1. IDENTIFICATION

Product identifier
Product Name
SINGLET™ pH BUFFER SOLUTION  pH 4.01 Buffer Solution

Other means of identification
Product Code(s)
2770020

Safety data sheet number
M00368

Recommended use of the chemical and restrictions on use
Recommended Use
Laboratory reagent. Buffer.
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  +1(515)232-2533 - 8am - 4pm CST

2. HAZARDS IDENTIFICATION

Classification
Regulatory Status
This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Hazards not otherwise classified (HNOC)
Not applicable

Label elements

Hazard statements
The product contains no substances which at their given concentration, are considered to be hazardous to health

Other Hazards Known
Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS
4. FIRST AID MEASURES

Description of first aid measures

General advice
No hazards which require special first aid measures. Use first aid treatment according to the nature of the injury.

Inhalation
Remove to fresh air.

Eye contact
Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact
Wash skin with soap and water.

Ingestion
Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects, both acute and delayed

Symptoms
See Section 11 for additional Toxicological Information.

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
This material will not burn.

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

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**  
Ensure adequate ventilation.

**Environmental precautions**

Environmental precautions  
See Section 12 for additional ecological information.

**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.

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

**Storage Conditions**  
Keep containers tightly closed in a dry, cool and well-ventilated place.

**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 IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>STEL: 0.3 ppm</td>
<td>TWA: 0.75 ppm</td>
<td>IDLH: 20 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA: 0.1 ppm</td>
<td>(vacated) TWA: 3 ppm</td>
<td>Ceiling: 0.1 ppm 15 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vacated) STEL: 10 ppm</td>
<td>TWA: 0.016 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vacated) STEL: 2 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL: 2 ppm</td>
<td></td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>STEL: 250 ppm</td>
<td>TWA: 200 ppm</td>
<td>IDLH: 6000 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA: 200 ppm</td>
<td>(vacated) TWA: 200 ppm</td>
<td>TWA: 200 ppm</td>
</tr>
<tr>
<td></td>
<td>S*</td>
<td>(vacated) STEL: 250 ppm</td>
<td>TWA: 200 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vacated) STEL: 325 mg/m³</td>
<td>STEL: 325 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vacated) SKN*</td>
<td></td>
</tr>
</tbody>
</table>

**Appropriate engineering controls**

**Engineering Controls**  
Showers  
Eyewash stations
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.

Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin and body protection
No special protective equipment required.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.

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>Physical state</td>
<td>Liquid</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>aqueous solution</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>Molecular weight</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>4.01</td>
<td></td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>~ 0 °C / 32 °F</td>
<td>Estimation based on theoretical calculation</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>~ 100 °C / 212 °F</td>
<td>Estimation based on theoretical calculation</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>0.99 (water = 1)</td>
<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>17.027 mm Hg / 2.27 kPa at 20 °C / 68 °F</td>
<td></td>
</tr>
<tr>
<td>Vapor density (air = 1)</td>
<td>0.62</td>
<td></td>
</tr>
<tr>
<td>Specific gravity (water = 1 / air = 1)</td>
<td>1.002</td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient (n-octanol/water)</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Soil Organic Carbon-Water Partition Coefficient</td>
<td>Not applicable</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>~ 1 cP (mPa s) at 20 °C / 68 °F</td>
<td></td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>~ 0.998 cSt (mm²/s) at 20 °C / 68 °F</td>
<td></td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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>None reported</td>
<td>No information available</td>
<td>No data available</td>
<td>No information available</td>
</tr>
</tbody>
</table>

Other Information

Metal Corrosivity

- **Steel Corrosion Rate**: No data available
- **Aluminum Corrosion Rate**: No data available

Volatile Organic Compounds (VOC) Content

Not applicable. See ingredients information below.

<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>Formaldehyde</td>
<td>50-00-0</td>
<td>No data available</td>
<td>X</td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>67-56-1</td>
<td>No data available</td>
<td>X</td>
</tr>
</tbody>
</table>

Explosive properties

- **Upper explosion limit**: No data available
- **Lower explosion limit**: No data available

Flammable properties

- **Flash point**: No data available

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.**

Particle Size

- **No information available.**

Particle Size Distribution

- **No information available.**

10. STABILITY AND REACTIVITY

Reactivity

- **Not applicable.**

Chemical stability

Stability

- **Stable under normal conditions.**

Explosion data

- **Sensitivity to Mechanical Impact**: None
Sensitivity to Static Discharge  None.

Possibility of Hazardous Reactions
Possibility of Hazardous Reactions  None under normal processing.

Hazardous polymerization
None under normal processing.

Conditions to avoid
Conditions to avoid  None known based on information supplied.

Incompatible materials
Incompatible materials  Strong oxidizing agents, strong acids, and strong bases.

Hazardous Decomposition Products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Product Information

Inhalation  No known effect based on information supplied.
Eye contact  No known effect based on information supplied.
Skin contact  No known effect based on information supplied.
Ingestion  No known effect based on information supplied.

Symptoms  No information available.

Aggravated Medical Conditions  None known.
Toxicologically synergistic products  None known.
Toxicokinetics, metabolism and distribution  See ingredients information below.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Toxicokinetics, metabolism and distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (&lt;0.1%)</td>
<td>Readily Absorbed via the respiratory and gastrointestinal routes. Absorbed formaldehyde can be oxidized to</td>
</tr>
<tr>
<td></td>
<td>formate and carbon dioxide. Half-life of formaldehyde is 1 min in rat plasma.</td>
</tr>
<tr>
<td>CAS#: 50-00-0</td>
<td></td>
</tr>
<tr>
<td>Methyl alcohol (&lt;0.1%)</td>
<td>Metabolism of methanol appears to be similar regardless of administrative route. Methanol is converted to</td>
</tr>
<tr>
<td></td>
<td>formaldehyde, which is converted to formate which is oxidized to carbon dioxide in primates.</td>
</tr>
<tr>
<td>CAS#: 67-56-1</td>
<td></td>
</tr>
</tbody>
</table>

Product Acute 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

Unknown Acute Toxicity
0% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)
### Product Code(s)
2770020

### Issue Date
26-Apr-2016

### Version
5.4

### Product Name
SINGLET™ pH BUFFER SOLUTION  pH 4.01
Buffer Solution

### Revision Date
17-Aug-2018

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### ATEmix (oral)
No information available

### ATEmix (dermal)
No information available

### ATEmix (inhalation-dust/mist)
No information available

### ATEmix (inhalation-vapor)
No information available

### ATEmix (inhalation-gas)
No information available

---

### Ingredient Acute Toxicity Data

#### Oral Exposure Route
If available, see data below

<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>Formaldehyde</td>
<td>Rat LD&lt;sub&gt;50&lt;/sub&gt;</td>
<td>100 mg/kg</td>
<td>None reported</td>
<td>None reported</td>
<td>GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)</td>
</tr>
</tbody>
</table>

#### Dermal Exposure Route
If available, see data below

<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>Formaldehyde</td>
<td>Rabbit LD&lt;sub&gt;50&lt;/sub&gt;</td>
<td>270 mg/kg</td>
<td>None reported</td>
<td>None reported</td>
<td>GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)</td>
</tr>
</tbody>
</table>

#### Inhalation (Dust/Mist) Exposure Route
If available, see data below

<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>Formaldehyde</td>
<td>Rat LC&lt;sub&gt;50&lt;/sub&gt;</td>
<td>0.578 mg/L</td>
<td>4 hours</td>
<td>None reported</td>
<td>L&lt;/iLOL&lt;/i&gt;</td>
</tr>
</tbody>
</table>

#### Inhalation (Vapor) Exposure Route
If available, see data below

#### Inhalation (Gas) Exposure Route
If available, see data below

### Product Specific Target Organ Toxicity Single Exposure 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 Specific Target Organ Toxicity Single Exposure Data

#### Oral Exposure Route
If available, see data below

<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>Formaldehyde</td>
<td>Human LD&lt;sub&gt;50&lt;/sub&gt;</td>
<td>70 mg/kg</td>
<td>None reported</td>
<td>Gastrointestinal Kidney, Ureter, or Bladder Liver Other changes Ulcerated stomach Other changes</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>Human LD&lt;sub&gt;50&lt;/sub&gt;</td>
<td>143 mg/kg</td>
<td>None reported</td>
<td>Lungs, Thorax, or Respiration Dyspnea</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

#### Chemical name

<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>Formaldehyde</td>
<td>Human TD&lt;sub&gt;50&lt;/sub&gt;</td>
<td>643 mg/kg</td>
<td>None reported</td>
<td>Gastrointestinal Lungs, Thorax, or Respiration Nausea or vomiting Respiratory obstruction Ulcerated stomach</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>
Methyl alcohol (<0.1%)  
CAS#: 67-56-1

<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>Methyl alcohol (&lt;0.1%)</td>
<td>Human</td>
<td>300 mg/L</td>
<td>None reported</td>
<td>Lungs, Thorax, or Respiration Dyspnea</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

**Product Skin Corrosion/Irritation Data**
No data available.

**Ingredient Skin Corrosion/Irritation Data**
If available, see data below.

<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>Formaldehyde (&lt;0.1%)</td>
<td>Standard Draize Test</td>
<td>Human</td>
<td>0.150 mg</td>
<td>72 hours</td>
<td>Corrosive to skin</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
<tr>
<td>Methyl alcohol (&lt;0.1%)</td>
<td>Standard Draize Test</td>
<td>Rabbit</td>
<td>20 mg</td>
<td>24 hours</td>
<td>Skin irritant</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

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

**Ingredient Eye Damage/Eye Irritation Data**
If available, see data below.

<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>Formaldehyde (&lt;0.1%)</td>
<td>Rinse Test</td>
<td>Human</td>
<td>1 ppm</td>
<td>6 minutes</td>
<td>Corrosive to eyes</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
<tr>
<td>Methyl alcohol (&lt;0.1%)</td>
<td>Standard Draize Test</td>
<td>Rabbit</td>
<td>40 mg</td>
<td>None reported</td>
<td>Eye irritant</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

**Sensitization Information**

**Product Sensitization Data**
Skin Sensitization Exposure Route  
Respiratory Sensitization Exposure Route  
No data available.

**Ingredient Sensitization Data**
Skin Sensitization Exposure Route  
If available, see data below.

<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>Formaldehyde (&lt;0.1%)</td>
<td>Patch test</td>
<td>Human</td>
<td>Confirmed to be a skin sensitizer</td>
<td>ERMA (New Zealands Environmental Risk Management Authority)</td>
</tr>
</tbody>
</table>
Respiratory Sensitization Exposure Route
If available, see data below.

<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>Formaldehyde (&lt;0.1%) CAS#: 50-00-0</td>
<td>IgE Specific Immune Response Test</td>
<td>Guinea pig</td>
<td>Confirmed to be a respiratory sensitizer</td>
<td>CICAD (Concise International Chemical Assessment Documents)</td>
</tr>
</tbody>
</table>

Chronic Toxicity Information

Product Specific Target Organ Toxicity Repeat Dose Data

<table>
<thead>
<tr>
<th>Oral Exposure Route</th>
<th>No data available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal Exposure Route</td>
<td>No data available.</td>
</tr>
<tr>
<td>Inhalation (Dust/Mist) Exposure Route</td>
<td>No data available.</td>
</tr>
<tr>
<td>Inhalation (Vapor) Exposure Route</td>
<td>No data available.</td>
</tr>
<tr>
<td>Inhalation (Gas) Exposure Route</td>
<td>No data available.</td>
</tr>
</tbody>
</table>

Ingredient Specific Target Organ Toxicity Repeat Exposure Data

<table>
<thead>
<tr>
<th>Oral Exposure Route</th>
<th>If available, see data below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal Exposure Route</td>
<td>If available, see data below</td>
</tr>
<tr>
<td>Inhalation (Dust/Mist) Exposure Route</td>
<td>If available, see data below</td>
</tr>
<tr>
<td>Inhalation (Vapor) Exposure Route</td>
<td>If available, see data below</td>
</tr>
</tbody>
</table>

<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>Formaldehyde (&lt;0.1%) CAS#: 50-00-0</td>
<td>Human TCₐ₀</td>
<td>0.017 mg/L</td>
<td>0.5 days</td>
<td>Eye</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
<tr>
<td></td>
<td>Lungs, Thorax, or Respiration</td>
<td>Lacrimation</td>
<td>Other changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

<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>Formaldehyde (&lt;0.1%) CAS#: 50-00-0</td>
<td>Human TCₐ₀</td>
<td>2 mg/L</td>
<td>40 minutes</td>
<td>Lungs, Thorax, or Respiration</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
<tr>
<td></td>
<td>Lungs, Thorax, or Respiration</td>
<td>Other changes</td>
<td>Respiratory depression</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Inhalation (Gas) Exposure Route
If available, see data below

Product Carcinogenicity Data

<table>
<thead>
<tr>
<th>Oral Exposure Route</th>
<th>No data available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal Exposure Route</td>
<td>No data available</td>
</tr>
<tr>
<td>Inhalation (Dust/Mist) Exposure Route</td>
<td>No data available</td>
</tr>
<tr>
<td>Inhalation (Vapor) Exposure Route</td>
<td>No data available</td>
</tr>
<tr>
<td>Inhalation (Gas) Exposure Route</td>
<td>No data available</td>
</tr>
</tbody>
</table>

Ingredient Carcinogenicity Data

<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>Formaldehyde</td>
<td>50-00-0</td>
<td>A1</td>
<td>Group 1</td>
<td>Known</td>
<td>X</td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>67-56-1</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

Oral Exposure Route If available, see data below
Dermal Exposure Route If available, see data below
### Inhalation (Dust/Mist) Exposure Route

#### Chemical name
Formaldehyde

#### Endpoint type
Rat

#### Reported dose
15 mg/L

#### Exposure time
78 weeks

#### Toxicological effects
Olfaction
Tumors

#### Key literature references and sources for data
RTECS (Registry of Toxic Effects of Chemical Substances)

### Inhalation (Vapor) Exposure Route

If available, see data below

### Inhalation (Gas) Exposure Route

If available, see data below

### Chemical name
- **Formaldehyde (<0.1%)**
  - CAS#: 50-00-0

### Test
- Micronucleus test

### Species
- Human

### Reported dose
- Human
- .000985 mg/L

### Exposure time
- 8.5 years

### Results
- Positive test result for mutagenicity

### Key literature references and sources for data
RTECS (Registry of Toxic Effects of Chemical Substances)

### Ingredient Germ Cell Mutagenicity invivo Data

If available, see data below

### Oral Exposure Route

No data available

### Dermal Exposure Route

No data available

### Inhalation (Dust/Mist) Exposure Route

No data available

### Inhalation (Vapor) Exposure Route

If available, see data below

### Inhalation (Gas) Exposure Route

If available, see data below

### Chemical name
- **Methyl alcohol (<0.1%)**
  - CAS#: 67-56-1

### Test
- DNA inhibition

### Species
- Human lymphocyte

### Reported dose
- 300 mmol/L

### Exposure time
- None reported

### Results
- Positive test result for mutagenicity

### Key literature references and sources for data
RTECS (Registry of Toxic Effects of Chemical Substances)

### Chemical name
- **Methyl alcohol (<0.1%)**
  - CAS#: 67-56-1

### Test
- Cytogenetic analysis

### Species
- Mouse

### Reported dose
- 1000 mg/kg

### Exposure time
- None reported

### Results
- Positive test result for mutagenicity

### Key literature references and sources for data
RTECS (Registry of Toxic Effects of Chemical Substances)

### Dermal Exposure Route

If available, see data below

### Inhalation (Dust/Mist) Exposure Route

If available, see data below

### Inhalation (Vapor) Exposure Route

If available, see data below
### Inhalation (Gas) Exposure Route
If available, see data below

#### Product Reproductive Toxicity Data

<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>Methyl alcohol (&lt;0.1%) CAS#: 67-56-1</td>
<td>Rat TD&lt;sub&gt;L0&lt;/sub&gt;</td>
<td>4118 mg/kg</td>
<td>10 days</td>
<td>Effects on Embryo or Fetus Specific Developmental Abnormalities Ear Eye Fetotoxicity (except death e.g. stunted fetus) Urogenital System</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

#### Dermal Exposure Route
If available, see data below

#### Inhalation (Dust/Mist) Exposure Route
If available, see data below

<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>Methyl alcohol (&lt;0.1%) CAS#: 67-56-1</td>
<td>Rat TC&lt;sub&gt;L0&lt;/sub&gt;</td>
<td>0.0026 mg/L</td>
<td>22 days</td>
<td>Effects on Embryo or Fetus Fetotoxicity (except death e.g. stunted fetus)</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

#### Inhalation (Vapor) Exposure Route
If available, see data below

<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>Formaldehyde (&lt;0.1%) CAS#: 50-00-0</td>
<td>Rat TC&lt;sub&gt;L0&lt;/sub&gt;</td>
<td>40 mg/L</td>
<td>14 days</td>
<td>Effects on Embryo or Fetus Fetotoxicity (except death e.g. stunted fetus)</td>
<td>RTECS (Registry of Toxic Effects of Chemical Substances)</td>
</tr>
</tbody>
</table>

### 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

##### Product Ecological Data

<table>
<thead>
<tr>
<th>Ecotoxicity</th>
<th>Key literature references and sources for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>No data available</td>
</tr>
<tr>
<td>Crustacea</td>
<td>No data available</td>
</tr>
<tr>
<td>Algae</td>
<td>No data available</td>
</tr>
</tbody>
</table>
**Ingredient Ecological Data**

**Aquatic toxicity**

**Fish**

<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>Formaldehyde</td>
<td>96 hours</td>
<td><em>Morone saxatilis</em></td>
<td>LC&lt;sub&gt;50&lt;/sub&gt;</td>
<td>6.7 mg/L</td>
<td>PEEN (Pan European Ecological Network)</td>
</tr>
<tr>
<td>(&lt;0.1%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS#: 50-00-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Crustacea**

<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>Formaldehyde</td>
<td>48 Hours</td>
<td><em>Daphnia pulex</em></td>
<td>EC&lt;sub&gt;50&lt;/sub&gt;</td>
<td>5.8 mg/L</td>
<td>PEEN (Pan European Ecological Network)</td>
</tr>
<tr>
<td>(&lt;0.1%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS#: 50-00-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Algae**

If available, see ingredient data below

**Other Information**

**Persistence and degradability**

**Product Biodegradability Data**

No data available.

**Ingredient Biodegradability Data**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Test method</th>
<th>Biodegradation</th>
<th>Exposure time</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-Benzenedicarboxylic acid, monopotassium salt (1 - 5%)</td>
<td>OECD Test No. 303: Simulation Test - Aerobic Sewage Treatment -- A: Activated Sludge Units; B: Biofilms</td>
<td>None reported</td>
<td>None reported</td>
<td>Readily biodegradable</td>
</tr>
<tr>
<td>CAS#: 877-24-7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Bioaccumulation**

**Product Bioaccumulation Data**

No data available.

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

Not applicable

**Ingredient Bioaccumulation Data**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Test method</th>
<th>Exposure time</th>
<th>Species</th>
<th>Bioconcentration factor (BCF)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (&lt;0.1%) CAS#: 50-00-0</td>
<td>Estimation through BCFBAF v3.01 part of the Estimation Programs Interface (EPI) Suite™</td>
<td>None reported</td>
<td>None reported</td>
<td>BCF = 3.16228</td>
<td>Does not have the potential to bioaccumulate</td>
</tr>
<tr>
<td>Methyl alcohol (&lt;0.1%) CAS#: 67-56-1</td>
<td>OECD Test 305: Bioaccumulation in Fish</td>
<td>None reported</td>
<td>None reported</td>
<td>BCF &lt; 10</td>
<td>Does not have the potential to bioaccumulate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Mobility**

EN / AGHS
Soil Organic Carbon-Water Partition Coefficient

Not applicable

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>

Other adverse effects
Contains a substance with an endocrine-disrupting potential.

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.

US EPA Waste Number
U122 U154

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>RCRA</th>
<th>RCRA - Basis for Listing</th>
<th>RCRA - D Series Wastes</th>
<th>RCRA - U Series Wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde 50-00-0</td>
<td>U122</td>
<td>Included in waste streams: K009, K010, K038, K040, K156, K157</td>
<td>-</td>
<td>U122</td>
</tr>
<tr>
<td>Methyl alcohol 67-56-1</td>
<td>-</td>
<td>Included in waste stream: F039</td>
<td>-</td>
<td>U154</td>
</tr>
</tbody>
</table>

Special instructions for disposal
Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. If permitted by regulation. Open cold water tap completely, slowly pour the reacted material to the drain. Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.

14. TRANSPORT INFORMATION

U.S. 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
Product Code(s) 2770020

Issue Date 26-Apr-2016
Version 5.4

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 Does not comply
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 does not contain any 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>Formaldehyde (CAS #: 50-00-0)</td>
<td>0.1</td>
</tr>
<tr>
<td>Methyl alcohol (CAS #: 67-56-1)</td>
<td>1.0</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazard Categories

- **Acute health hazard**: Yes
- **Chronic Health Hazard**: No
- **Fire hazard**: No
- **Sudden release of pressure hazard**: No
- **Reactive Hazard**: No

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)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>100 lb</td>
<td>-</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>50-00-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
Chemical name | Hazardous Substances RQs | CERCLA/SARA RQ | Reportable Quantity (RQ)
--- | --- | --- | ---
Formaldehyde 50-00-0 | 100 lb | 100 lb | RQ 100 lb final RQ
Methyl alcohol 67-56-1 | 5000 lb | - | RQ 5000 lb final RQ

**U.S. - Department of Homeland Security - Chemical Facility Anti-Terrorism Standards (CFATS) - Security Issues**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>U.S. - Department of Homeland Security - Chemical Facility Anti-Terrorism Standards (CFATS) - Security Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (CAS #: 50-00-0) (&lt;0.1%)</td>
<td>Release - Toxic (solution)</td>
</tr>
</tbody>
</table>

**US State Regulations**

**California Proposition 65**
This product contains the following Proposition 65 chemicals

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>California Proposition 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (CAS #: 50-00-0)</td>
<td>Carcinogen</td>
</tr>
<tr>
<td>Methyl alcohol (CAS #: 67-56-1)</td>
<td>Developmental</td>
</tr>
</tbody>
</table>

**WARNING:** This product can expose you to chemicals including Formaldehyde, Methyl alcohol, which are known to the State of California to cause cancer or birth defects or reproductive harm. For more information, go to [http://www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**U.S. 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>Formaldehyde 50-00-0</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Methyl alcohol 67-56-1</td>
<td>X</td>
<td>X</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>Methyl alcohol</td>
<td>180.0910</td>
<td>-</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)**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Global Automotive Declarable Substance List Classifications</th>
<th>Global Automotive Declarable Substance List Thersholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>Declarable Substance (FI)</td>
<td>0.0 %</td>
</tr>
</tbody>
</table>
**Product Code(s)** 2770020

**Product Name** SINGLET™ pH BUFFER SOLUTION pH 4.01

**Buffer Solution**

**Issue Date** 26-Apr-2016

**Revision Date** 17-Aug-2018

**Page** 16 / 16

<table>
<thead>
<tr>
<th>Prohibited Substance (LR)</th>
<th>Declarable Substance (LR)</th>
<th>0.1 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl alcohol 67-56-1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Declarable Substance (FI)** 0.1 %

**NFPA and HMIS Classifications**

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health hazards - 0</th>
<th>Flammability - 0</th>
<th>Instability - 0</th>
<th>Physical and Chemical Properties -</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Personal protection - X</td>
</tr>
<tr>
<td>HMIS</td>
<td></td>
<td></td>
<td></td>
<td>See section 8 for more information</td>
</tr>
</tbody>
</table>

| Physical Hazards - 0 |

**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**

- **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

**C** Carcinogen

**R** Reproductive toxicant

**M** mutagen

**Prepared By** Hach Product Compliance Department

**Issue Date** 26-Apr-2016

**Revision Date** 17-Aug-2018

**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.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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End of Safety Data Sheet