Simplicity in Water Analysis

Cover Page for Safety Data Sheet

Thank you for choosing CHEMetrics, Inc. We appreciate your business. In order to best serve your needs for accurate and complete Safety Data, we offer the following information as supplemental to the attached SDS.

SDS No.: K3503
Version No.: 1.1

Product Name: Copper Vacu-vials® Ampoules, Copper CHEMets® Refill
Part Nos.: K-3503 Ampoules, R-3510

Product Descriptions:

CHEMets Refills: Sealed glass ampoules, 7 mm OD, for visual colorimetric water analysis. Each CHEMet™ ampoule contains approximately 0.5 mL of liquid reagent sealed under vacuum. Refills contain 30 ampoules, test kits contain 1 refill.

Vacu-vials Ampoules: Sealed glass ampoules, 13 mm OD, for instrumental colorimetric water analysis. Each Vacu-vial™ ampoule contains approximately 2 mL of liquid reagent sealed under vacuum. Test kits contain 30 ampoules.

Addendum to Section 14 Transport Information:

Shipping container markings and labels for this product, as received, may vary from the contents of section 14 of the SDS for one or both of the following reasons:

- CHEMetrics has packaged this product as Dangerous Goods in Excepted Quantities according to IATA, US DOT, and IMDG regulations.
- CHEMetrics has packaged this product as part of a test kit or reagent set composed of various chemical reagents and elected to ship as UN 3316 Chemical Kit, Hazard Class 9, Packing Group II or III.

In case of reshipment, it is the responsibility of the shipper to determine appropriate labels and markings in accordance with applicable transportation regulations.

Additional Information:

- “Print Date” = Revision Date (expressed as DD/MM/YYYY)
- Test kits and reagents sets may contain additional chemical reagents. See separate SDS(s).
Copper Vacu-vials Ampoules, Copper CHEMets Refill
CHEMetrics, Inc.

Chemwatch: 9-86296
SDS No: K3503
Version No: 1.1

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>Copper Vacu-vials Ampoules, Copper CHEMets Refill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>Part Nos.: K-3503 Ampoules, R-3510</td>
</tr>
<tr>
<td>Proper shipping name</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other means of identification</td>
<td>Not Available</td>
</tr>
<tr>
<td>CAS number</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

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

| Relevant identified uses | Component of water analysis test kits K-3503, K-3510 |

Details of the manufacturer/importer

<table>
<thead>
<tr>
<th>Registered company name</th>
<th>CHEMetrics, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>4295 Catlett Road, Midland, VA. 22728 United States</td>
</tr>
<tr>
<td>Telephone</td>
<td>1-540-788-9026</td>
</tr>
<tr>
<td>Fax</td>
<td>1-540-788-4856</td>
</tr>
<tr>
<td>Website</td>
<td><a href="http://www.chemetrics.com">www.chemetrics.com</a></td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:technical@chemetrics.com">technical@chemetrics.com</a></td>
</tr>
</tbody>
</table>

Emergency telephone number

<table>
<thead>
<tr>
<th>Association / Organisation</th>
<th>ChemTel Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency telephone numbers</td>
<td>1-800-255-3924</td>
</tr>
<tr>
<td>Other emergency telephone numbers</td>
<td>401-813-248-0585</td>
</tr>
</tbody>
</table>

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

| GHS Classification | Skin Corrosion/Irritation Category 2, Eye Irritation Category 2A, STOT - SE (Resp. Irr.) Category 3 |

Label elements

GHS label elements

| SIGNAL WORD | WARNING |

Hazard statement(s)

| H315 | Causes skin irritation |
| H319 | Causes serious eye irritation |
| H335 | May cause respiratory irritation |

Precautionary statement(s) Prevention

| P101 | If medical advice is needed, have product container or label at hand. |
Precautionary statement(s) Response

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312 Call a POISON CENTER/doctor/physician/first aider if you feel unwell.

P337+P313 If eye irritation persists: Get medical advice/attention.

P302+P352 IF ON SKIN: Wash with plenty of water and soap.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Precautionary statement(s) Storage

P405 Store locked up.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Precautionary statement(s) Disposal

P501 Dispose of contents/container to authorised chemical landfill or if organic to high temperature incineration.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

<table>
<thead>
<tr>
<th>CAS No</th>
<th>% [weight]</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>52698-84-7</td>
<td>0.1</td>
<td>bathocuproinedisulfonic acid, disodium salt</td>
</tr>
<tr>
<td>1113-38-8</td>
<td>1</td>
<td>ammonium oxalate</td>
</tr>
<tr>
<td>7631-90-5</td>
<td>1</td>
<td>sodium bisulfite</td>
</tr>
<tr>
<td>67-64-1</td>
<td>&lt;1</td>
<td>acetone</td>
</tr>
<tr>
<td>631-61-8</td>
<td>23</td>
<td>ammonium acetate</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>&gt;73</td>
<td>water</td>
</tr>
</tbody>
</table>

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact

If this product comes in contact with the eyes:
- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Seek medical attention without delay; if pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact

If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

Inhalation

If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.

Ingestion

Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

For acute or short term repeated exposures to ammonia and its solutions:
- Mild to moderate inhalation exposures produce headache, cough, bronchospasm, nausea, vomiting, pharyngeal and retrosternal pain and conjunctivitis. Severe inhalation produces laryngospasm, signs of upper airway obstruction (stridor, hoarseness, difficulty in speaking) and, in excessively, high doses, pulmonary oedema.
- Warm humidified air may soothe bronchial irritation.
- Test all patients with conjunctival irritation for corneal abrasion (fluorescein stain, slit lamp exam)
- Dyspeptic patients should receive a chest X-ray and arterial blood gases to detect pulmonary oedema.

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

- There is no restriction on the type of extinguisher which may be used.
Use extinguishing media suitable for surrounding area.

**Special hazards arising from the substrate or mixture**

**Fire Incompatibility**

None known.

**Advice for firefighters**

**Fire Fighting**

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves in the event of a fire.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.
- **DO NOT** approach containers suspected to be hot.

**Fire/Explosion Hazard**

- Non combustible.
- Not considered a significant fire risk, however containers may burn.
  Decomposition may produce toxic fumes of: nitrogen oxides (NOx) May emit poisonous fumes. May emit corrosive fumes.

### SECTION 6 ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**Minor Spills**

- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.

**Major Spills**

- Moderate hazard.
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.

**SECTION 7 HANDLING AND STORAGE**

**Precautions for safe handling**

**Safe handling**

- **DO NOT** allow clothing wet with material to stay in contact with skin
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- **DO NOT** enter confined spaces until atmosphere has been checked.
  Wear impact- and splash-resistant eyewear. Break the ampoule tip only when it is completely immersed in sample. Breaking the tip in air may cause the glass ampoule to shatter.

**Other information**

For optimum analytical performance, store in the dark and at room temperature.

**Conditions for safe storage, including any incompatibilities**

**Suitable container**

- Polyethylene or polypropylene container.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

**Storage incompatibility**

- Acetic acid:
  - vapours forms explosive mixtures with air (above 39 C.)
  - reacts violently with bases such as carbonates and hydroxides (giving off large quantities of heat), oxidisers, organic amines, acetaldehyde, potassium tert-butoxide
  - reacts (sometimes violently), with strong acids, aliphatic amines, alkanolamines, alkylene oxides, epichlorohydrin, acetic anhydride, 2-aminoethanol, ammonia, ammonium nitrate, bromine perfluoride, chlorosulfonic acid, chronic acid, chromium trioxide, ethylenediamine, ethyleneimine, hydrogen peroxide, isocyanates, oleum, perchloric acid, permanganates, phosphorus isocynate, phosphorus trichloride, sodium peroxide, xylene
  - attacks cast iron, stainless steel and other metals, forming flammable hydrogen gas
  - attacks many forms of rubber, plastics and coatings

**PACKAGE MATERIAL INCOMPATIBILITIES**

Not Available

### SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

**Control parameters**

**OCCUPATIONAL EXPOSURE LIMITS (OEL)**

**INGREDIENT DATA**

<table>
<thead>
<tr>
<th>Source</th>
<th>Ingredient</th>
<th>Material name</th>
<th>TWA</th>
<th>STEL</th>
<th>Peak</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>US ACGIH Threshold Limit Values (TLV)</td>
<td>sodium bisulfite</td>
<td>Sodium bisulfite</td>
<td>5 mg/m^3</td>
<td>Not Available</td>
<td>Not Available</td>
<td>TLV® Basis: Skin, eye, &amp; URT irr</td>
</tr>
<tr>
<td>US NIOSH Recommended Exposure Limits (RELs)</td>
<td>sodium bisulfite</td>
<td>Monosodium salt of sulphurous acid, Sodium acid bisulfite, Sodium bisulphite, Sodium hydrogen sulfite</td>
<td>5 mg/m^3</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>
US OSHA Permissible Exposure Levels (PELs) - Table Z1

<table>
<thead>
<tr>
<th>Material name</th>
<th>Material</th>
<th>PEL / TLV</th>
<th>TLV® Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetone</td>
<td>Acetone</td>
<td>2400 mg/m³ / 1000 ppm</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium oxalate</td>
<td>Acetone</td>
<td>3 mg/m³</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium acetate</td>
<td>Acetone</td>
<td>2000 mg/m³</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium bisulfite</td>
<td>Acetone</td>
<td>10 mg/m³</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium oxalate</td>
<td>Acetone</td>
<td>17 mg/m³</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium oxalate</td>
<td>Acetone</td>
<td>4.6 mg/m³</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium oxalate</td>
<td>Acetone</td>
<td>590 mg/m³ / 250 ppm</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium acetate</td>
<td>Acetone</td>
<td>4.6 mg/m³</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium acetate</td>
<td>Acetone</td>
<td>50 mg/m³</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium acetate</td>
<td>Acetone</td>
<td>50 mg/m³</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium acetate</td>
<td>Acetone</td>
<td>250 mg/m³</td>
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</table>

EMERGENCY LIMITS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Material name</th>
<th>TEEL-1</th>
<th>TEEL-2</th>
<th>TEEL-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetone</td>
<td>Acetone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonium oxalate</td>
<td>Ammonium oxalate, (Di(hanedioic acid, diammonium salt)</td>
<td>33 mg/m³</td>
<td>370 mg/m³</td>
<td>2200 mg/m³</td>
</tr>
<tr>
<td>Ammonium oxalate</td>
<td>Ammonium oxalate, (Diammonium oxalate monohydrate)</td>
<td>1.1 mg/m³</td>
<td>12 mg/m³</td>
<td>71 mg/m³</td>
</tr>
<tr>
<td>Sodium bisulfite</td>
<td>Sodium bisulfite</td>
<td>15 mg/m³</td>
<td>17 mg/m³</td>
<td>400 mg/m³</td>
</tr>
<tr>
<td>Acetone</td>
<td>Acetone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonium acetate</td>
<td>Ammonium acetate</td>
<td>4.6 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Ammonium acetate</td>
<td>Ammonium acetate</td>
<td>50 mg/m³</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Exposure controls

Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

- Process controls which involve changing the way a job activity or process is done to reduce the risk.
- Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly.
- Personal protective equipment (PPE) - These are items of personal clothing or equipment worn by the worker to protect them from the hazard and include items such as gloves, respirators, protective eyewear, etc.

Personal protection

Safety glasses with side shields.
Chemical goggles.
Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience.

Eye and face protection

Skin protection

See Hand protection below

Hands/feet protection

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

Suitability and durability of glove type is dependent on usage.

Body protection

See Other protection below

Other protection

Overalls.
P.V.C. apron.
Barrier cream.
Skin cleansing cream.

Thermal hazards

Not Available

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the: "Forsberg Clothing Performance Index".
The effect(s) of the following substance(s) are taken into account in the computer-generated selection:

Copper Vac-u-ials Ampoules, Copper CHEMets Refill

<table>
<thead>
<tr>
<th>Material</th>
<th>CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUTYL</td>
<td>C</td>
</tr>
<tr>
<td>BUTYL/NEOPRENE</td>
<td>C</td>
</tr>
<tr>
<td>CPE</td>
<td>C</td>
</tr>
<tr>
<td>HYPALON</td>
<td>C</td>
</tr>
</tbody>
</table>

Respiratory protection

Type AX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

<table>
<thead>
<tr>
<th>Required minimum protection factor</th>
<th>Maximum gas/vapour concentration present in air p.p.m. (by volume)</th>
<th>Half-face Respirator</th>
<th>Full-Face Respirator</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 10</td>
<td>1000</td>
<td>AX-AUS / Class 1 P2</td>
<td>AX-AUS / Class 1 P2</td>
</tr>
<tr>
<td>up to 50</td>
<td>1000</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Continued...
### SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Colorless to pale brown, crystals possible</td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Relative density (Water = 1)</td>
<td>0.98</td>
</tr>
<tr>
<td>Odour</td>
<td>Sharp</td>
</tr>
<tr>
<td>Partition coefficient n-octanol / water</td>
<td>Not Available</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not Available</td>
</tr>
<tr>
<td>Auto-ignition temperature (°C)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Melting point / freezing point (°C)</td>
<td>-4</td>
</tr>
<tr>
<td>Initial boiling point and boiling range (°C)</td>
<td>106</td>
</tr>
<tr>
<td>Molecular weight (g/mol)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Flash point (°C)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not Available</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not Available</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Solubility in water (g/L)</td>
<td>Miscible</td>
</tr>
<tr>
<td>Vapour pressure (kPa)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Vapour density (Air = 1)</td>
<td>Not Available</td>
</tr>
<tr>
<td>VOC g/L</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

### SECTION 10 STABILITY AND REACTIVITY

- **Reactivity**: See section 7
- **Chemical stability**
  - Unstable in the presence of incompatible materials.
  - Product is considered stable.
  - Hazardous polymerisation will not occur.
- **Possibility of hazardous reactions**: See section 7
- **Conditions to avoid**: See section 7
- **Incompatible materials**: See section 7
- **Hazardous decomposition products**: See section 5

### SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

* * CPI - Chemwatch Performance Index
  - A: Best Selection
  - B: Satisfactory; may degrade after 4 hours continuous immersion
  - C: Poor to Dangerous Choice for other than short term immersion

**NOTE**: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. *Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.*
The material can cause respiratory irritation in some persons. The body’s response to such irritation can cause further lung damage. Not normally a hazard due to non-volatile nature of product. The material has NOT been classified by EC Directives or other classification systems as “harmful by inhalation”. This is because of the lack of corroborating animal or human evidence.

**Skin Contact**
This material can cause inflammation of the skin on contact in some persons.
The material may accentuate any pre-existing dermatitis condition.
Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions. Open cuts, abraded or irritated skin should not be exposed to this material.
Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

**Eye**
This material can cause eye irritation and damage in some persons.

**Chronic**
Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.
Substance accumulation, in the human body, may occur and may cause some concern following repeated or long term occupational exposure.

### Ecological Information

**SODIUM BISULFITE**
Human lymphocyte mutagen

**ACETONE**
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
The acute toxicity of acetone is low. Acetone is not a skin irritant or sensitiser but is a defatting agent to the skin. Acetone is an eye irritant. The subchronic toxicity of acetone has been examined in mice and rats that were administered acetone in the drinking water and again in rats treated by oral gavage.

**AMMONIUM ACETATE**
Altered sleep time, muscle contraction, coma, dyspnea, hypoglycemia recorded.

**BATHOCUPROINEDISULFONIC ACID, DISODIUM SALT, AMMONIUM OXALATE, WATER**
No significant acute toxicological data identified in literature search.

### CMR Status
Not Applicable

### Section 12 Ecological Information

**Toxicity**

*For Ammonia:*
Atmospheric Fate: Ammonia reacts rapidly with available acids (mainly sulfuric, nitric, and sometimes hydrochloric acid) to form the corresponding salts. Ammonia is persistent in the air.
Aquatic Fate: Biodegrades rapidly to nitrate, producing a high oxygen demand. Non-persistent in water (half-life 2 days).
Ecotoxicity: Moderately toxic to fish under normal temperature and pH conditions and harmful to aquatic life at low concentrations.

**Persistence and degradability**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium bisulfite</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

*Data required to make classification available* - ✔️
*Data available but does not fill the criteria for classification* - ✗
*Data Not Available to make classification* - 🔴

**Legend:**
### Bioaccumulative potential

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Bioaccumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium bisulfite</td>
<td>LOW (LogKOW = -2.3169)</td>
</tr>
<tr>
<td>acetone</td>
<td>LOW (BCF = 69)</td>
</tr>
<tr>
<td>water</td>
<td>LOW (LogKOW = -1.38)</td>
</tr>
</tbody>
</table>

### Mobility in soil

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium bisulfite</td>
<td>LOW (KOC = 4.41)</td>
</tr>
<tr>
<td>acetone</td>
<td>HIGH (KOC = 1.981)</td>
</tr>
<tr>
<td>water</td>
<td>LOW (KOC = 14.3)</td>
</tr>
</tbody>
</table>

### SECTION 13 DISPOSAL CONSIDERATIONS

**Waste treatment methods**

| Product / Packaging disposal | Dispose of according to federal, state, and local regulations. |

### SECTION 14 TRANSPORT INFORMATION

#### Labels Required

- Marine Pollutant: NO

**Land transport (DOT): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

**Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

**Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

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

<table>
<thead>
<tr>
<th>Source</th>
<th>Ingredient</th>
<th>Pollution Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk</td>
<td>sodium bisulfite</td>
<td>Z</td>
</tr>
</tbody>
</table>

### SECTION 15 REGULATORY INFORMATION

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

- **bathocuproinedisulfonic acid, disodium salt(52698-84-7) is found on the following regulatory lists**
  - "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"
- **ammonium oxalate(1113-36-6) is found on the following regulatory lists**
  - "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"
- **sodium bisulfite(7631-90-5) is found on the following regulatory lists**
  - "US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants";
  - "US - Hawaii Air Contaminant Limits";
  - "US - California Permissible Exposure Limits for Chemical Contaminants";
  - "US ACGIH Threshold Limit Values (TLV) - Carcinogens";
  - "US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants";
  - "US - Michigan Exposure Limits for Air Contaminants";
  - "International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monograph";
  - "US NIOSH Recommended Exposure Limits (PELs)";
  - "US - Alaska Limits for Air Contaminants";
  - "US - Washington Permissible exposure limits of air contaminants";
  - "US - Minnesota Permissible Exposure Limits (PELs)";
  - "US ACGIH Threshold Limit Values (TLV)";
  - "US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants";
  - "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"
- **acetone(67-64-1) is found on the following regulatory lists**
  - "US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)";
  - "US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants";
  - "US - Idaho - Limits for Air Contaminants";
  - "US - Hawaii Air Contaminant Limits";
  - "US - California Permissible Exposure Limits for Chemical Contaminants";
  - "US ACGIH Threshold Limit Values (TLV) - Carcinogens";
  - "US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants";
  - "US - Oregon Permissible Exposure Limits (Z-1)";
  - "US - Michigan Exposure Limits for Air Contaminants";
  - "US EPA Carcinogens Listing";
  - "US NIOSH Recommended Exposure Limits (RELS)";
  - "US - Alaska Limits for Air Contaminants";
  - "US - Washington Permissible exposure limits of air contaminants";
  - "US ACGIH Threshold Limit Values (TLV) - Notice of Intended Changes";
  - "US Spacecraft Maximum Allowable Concentrations (SMACs) for Airborne Contaminants";
  - "US - Minnesota Permissible Exposure Limits (PELs)";
  - "US ACGIH Threshold Limit Values (TLV)";
  - "US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants";
  - "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory";
  - "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants";
  - "US OSHA Permissible Exposure Levels (PELs) - Table Z1"
- **ammonium acetate(631-61-8) is found on the following regulatory lists**
  - "US EPA Carcinogens Listing";
  - "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"
- **water(7732-18-5) is found on the following regulatory lists**
  - "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"
SECTION 16 OTHER INFORMATION

Other information

Ingredients with multiple cas numbers

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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