) |
| Dichloroisocyanuric acid, sodium salt (1 - 5%) CAS#: 2893-78-9 | Rat LD ₅₀ | 750 mg/kg | None reported | None reported | ERMA (New Zealand Environmental Risk Management Authority) HSDB (Hazardous Substances Data Bank) |
| Chemical Name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*, R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | Rabbit LD ₅₀ | 5290 mg/kg | None reported | None reported | EPA (United States Environmental Protection Agency) |

Dermal Exposure Route

If available, see data below

| Chemical Name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|-------------------------|---------------|---------------|-----------------------|--|
| Dichloroisocyanuric acid, sodium salt (1 - 5%) CAS#: 2893-78-9 | Rabbit LD ₅₀ | > 10000 mg/kg | None reported | None reported | No information available |

Inhalation (Dust/Mist) Exposure Route

If available, see data below

| Chemical Name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|----------------------|---------------|---------------|-----------------------|--|
| Lithium hydroxide monohydrate (1 - 5%) CAS#: 1310-66-3 | Rat LC ₅₀ | 0.96 mg/L | 4 hours | None reported | IUCLID (The International Uniform Chemical Information Database) |
| Dichloroisocyanuric acid, sodium salt (1 - 5%) CAS#: 2893-78-9 | Rat LC ₅₀ | 12.5 mg/L | 4 hours | None reported | IUCLID (The International Uniform Chemical Information Database) |

Inhalation (Vapor) Exposure Route

No data available

Inhalation (Gas) Exposure Route

No data available

Product Skin Corrosion/Irritation Data

No data available.

Ingredient Skin Corrosion/Irritation Data

If available, see data below

| Chemical Name | Test method | Species | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---------------------------|---------|---------------|---------------|-------------------------------------|--|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | Patch test | Rabbit | None reported | None reported | Not corrosive or irritating to skin | ECHA (The European Chemicals Agency) |
| Lithium hydroxide monohydrate (1 - 5%) CAS#: 1310-66-3 | Existing human experience | Human | None reported | None reported | Corrosive to skin | ERMA (New Zealand's Environmental Risk Management Authority) |
| Dichloroisocyanuric acid, sodium salt (1 - 5%) CAS#: 2893-78-9 | Standard Draize Test | Rabbit | 500 mg | 24 hours | Mild skin irritant | RTECS (Registry of Toxic Effects of Chemical Substances) |

Product Serious Eye Damage/Eye Irritation Data

No data available.

Ingredient Eye Damage/Eye Irritation Data

If available, see data below

| Chemical Name | Test method | Species | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---|---------------|---------|---------------|---------------|-------------------|--|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | None reported | Rabbit | None reported | None reported | Mild eye irritant | IUCLID (The International Uniform Chemical Information Database) |
| Butanedioic acid, | None reported | Human | None | None | Not corrosive or | ECHA (The European |

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| | | | | | | |
|--|------------|--------|---------------|---------------|--------------------|--|
| 2,3-dihydroxy-[R-(R*, R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | | | reported | reported | irritating to eyes | Chemicals Agency) |
| Dichloroisocyanuric acid, sodium salt (1 - 5%) CAS#: 2893-78-9 | Rinse Test | Rabbit | None reported | None reported | Eye irritant | RTECS (Registry of Toxic Effects of Chemical Substances) |

Sensitization Information

Product Sensitization Data

Skin Sensitization Exposure Route No data available.

Respiratory Sensitization Exposure Route No data available.

Ingredient Sensitization Data

Skin Sensitization Exposure Route If available, see data below.

| Chemical Name | Test method | Species | Results | Key literature references and sources for data |
|--|---------------|------------|---------------------------------------|--|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | None reported | Guinea pig | Not confirmed to be a skin sensitizer | IUCLID (The International Uniform Chemical Information Database) |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*, R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | None reported | Human | Not confirmed to be a skin sensitizer | ECHA (The European Chemicals Agency) |

Respiratory Sensitization Exposure Route If available, see data below.

| Chemical Name | Test method | Species | Results | Key literature references and sources for data |
|--|---------------|---------|---------------------------------------|--|
| Butanedioic acid, 2,3-dihydroxy-[R-(R*, R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | None reported | Human | Not confirmed to be a skin sensitizer | ECHA (The European Chemicals Agency) |

Chronic Toxicity Information

Product Repeat Dose Toxicity Data

Oral Exposure Route No data available.

Dermal Exposure Route No data available.

Inhalation (Dust/Mist) Exposure Route No data available.

Inhalation (Vapor) Exposure Route No data available.

Inhalation (Gas) Exposure Route No data available.

Ingredient Repeat Dose Toxicity Data

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

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Inhalation (Vapor) Exposure Route

No data available

Inhalation (Gas) Exposure Route

No data available

| Chemical Name | CAS No | ACGIH | IARC | NTP | OSHA |
|---|-----------|-------|------|-----|------|
| Trisodium citrate | 68-04-2 | - | - | - | - |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*,R*)]-, disodium salt | 868-18-8 | - | - | - | - |
| Lithium hydroxide monohydrate | 1310-66-3 | - | - | - | - |
| Dichloroisocyanuric acid, sodium salt | 2893-78-9 | - | - | - | - |

Legend

| | |
|--|----------------|
| ACGIH (American Conference of Governmental Industrial Hygienists) | Does not apply |
| IARC (International Agency for Research on Cancer) | Does not apply |
| NTP (National Toxicology Program) | Does not apply |
| OSHA (Occupational Safety and Health Administration of the US Department of Labor) | Does not apply |

Product Carcinogenicity Data

No data available

Oral Exposure Route

No data available

Dermal Exposure Route

No data available

Inhalation (Dust/Mist) Exposure Route

No data available

Inhalation (Vapor) Exposure Route

No data available

Inhalation (Gas) Exposure Route

No data available

Ingredient Carcinogenicity Data

Oral Exposure Route

If available, see data below

| Chemical Name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|---|---------------|---------------|---------------|-----------------------|--|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | Rat | 3000 mg/kg | 2 years | None reported | IUCLID (The International Uniform Chemical Information Database) |

Dermal Exposure Route

No data available

Inhalation (Dust/Mist) Exposure Route

No data available

Inhalation (Vapor) Exposure Route

No data available

Inhalation (Gas) Exposure Route

No data available

Product Germ Cell Mutagenicity *in vitro* Data

No data available.

Ingredient Germ Cell Mutagenicity *in vitro* Data

If available, see data below

| Chemical Name | Test | Cell Strain | Reported dose | Exposure time | Results | Key literature references and |
|---------------|------|-------------|---------------|---------------|---------|-------------------------------|
|---------------|------|-------------|---------------|---------------|---------|-------------------------------|

| | | | | | | sources for data |
|--|-------------------------------|-----------------------------------|------------------|------------------|--|--|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | Mutation in microorganisms | <i>Salmonella typhimurium</i> | None reported | None reported | Negative test result for mutagenicity | IUCLID (The International Uniform Chemical Information Database) |

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Ingredient Germ Cell Mutagenicity *in vivo* Data

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Ingredient Reproductive Toxicity Data

Oral Exposure Route If available, see data below

| Chemical Name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|--|---------------------------|----------------------|----------------------|---|--|
| Dichloroisocyanuric acid, sodium salt (1 - 5%) CAS#: 2893-78-9 | Mouse TD _{Lo} | 4000 mg/kg | 9 days | Effects on Newborn Growth statistics (e.g. % reduced weight gain) Physical Specific Developmental Abnormalities Musculoskeletal system | RTECS (Registry of Toxic Effects of Chemical Substances) |
| Chemical Name | Endpoint type | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | Rat | 600 mg/kg | None reported | None reported | No information available |

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route

No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic life with long lasting effects

Unknown Aquatic Toxicity

0% of the mixture consists of component(s) of unknown hazards to the aquatic environment

Product Ecological Data

Aquatic toxicity

Fish

No data available

Crustacea

No data available

Algae

No data available

Terrestrial toxicity

Soil

No data available

Vertebrates

No data available

Invertebrates

No data available

Ingredient Ecological Data

Aquatic toxicity

Fish

If available, see ingredient data below

| Chemical Name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|--|---------------|----------------------------|------------------|---------------|---|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | 96 hours | <i>Poecilia reticulata</i> | LC ₅₀ | > 18000 mg/L | IUCLID (The International Uniform Chemical Information Database) |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*, R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | 96 hours | None reported | LC ₅₀ | 612000 mg/L | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™ |
| Dichloroisocyanuric acid, sodium salt (1 - 5%) CAS#: 2893-78-9 | 96 hours | <i>Oncorhynchus mykiss</i> | LC ₅₀ | 0.25 mg/L | PEEN (Pan European Ecological Network) |

Crustacea

If available, see ingredient data below

| Chemical Name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|--|---------------|----------------------|------------------|---------------|---|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | None reported | None reported | None reported | None reported | IUCLID (The International Uniform Chemical Information Database) |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*, R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | 48 Hours | None reported | LC ₅₀ | 263000 mg/L | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™ |
| Dichloroisocyanuric acid, sodium salt | 48 Hours | <i>Daphnia magna</i> | LC ₅₀ | 0.28 mg/L | ECHA (The European Chemicals Agency) |

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| | | | | | |
|-----------------------------|--|--|--|--|--|
| (1 - 5%) CAS#: 2893-78-9 | | | | | PEEN (Pan European Ecological Network) |
|-----------------------------|--|--|--|--|--|

Algae

If available, see ingredient data below

| Chemical Name | Exposure time | Species | Endpoint type | Reported dose | Key literature references and sources for data |
|--|---------------|---------------------------|------------------|---------------|---|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | 96 hours | <i>Chlorella vulgaris</i> | EC ₅₀ | > 18000 mg/L | IUCLID (The International Uniform Chemical Information Database) |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*, R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | 96 hours | None reported | EC ₅₀ | 623770 mg/L | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™ |

Terrestrial toxicity

Soil No data available
Vertebrates No data available
Invertebrates No data available

Other Information

Persistence and degradability

None known.

Product Biodegradability Data

If available, see ingredient data below.

Ingredient Biodegradability Data

Test data reported below

| Chemical Name | Test method | Biodegradation | Exposure time | Results |
|--|---------------|----------------|---------------|-----------------------|
| Butanedioic acid, 2,3-dihydroxy-[R-(R*, R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | None reported | 73% | 14 days | Readily biodegradable |
| Dichloroisocyanuric acid, sodium salt (1 - 5%) CAS#: 2893-78-9 | None reported | None reported | None reported | Readily biodegradable |

Bioaccumulation

None known.

Product Bioaccumulation Data No data available.

Ingredient Bioaccumulation Data No data available

Additional information

Product Information

Partition Coefficient (n-octanol/water) Not applicable

Ingredient Information

| Chemical Name | Partition Coefficient (n-octanol/water) | Method |
|--|---|--|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | log K _{ow} = -0.76 | No information available |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*,R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | log K _{ow} = -4.28 | No information available |
| Dichloroisocyanuric acid, sodium salt (1 - 5%) CAS#: 2893-78-9 | log K _{ow} = -0.06 | Estimation through KOWWIN v1.68 part of the Estimation Programs Interface (EPI) Suite™ |

Mobility

Mobility in soil: High mobility. If available, see ingredient data below.

Product Information

Soil Organic Carbon-Water Partition Coefficient Not applicable

Ingredient Information

| Chemical Name | Soil Organic Carbon-Water Partition Coefficient | Method |
|--|---|--------------------------|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | log K _{oc} = 0.68 | No information available |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*,R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | log K _{oc} = -1.33 | No information available |

Additional information

Water solubility

Product Information

| Water solubility classification | Water solubility | Water Solubility Temperature |
|---------------------------------|-------------------|------------------------------|
| Soluble | No data available | 25 °C / 77 °F |

Ingredient Information

| Chemical Name | Water solubility classification | Water solubility | Water solubility temperature °C | Water solubility temperature °F |
|--|---------------------------------|------------------|---------------------------------|---------------------------------|
| Trisodium citrate (80 - 90%) CAS#: 68-04-2 | Completely soluble | 425000 mg/L | 20 °C | 68 °F |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*,R*)]-, disodium salt (7 - 13%) CAS#: 868-18-8 | Completely soluble | 100000 mg/L | 20 °C | 68 °F |
| Lithium hydroxide monohydrate (1 - 5%) CAS#: 1310-66-3 | Completely soluble | 128000 mg/L | 20 °C | 68 °F |
| Dichloroisocyanuric acid, sodium salt (1 - 5%) | Completely soluble | 227000 mg/L | 25 °C | 77 °F |

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| | | | | |
|-----------------|--|--|--|--|
| CAS#: 2893-78-9 | | | | |
|-----------------|--|--|--|--|

Other adverse effects
 No information available.

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Endocrine disrupting potential |
|--|--|--|--------------------------------|
| Dichloroisocyanuric acid, sodium salt (1 - 5%) CAS#: 2893-78-9 | Group III Chemical | - | - |

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

- Disposal of wastes** Disposal should be in accordance with applicable regional, national, and local laws and regulations.
- Contaminated packaging** Do not reuse container.
- US EPA Waste Number** D002
- Special instructions for disposal** Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Open cold water tap completely, slowly pour the reacted material to the drain. Flush system with plenty of water.
- Waste from residues/unused products** Disposal should be in accordance with applicable regional, national, and local laws and regulations.
- Contaminated packaging** Do not reuse container.

14. TRANSPORT INFORMATION

IMDG

Proper shipping name Lithium Hydroxide Mixture
 Hazard Class 8
 UN/ID no UN2680
 Packing Group II

IATA

UN/ID no UN2680
 Proper shipping name Lithium Hydroxide Mixture
 Hazard Class 8
 Packing Group II
 ERG Code 154

DOT

Proper shipping name Lithium Hydroxide Mixture
 Hazard Class 8
 UN/ID no UN2680
 Packing Group II
 Marine pollutant This product contains a chemical which is listed as a marine pollutant according to DOT.

TDG

Hazard Class 8
 UN/ID no UN2680
 Packing Group II
 Marine pollutant This product contains a chemical which is listed as a severe marine pollutant according to

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TDG.

ADR

Proper shipping name Lithium Hydroxide Mixture
Hazard Class 8
UN/ID no UN2680
Packing Group II

Additional information

There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is not in a reagent set or kit, the classification given above applies. If the item is part of a reagent set or kit the classification would change to the following: UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

International Inventories

TSCA Complies
DSL/NDSL Complies
EINECS/ELINCS Complies
ENCS Complies
IECSC Complies
KECL Complies
PICCS Complies
TCSI Complies
AICS Complies
NZIoC Complies

TSCA- United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL- Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS- Japan Existing and New Chemical Substances

IECSC- China Inventory of Existing Chemical Substances

KECL- Korean Existing and Evaluated Chemical Substances

PICCS- Philippines Inventory of Chemicals and Chemical Substances

TCSI- Taiwan Chemical Substances Inventory

AICS- Australian Inventory of Chemical Substances

NZIoC- New Zealand Inventory of Chemicals

Wastes Management Dispose of in accordance with federal, state and local regulations

Basel Convention Codes

| Chemical Name | CAS No | ANNEX I | ANNEX III |
|---|-----------|---------|-----------|
| Trisodium citrate | 68-04-2 | - | - |
| Butanedioic acid, 2,3-dihydroxy-[R-(R*,R*)]-, disodium salt | 868-18-8 | - | - |
| Lithium hydroxide monohydrate | 1310-66-3 | - | - |
| Dichloroisocyanuric acid, sodium salt | 2893-78-9 | - | - |

International Regulations

Ozone-depleting substances (ODS) Not applicable

Persistent Organic Pollutants Not applicable

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Export Notification requirements Not applicable

16. OTHER INFORMATION

Key or legend to abbreviations and acronyms used in the safety data sheet

| | |
|-------------------|---|
| <i>NIOSH IDLH</i> | <i>Immediately Dangerous to Life or Health</i> |
| ACGIH | ACGIH (American Conference of Governmental Industrial Hygienists) |
| <i>NDF</i> | <i>no data</i> |

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

| | | | |
|------|---------------------------------|---------|---|
| TWA | TWA (time-weighted average) | STEL | STEL (Short Term Exposure Limit) |
| MAC | Maximum Allowable Concentration | Ceiling | Ceiling Limit Value |
| X | Listed | Vacated | These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations. |
| SKN* | Skin designation | SKN+ | Skin sensitization |
| RSP+ | Respiratory sensitization | ** | Hazard Designation |
| C | Carcinogen | R | Reproductive toxicant |
| M | mutagen | | |

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Revision Note None.

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

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End of Safety Data Sheet