1. IDENTIFICATION

Product identifier
Product Name
SulfaVer® 4 Sulfate Reagent

Other means of identification
Product Code(s) 2106769

Safety data sheet number M00046

Recommended use of the chemical and restrictions on use
Recommended Use Laboratory reagent. Sulfate determination.
Uses advised against None.
Restrictions on use None.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company P.O.Box 389 Loveland, CO 80539 USA +1(970) 669-3050

Emergency telephone number
+1(303) 623-5716 - 24 Hour Service

2. HAZARDS IDENTIFICATION

Classification

Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Acute toxicity - Oral</th>
<th>Acute toxicity - Inhalation (Dusts/Mists)</th>
<th>Skin corrosion/irritation</th>
<th>Serious eye damage/eye irritation</th>
<th>Chronic aquatic toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2A</td>
<td>3</td>
</tr>
</tbody>
</table>

Hazards not otherwise classified (HNOC)
Not applicable

Label elements

Signal word
Warning
Hazard statements
H302 - Harmful if swallowed
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H412 - Harmful to aquatic life with long lasting effects

Precautionary statements
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P271 - Use only outdoors or in a well-ventilated area
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P312 - Call a POISON CENTER or doctor/physician if you feel unwell
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse
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
P337 + P313 - If eye irritation persists: Get medical advice/attention
P273 - Avoid release to the environment
P270 - Do not eat, drink or smoke when using this product
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P330 - Rinse mouth
P501 - Dispose of contents/ container to an approved waste disposal plant

Other Hazards Known
May be harmful in contact with skin
Harmful to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Not applicable

Mixture

Chemical Family
Mixture.

Percent ranges are used where confidential product information is applicable.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS No.</th>
<th>Percent Range</th>
<th>HMRIC #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid</td>
<td>77-92-9</td>
<td>50 - 60%</td>
<td>-</td>
</tr>
<tr>
<td>Barium chloride (BaCl2), dihydrate</td>
<td>10326-27-9</td>
<td>40 - 50%</td>
<td>-</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Description of first aid measures

General advice
Show this safety data sheet to the doctor in attendance.

Inhalation
Remove to fresh air. Get medical attention immediately if symptoms occur. If breathing has
stopped, give artificial respiration. Get medical attention immediately. If symptoms persist, call a physician.

**Eye contact**
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. Do not rub affected area.

**Skin contact**
Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

**Ingestion**
Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get medical attention.

**Self-protection of the first aider**
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.

**Most important symptoms and effects, both acute and delayed**

**Symptoms**
Burning sensation. Coughing and/or wheezing. Difficulty in breathing.

**Indication of any immediate medical attention and special treatment needed**

**Note to physicians**
Treat symptomatically.

---

### 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable Extinguishing Media**
Caution: Use of water spray when fighting fire may be inefficient.

**Specific hazards arising from the chemical**
No information available.

**Hazardous combustion products**
Carbon monoxide, Carbon dioxide. Chlorides.

**Special protective equipment for fire-fighters**
Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

---

### 6. ACCIDENTAL RELEASE MEASURES

**U.S. Notice**
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

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

**Personal precautions**
Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Avoid generation of dust. Do not breathe dust.

**Other Information**
Refer to protective measures listed in Sections 7 and 8.

**Environmental precautions**
Environmental precautions
Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Pick up and transfer to properly labeled containers.

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

Reference to other sections
See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid generation of dust. Ensure adequate ventilation.

Conditions for safe storage, including any incompatibilities

Storage Conditions
Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children.

Flammability class
Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium chloride (BaCl2), dihydrate CAS#: 10326-27-9</td>
<td>TWA: 0.5 mg/m³ Ba</td>
<td>TWA: 0.5 mg/m³ (vacated) TWA: 0.5 mg/m³</td>
<td>IDLH: 50 mg/m³ Ba TWA: 0.5 mg/m³ except Barium sulfate Ba</td>
</tr>
</tbody>
</table>

Appropriate engineering controls
Engineering Controls
Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection
No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hand Protection
Wear suitable gloves. Impervious gloves.

Eye/face protection
If splashes are likely to occur, wear safety glasses with side-shields.

Skin and body protection
Wear suitable protective clothing. Long sleeved clothing.

General Hygiene Considerations
Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing. Avoid breathing dust/fume/gas/mist/vapors/spray.
Environmental exposure controls
Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

Thermal hazards
None under normal processing.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular weight</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>2.01</td>
<td>5% Solution</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>~ 124 °C / 255 °F</td>
<td></td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Vapor density (air = 1)</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Specific gravity (water = 1 / air = 1)</td>
<td>~ 2</td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient (n-octanol/water)</td>
<td>log $K_{ow}$ ~ -1.04</td>
<td></td>
</tr>
<tr>
<td>Soil Organic Carbon-Water Partition Coefficient</td>
<td>log $K_{oc}$ ~ 0.48</td>
<td></td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>Dynamic viscosity</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

### Solubility(ies)

**Water solubility**

<table>
<thead>
<tr>
<th>Water solubility classification</th>
<th>Water solubility</th>
<th>Water Solubility Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soluble</td>
<td>&gt; 1000 mg/L</td>
<td>25 °C / 77 °F</td>
</tr>
</tbody>
</table>

**Solubility in other solvents**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Solubility classification</th>
<th>Solubility</th>
<th>Solubility Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid</td>
<td>Soluble</td>
<td>&gt; 1000 mg/L</td>
<td>25 °C / 77 °F</td>
</tr>
</tbody>
</table>

### Other Information

**Metal Corrosivity**

Steel Corrosion Rate: Not applicable
Aluminum Corrosion Rate
Not applicable

Volatile Organic Compounds (VOC) Content
Not applicable

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS No.</th>
<th>Volatile organic compounds (VOC) content</th>
<th>CAA (Clean Air Act)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid</td>
<td>77-92-9</td>
<td>Not applicable</td>
<td>-</td>
</tr>
<tr>
<td>Barium chloride (BaCl2), dihydrate</td>
<td>10326-27-9</td>
<td>Not applicable</td>
<td>-</td>
</tr>
</tbody>
</table>

Explosive properties
Upper explosion limit          No data available
Lower explosion limit          No data available

Flammable properties
Flash point                     Not applicable

Flammability Limit in Air
Upper flammability limit       No data available
Lower flammability limit       No data available

Oxidizing properties
No data available.

Bulk density                   No data available

10. STABILITY AND REACTIVITY

Reactivity
Not applicable.

Chemical stability
Stable under normal conditions.

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

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization
None under normal processing.

Conditions to avoid
Excessive heat.

Incompatible materials

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

11. TOXICOLOGICAL INFORMATION
Information on Likely Routes of Exposure

Product Information

**Inhalation**
May cause irritation of respiratory tract. Harmful by inhalation.

**Eye contact**
Causes serious eye irritation.

**Skin contact**
Causes skin irritation.

**Ingestion**
Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed.

**Symptoms**
Redness. May cause redness and tearing of the eyes. Coughing and/or wheezing.

**Acute toxicity**
Based on available data, the classification criteria are not met

Product Acute Toxicity Data
Test data reported below.

### Oral Exposure Route

<table>
<thead>
<tr>
<th>Endpoint type</th>
<th>Reported dose</th>
<th>Toxicological effects</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rat LD₅₀</td>
<td>680 mg/kg</td>
<td>Behavioral</td>
<td>Outside testing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decreased locomotor activity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sedation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chronic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Death</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gastrointestinal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enteritis of the intestines</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gas</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Smooth pyloric and ulcerated stomach</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lungs, Thorax, or Respiration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Congestion of the lungs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hemorrhagic lungs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Skin and Appendages</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Piloerection</td>
<td></td>
</tr>
</tbody>
</table>

### Dermal Exposure Route

<table>
<thead>
<tr>
<th>Endpoint type</th>
<th>Reported dose</th>
<th>Toxicological effects</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rat LD₅₀</td>
<td>&gt; 3414 mg/kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Inhalation (Vapor) Exposure Route**

**Inhalation (Gas) Exposure Route**

**Ingredient Acute Toxicity Data**
No data available.
Unknown Acute Toxicity
0% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)

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

<table>
<thead>
<tr>
<th>ATEmix (oral)</th>
<th>No information available</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATEmix (dermal)</td>
<td>No information available</td>
</tr>
<tr>
<td>ATEmix (inhalation-dust/mist)</td>
<td>2.70 mg/L</td>
</tr>
<tr>
<td>ATEmix (inhalation-vapor)</td>
<td>No information available</td>
</tr>
<tr>
<td>ATEmix (inhalation-gas)</td>
<td>No information available</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation
Classification based on data available for ingredients. Irritating to skin.

Product Skin Corrosion/Irritation Data
No data available.

Ingredient Skin Corrosion/Irritation Data
No data available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Test method</th>
<th>Species</th>
<th>Reported dose</th>
<th>Exposure time</th>
<th>Results</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid  (50 - 60%) CAS#: 77-92-9</td>
<td>Standard Draize Test</td>
<td>Rabbit</td>
<td>500 mg</td>
<td>24 hours</td>
<td>Mild skin irritant</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
<tr>
<td>Barium chloride (BaCl2), dihydrate (40 - 50%) CAS#: 10326-27-9</td>
<td>EpiDerm Skin Model (Directive 2000/33/EC, B.27)</td>
<td>Human</td>
<td>10 mg</td>
<td>42 hours</td>
<td>Not corrosive or irritating to skin</td>
<td>ECHA (The European Chemicals Agency)</td>
</tr>
</tbody>
</table>

Serious eye damage/irritation
Classification based on data available for ingredients. Irritating to eyes.

Product Serious Eye Damage/Eye Irritation Data
No data available.

Ingredient Eye Damage/Eye Irritation Data
No data available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Test method</th>
<th>Species</th>
<th>Reported dose</th>
<th>Exposure time</th>
<th>Results</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid</td>
<td>Standard Draize</td>
<td>Rabbit</td>
<td>0.750 mg</td>
<td>24 hours</td>
<td>Eye irritant</td>
<td>RTECS (Registry of</td>
</tr>
</tbody>
</table>
Test	Species	Results	Key literature references and sources for data
Standard Draize Test	Rabbit	100 mg	72 hours	Eye irritant
ECHA (The European Chemicals Agency)

Respiratory or skin sensitization
Based on available data, the classification criteria are not met.

Product Sensitization Data
No data available.

Ingredient Sensitization Data
No data available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Test method</th>
<th>Species</th>
<th>Results</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium chloride (BaCl2), dihydrate (40 - 50%) CAS#: 10326-27-9</td>
<td>Local Lymph Node Assay</td>
<td>Mouse</td>
<td>Not confirmed to be a skin sensitizer</td>
<td>ECHA (The European Chemicals Agency)</td>
</tr>
</tbody>
</table>

STOT - single exposure
Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Single Exposure Data
No data available.

Ingredient Specific Target Organ Toxicity Single Exposure Data
No data available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Endpoint type</th>
<th>Reported dose</th>
<th>Exposure time</th>
<th>Toxicological effects</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium chloride (BaCl2), dihydrate (40 - 50%) CAS#: 10326-27-9</td>
<td>Rat LD₅₀</td>
<td>300 mg/kg</td>
<td>None reported</td>
<td>None reported</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

STOT - repeated exposure
Based on available data, the classification criteria are not met.

Product Specific Target Organ Toxicity Repeat Dose Data
No data available.

Ingredient Specific Target Organ Toxicity Repeat Exposure Data
No data available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Endpoint type</th>
<th>Reported dose</th>
<th>Exposure time</th>
<th>Toxicological effects</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium chloride (BaCl2), dihydrate (40 - 50%) CAS#: 10326-27-9</td>
<td>Rat TD₅₀</td>
<td>91 mg/kg</td>
<td>182 days</td>
<td>Behavioral Alteration of classical conditioning Blood Enzyme inhibition, induction, or change in blood or tissue levels (multiple enzyme effects)</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

Carcinogenicity
Based on available data, the classification criteria are not met.

Product Carcinogenicity Data
No data available.
Ingredient Carcinogenicity Data
No data available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS No.</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid</td>
<td>77-92-9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Barium chloride (BaCl2), dihydrate</td>
<td>10326-27-9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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

Barium chloride (BaCl2), dihydrate (40 - 50%)
CAS#: 10326-27-9

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Endpoint type</th>
<th>Reported dose</th>
<th>Exposure time</th>
<th>Toxicological effects</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium chloride (BaCl2), dihydrate (40 - 50%)</td>
<td>Rat NOAEL</td>
<td>91 mg/kg</td>
<td>2 years</td>
<td>Not Carcinogenic</td>
<td>ECHA (The European Chemicals Agency)</td>
</tr>
</tbody>
</table>

Germ cell mutagenicity
Based on available data, the classification criteria are not met.

Product Germ Cell Mutagenicity *invitro* Data
No data available.

Ingredient Germ Cell Mutagenicity *invitro* Data
No data available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Test</th>
<th>Cell Strain</th>
<th>Reported dose</th>
<th>Exposure time</th>
<th>Results</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium chloride (BaCl2), dihydrate (40 - 50%)</td>
<td>Gene conversion and mitotic recombination</td>
<td>Saccharomyces cerevisiae</td>
<td>14 mmol/L</td>
<td>None reported</td>
<td>Positive test result for mutagenicity</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

Product Germ Cell Mutagenicity *invivo* Data
No data available.

Ingredient Germ Cell Mutagenicity *invivo* Data
No data available.

Reproductive toxicity
Based on available data, the classification criteria are not met.

Product Reproductive Toxicity Data
No data available.

Ingredient Reproductive Toxicity Data
No data available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Endpoint type</th>
<th>Reported dose</th>
<th>Exposure time</th>
<th>Toxicological effects</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium chloride (BaCl2), dihydrate (40 - 50%)</td>
<td>Rat TDLo</td>
<td>84 mg/kg</td>
<td>24 weeks</td>
<td>Paternal Effects Spermatogenesis (including genetic material, sperm morphology, motility, and count)</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

Aspiration hazard
Based on available data, the classification criteria are not met.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

Harmful to aquatic life with long lasting effects.

### Unknown aquatic toxicity

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

#### Product Ecological Data

**Aquatic Acute Toxicity**

No data available.

**Aquatic Chronic Toxicity**

No data available.

### Ingredient Ecological Data

**Aquatic Acute Toxicity**

No data available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Exposure time</th>
<th>Species</th>
<th>Endpoint type</th>
<th>Reported dose</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium chloride (BaCl2), dihydrate (40 - 50%)</td>
<td>48 Hours</td>
<td><em>Daphnia magna</em></td>
<td>EC50</td>
<td>14.5 mg/L</td>
<td>Vendor SDS</td>
</tr>
<tr>
<td>CAS#: 10326-27-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Aquatic Chronic Toxicity**

No data available.

### Persistence and degradability

**Product Biodegradability Data**

No data available.

**Bioaccumulation**

**Product Bioaccumulation Data**

No data available.

**Partition Coefficient (n-octanol/water)**

\[ \log K_{ow} \approx -1.04 \]

**Mobility**

**Soil Organic Carbon-Water Partition Coefficient**

\[ \log K_{oc} \approx 0.48 \]

### Other adverse effects

No information available.

## 13. DISPOSAL CONSIDERATIONS

### Waste treatment methods

**Waste from residues/unused products**

Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

**Contaminated packaging**

Do not reuse empty containers.
Special instructions for disposal  Dispose of material in an E.P.A. approved hazardous waste facility.

14. TRANSPORT INFORMATION

DOT  Not regulated
TDG  Not regulated
IATA  Not regulated
IMDG  Not regulated

Note:  No special precautions necessary.

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

National Inventories
TSCA  Complies
DSL/NDSL  Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories
EINECS/ELINCS  Complies
ENCS  Complies
IECSC  Complies
KECL  Complies
PICCS  Complies
TCSI  Complies
AICS  Complies
NZIoC  Complies

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

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN / AGHS</td>
<td></td>
</tr>
</tbody>
</table>
Barium chloride (BaCl2), dihydrate (CAS #: 10326-27-9) 1.0

### SARA 311/312 Hazard Categories

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute health hazard</td>
<td>Yes</td>
</tr>
<tr>
<td>Chronic Health Hazard</td>
<td>Yes</td>
</tr>
<tr>
<td>Fire hazard</td>
<td>No</td>
</tr>
<tr>
<td>Sudden release of pressure hazard</td>
<td>No</td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>No</td>
</tr>
</tbody>
</table>

### CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

### CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

### US State Regulations

#### California Proposition 65

This product does not contain any Proposition 65 chemicals

#### U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium chloride (BaCl2), dihydrate 10326-27-9</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

### U.S. EPA Label Information

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>FIFRA</th>
<th>FDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid</td>
<td>180.0950</td>
<td>21 CFR 184.1033</td>
</tr>
</tbody>
</table>

### 16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

#### Special Comments

None

#### Additional information

**Global Automotive Declarable Substance List (GADSL)**

Not applicable

**NFPA and HMIS Classifications**

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- 2</td>
<td>- 0</td>
<td>- 0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health hazards</th>
<th>Flammability</th>
<th>Physical hazards</th>
<th>Personal protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- 2</td>
<td>- 0</td>
<td>- 0</td>
<td>X</td>
</tr>
</tbody>
</table>

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

- **NIOSH IDLH**: Immediately Dangerous to Life or Health
- **ACGIH**: ACGIH (American Conference of Governmental Industrial Hygienists)
- **NDF**: no data
Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA</td>
<td>TWA (time-weighted average)</td>
<td>STEL</td>
<td>STEL (Short Term Exposure Limit)</td>
</tr>
<tr>
<td>MAC</td>
<td>Maximum Allowable Concentration</td>
<td>Ceiling</td>
<td>Ceiling Limit Value</td>
</tr>
<tr>
<td>X</td>
<td>Listed</td>
<td>Vacated</td>
<td>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 &quot;liberated&quot; exposure limits in their state regulations.</td>
</tr>
<tr>
<td>SKN*</td>
<td>Skin designation</td>
<td>SKN+</td>
<td>Skin sensitization</td>
</tr>
<tr>
<td>RSP+</td>
<td>Respiratory sensitization</td>
<td>**</td>
<td>Hazard Designation</td>
</tr>
<tr>
<td>C</td>
<td>Carcinogen</td>
<td>R</td>
<td>Reproductive toxicant</td>
</tr>
<tr>
<td>M</td>
<td>mutagen</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prepared By: Hach Product Compliance Department

Issue Date: 23-Oct-2019

Revision Date: 24-Oct-2019

Revision Note: SDS sections updated 2

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