BrdU Cell Proliferation Chemiluminescent Assay Kit

1 Kit
(500 assays (96 well format))

Description: The BrdU Cell Proliferation Assay Kit detects 5-bromo-2’-deoxyuridine (BrdU) incorporated into cellular DNA during cell proliferation using an anti-BrdU antibody. When cells are cultured with labeling medium that contains BrdU, this pyrimidine analog is incorporated in place of thymidine into the newly synthesized DNA of proliferating cells. After removing labeling medium, cells are fixed and the DNA is denatured with our fixing/denaturing solution. Denaturing of DNA is necessary to improve the accessibility of the incorporated BrdU to the detection antibody. A BrdU mouse mAb is then added to detect the incorporated BrdU. Anti-mouse IgG, HRP-linked Antibody is used to recognize the bound detection antibody. Chemiluminescent reagent is added for signal development. The magnitude of light emission, measured in relative light units (RLU), is proportional to the quantity of BrdU incorporated into cells, which is a direct indication of cell proliferation.

Background: Halogenated nucleotides such as the pyrimidine analog bromodeoxyuridine (BrdU) are useful for labeling nascent DNA in living cells and tissues. BrdU becomes incorporated into replicating DNA in place of thymidine and subsequent immunodetection of BrdU using specific monoclonal antibodies allows labeling of cells in S phase of the cell cycle. After pulse-labeling cells or tissues with bromodeoxyuridine, BrdU (Bud20a) Mouse mAb can be used to detect BrdU incorporated into single stranded DNA. Please see our detailed protocol for information regarding the labeling procedure and denaturation of double stranded DNA for various immunodetection applications (1-4).

Specificity/Sensitivity: BrdU Cell Proliferation Chemiluminescent Assay Kit detects BrdU incorporation into cellular DNA during cell proliferation. The BrdU-labeled DNA must be denatured to be detected by the BrdU mouse mAb used in this kit. This BrdU mouse mAb does not cross-react with endogenous DNA. Depending on the cell type and the incubation time applied in the assay, 0.2-2x10^4 cells/well are sufficient for most experimental setups. For best results, a cell number titration (Figure 1) is recommended.

Background References:

Figure 1. C2C12 cells were seeded at varying density in serum free medium in a 96-well plate and incubated overnight. Serum was added to the plate at various concentrations and cells were incubated for 24 hr. Finally, 10 μM BrdU was added to the plate and cells were incubated for 4 hr.

Figure 2. Treatment of MCF 10A cells with Human Epidermal Growth Factor (hEGF) #8916 increases cell proliferation as detected by the BrdU Cell Proliferation Chemiluminescent Assay Kit #5492. MCF 10A cells were seeded at 1x10^4 cells/well in a 96-well plate and incubated overnight. Cells were then starved in serum free medium overnight. hEGF was added to the plate and cells were incubated for 24 hr. Finally, 10 μM BrdU was added to the plate and cells were incubated for 4 hr.

Figure 3. Jurkat cells were seeded at 5x10^4 cells/well in a 96-well plate and incubated overnight. Cells were then treated with various concentrations of doxorubicin for 2 hr. Finally, 10 μM BrdU was added to the plate and cells were incubated for 4 hr.

For Research Use Only. Not For Use In Diagnostic Procedures.
BrdU Cell Proliferation (Chemiluminescent Assay) Protocol

A  Reagent Preparation
1. Prepare 1X Wash Buffer by diluting 20X Wash Buffer (included in each BrdU ELISA Kit) in purified water.
2. Prepare 1X detection antibody solution by diluting BrdU Detection Antibody 1:100 with Detection Antibody Diluent (green).
3. Prepare 1X HRP-conjugated secondary antibody solution by diluting Anti-mouse IgG, HRP-linked Antibody 1:100 with HRP-linked Antibody Diluent (red).
4. Prepare 10X BrdU solution by diluting BrdU 1:100 with cell culture medium.

B  BrdU Incorporation:
1. Plate cells in 96-well plate and incubate with respective test substance. Typical seed cell number is 2500-100000 cells/well depending on cell growth rate. Typical incubation time is 1-72 hr.
2. Add prepared 10X BrdU solution to plate wells, for a final 1X concentration. (Example: For 100 µl medium in the plate, add 10 µl of 10X BrdU solution per well.)
3. Place cells in incubator. Typical incubation time is 1-24 hr.
4. Remove medium. For suspension cells, centrifuge the plate at 300 g for 10 min, then remove medium.

C  BrdU Assay:
1. Add 100 µl/well of the Fixing/Denaturing Solution, keep the plate at room temperature for 30 min. Remove solution.
2. Add 100 µl/well prepared 1X detection antibody solution, keep plate at room temperature for 1 hour. Remove solution and wash plate 3 times with 1X Wash Buffer.
3. Add 100 µl/well prepared 1X HRP-conjugated secondary antibody solution, keep plate at room temperature for 30 min. Remove the solution and wash plate 3 times with 1X Wash Buffer.
5. Add 100 µl of the Working Solution to each well. Use a plate-based luminometer to measure Relative Light Units (RLU) at 425 nM within 1-10 min following addition of the substrate. Optimal signal intensity is achieved when read within 10 min.
The products listed below meet the criteria for classification as hazardous in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Please refer to the indicated Safety Data Sheet (SDS) for information concerning hazards and appropriate protective measures. SDSs for products not classified as hazardous are available on request. Visit www.cellsignal.com for additional technical information and support.

**SECTION 1. Identification**

**Product identifier**

- **GHS09**

**Product name**

- Fixing/Denaturing Solution

**UN number**

- UN3924

**Recommended use of the chemical and restrictions on use**

- This product is intended for research purposes only.

**Identified uses**

- None.

**Uses advised against**

- None.

**Manufacturer, importer, supplier**

- Cell Signaling Technology, Inc.
  - 2 Trask Lane, Danvers, MA 01923
  - United States
  - TEL: +1 978 867 2300
  - FAX: +1 978 867 2305
  - E-MAIL: support@cellsignal.com
  - WEBSITE: www.cellsignal.com

**Emergency telephone number**

- In case of emergency call CHEMTREC 1-800-424-0000

**SECTION 2. Hazard(s) identification**

**Classification**

- This substance/mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

**GHS Label elements, including precautionary statements**

- **Signal Word**
  - Danger

- **Hazard statement(s)**
  - Causes severe skin burns and eye damage.

**Precautionary Statement(s)**

- **Preventive eye/Personal Protection**
  - Category 1

- **Environmental label statements**
  - Category 1

**Supplementary Hazard Information**

- No information available.

- Hazards not otherwise classified (HINOC) Not applicable.

**SECTION 3. Composition/information on ingredients**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Weight %</th>
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</thead>
<tbody>
<tr>
<td>Solution</td>
<td>1674-71-2</td>
<td>0.105</td>
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</tbody>
</table>

**SECTION 4. First-aid measures**

**Eye contact**

- Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

**Inhalation**

- Immediate medical attention is required. Wash off immediately with soap and plenty of water. Remove all contaminated clothes and shoes.

**Ingestion**

- Immediate medical attention is required. Rinse off immediately with soap and plenty of water while keeping the patient awake and alert. Keep the patient sitting upright. If breathing is difficult, give oxygen. Do not give anything by mouth to an unconscious person.

**SECTION 5. Fire-fighting measures**

**Suitable Extinguishing Media**

- Water雾

**Suitable Extinguishing Media**

- Water雾

**Specific hazards arising from the chemical**

- Vapors may travel to sources of ignition and flashback.

**Explosive Data**

- Sensitivity to Mechanical Impact: None

**Protection Equipment and Precautions for Firefighters**

- As in any fire, wear self-contained breathing apparatus, pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**SECTION 6. Accidental release measures**

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

- For non-emergency personnel
  - Evacuate personnel to safe areas. Remove all sources of ignition. Ensure adequate ventilation. Keep people away from and upwind of spillages. Take precautionary measures against static discharge. All equipment used when handling the product must be grounded. Use personal protective equipment. Avoid contact with skin, eyes and clothing.
  - Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
  - Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**Other information**

- No information available.

**Environmental precautions**

- Local authorities should be advised of significant spillages and affected areas. Prevent product from entering drains. Beware of strong acids. Strong oxidizing agents.

**Methods and material for containment and cleaning up**

- Methods for containment
  - Prevent further leakage or spillage if safe to do so.
  - Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. Keep contaminated surface thoroughly clean.

**Methods for cleaning up**

- Remove contaminated clothing and shoes. Wash skin with soap and water. Wash affected clothing before reuse. Use non-sparking tools. Take precautionary measures against static discharge.

**Protection for emergency response personnel**

- Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

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

- Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Wear personal protective equipment. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

**Technical measures/Storage conditions**

- Flammable.

**Packaging material**

- None.

**Incompatible products**

- None.

**SECTION 5. Handling and storage**

**Precautions for safe handling**

- Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Wear personal protective equipment. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

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

- Keep container tightly closed in a dry, cool and well-ventilated place.

**Technical measures/Storage conditions**

- Flammable.

**Packaging material**

- None.

**Incompatible products**

- None.

**SECTION 6. Accidental release measures**

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

- For non-emergency personnel
  - Evacuate personnel to safe areas. Remove all sources of ignition. Ensure adequate ventilation. Keep people away from and upwind of spillages. Take precautionary measures against static discharge. All equipment used when handling the product must be grounded. Use personal protective equipment. Avoid contact with skin, eyes and clothing.
  - Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
  - Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**Other information**

- No information available.

**Environmental precautions**

- Local authorities should be advised of significant spillages and affected areas. Prevent product from entering drains. Beware of strong acids. Strong oxidizing agents.

**Methods and material for containment and cleaning up**

- Methods for containment
  - Prevent further leakage or spillage if safe to do so.
  - Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. Keep contaminated surface thoroughly clean.

**Methods for cleaning up**

- Remove contaminated clothing and shoes. Wash skin with soap and water. Wash affected clothing before reuse. Use non-sparking tools. Take precautionary measures against static discharge.

**Protection for emergency response personnel**

- Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

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

- Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Wear personal protective equipment. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

**Technical measures/Storage conditions**

- Flammable.

**Packaging material**

- None.

**Incompatible products**

- None.
**SECTION 8. Exposure controls/personal protection**

**Control parameters**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH REL</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
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<td>Legacy</td>
<td>Legacy</td>
<td>Legacy</td>
<td>Legacy</td>
<td>Legacy</td>
</tr>
<tr>
<td>sodium hydroxide</td>
<td>Legacy</td>
<td>Legacy</td>
<td>Legacy</td>
<td>Legacy</td>
<td>Legacy</td>
</tr>
</tbody>
</table>

**Appropriate engineering controls**

- Showers, eyewash stations, and ventilation systems.

**Individual protective measures, such as personal protective equipment**

- Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency of work activities and the concentrations of the hazardous substances.

**Eye contact protection**

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

**Respiratory protection**

- If exposure limits are exceeded or is suspected, NIOSH/MSHA-approved respiratory protection should be worn. Positive-pressure supplied air respirations may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

**Hazardous Decomposition Products**

- No information available.

**Incompatible Materials**

- No information available.

**Honda Restriction Products**

- Strong acid. Strong oxidizing agent.

**Thermal decomposition can lead to the release of toxic corrosive gases and vapors.**

**SECTION 9. Physical and chemical properties**

- **Physical state**: Liquid
- **Appearance**: Transparent
- **Odor**: No information available
- **Odor threshold**: No information available
- **Density**: 1.0 g/cm³
- **Melting point/freezing point**: No information available
- **Flash point**: 15 °C / 59 °F (based on components)
- **Autoignition temperature**: No information available
- **Partition coefficient**: n-octanol/water
- **Solubility in other solvents**: No information available
- **Vapor density**: No information available
- **Flammability (solid, gas)**: No information available
- **Upper flammability limit**: No information available
- **Lower flammability limit**: No information available
- **Aspiration hazard**: No information available

**SECTION 10. Stability and reactivity**

**Decomposition temperature**: No information available

**Vocality**: No information available

**Viscosity, dynamic**: No information available

**Explosive properties**: No information available

**Oxidizing properties**: No information available

**Other information**

- **Reactivity**: No information available.

**Chemical stability**

- Stable under recommended storage conditions.

**Possibility of hazardous reactions**

- **Hazardous reactions**: None under normal processing.

**Conditions to Avoid**

- **Heat, flames and specific instigators**: None.

**Incompatible Materials**

- **Incompatible materials**: Soluble in water.

**Thermal decomposition can lead to the release of toxic corrosive gases and vapors.**

**SECTION 11. Ecological information**

**Information on basic physical and chemical properties**

- **Skin corrosion/irritation**: Increased heart rate.
- **Serious eye damage/eye irritation**: Risk of serious damage to eyes.
- **Respiratory irritation**: No information available.
- **Systemic toxicity**: No information available.
- **Mutagenic effects**: No information available.
- **Carcinogenicity**: No information available.
- **Reproductive toxicity**: No information available.
- **STOT - single exposure**: No information available.
- **STOT - repeated exposure**: No information available.
- **Aspiration hazard**: No information available.

**Toxic to aquatic organisms**

- **Toxic to aquatic invertebrates**: Increased heart rate.
- **Toxic to fish**: Risk of serious damage to eyes.
- **Toxic to aquatic plants**: No information available.

**Effect on aquatic life**

- **Dissolution**: No information available.

**Ecotoxicity**

- **LC50 (96 h) (Oncorhynchus mykiss) 96 h**: 12.0 - 16.0 mL/L
- **EC50 (96 h) (Daphnia magna) 48 h**: 2 mg/L
- **Median bioconcentration factor**: No information available.

**Stability and reactivity**

- **Autoignition temperature**: No information available.

**SECTION 12. Regulatory information**

**Transport hazard class(es)**

- **Class E - Corrosive Material at >= 1%**

**UN number**: 19935

**UN proper shipping name**: Flammable liquids, corrosive, no. (Ethanol, Sodium hydroxide).

**Packaging group**: 3

**AIA**

- **AIA**: No

**Chemical Name - 25%**: Flammable liquids, corrosive, n.o.s. (Ethanol, Sodium hydroxide).

**Chemical Name - 50%**: Flammable liquids, corrosive, n.o.s. (Ethanol, Sodium hydroxide).

**Chemical Name - 75%**: Flammable liquids, corrosive, n.o.s. (Ethanol, Sodium hydroxide).

**Chemical Name - 100%**: Flammable liquids, corrosive, n.o.s. (Ethanol, Sodium hydroxide).

**Canadian Workplaces Hazardous Materials Information System (WHMIS) Classification**

- **Class E - Corrosive Material at >= 1%**

**SAFETY DATA SHEET**

Section 313 of Title II 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.

**SARA 313 Hazard Category**

- **Acute Health Hazard**: Yes
- **Chronic Health Hazard**: No
- **Fire Hazard**: Yes
- **Sudden Release of Pressure Hazard**: No
- **Reactivity Hazard**: No
- **Clean Water Act**: Yes

**Chemical Name - DWA - Regulated Quantities**

- **DWA - Toxic Pollutants**: No Listed
- **DWA - Priority Pollutants**: No Listed
- **DWA - Hazardous Substance**: Yes Listed
- **DWA - Nuisance Pollutants**: No Listed

**Chemical Name - EPA - Regulatory Categories**

- **EPA - Toxic Substances**: Listed
- **EPA - Hazardous Substance**: Listed

**Chemical Name - California Prop. 65**

- **Ethanol**: Carcinogen
- **Sodium hydroxide**: Carcinogen

**Disclaimer**

Ethyl alcohol is only a considered a Proposition 65 developmental hazard when it is ingested as an alcoholic beverage.
Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe.

Advice for emergency responders

Indication of any immediate medical attention and special treatment needed

tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing.

Do NOT induce vomiting. Rinse mouth. Drink plenty of water. Never give anything by mouth.

Inhalation

Wash off immediately with plenty of water for at least 15 minutes. If skin irritation or rash occurs:

Eye contact

May produce an allergic reaction. May cause an allergic skin reaction.

Supplementary Hazard Information

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. Accidental release measures

Personal-precautions, protective equipment and emergency procedures

For non-emergency personal use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid contact with the skin and the eyes.

Other information

Environmental precautions

Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

Methods and material for containment and cleaning up

Methods for containment

Prevent further leakage or spillage if safe to do so. Surround with inert absorbent material. Pick up and transfer to properly labeled containers.

Methods for cleaning up

Prevent further leakage or spillage if safe to do so. Wash with inert absorbent material. Pick up and transfer to properly labeled containers. After cleaning, flush away with water. Prevent product from entering drains.

SECTION 7. Handling and storage

Precautions for safe handling

Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Wear personal protective equipment.

Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions

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

Packaging material

No information available.

Incompatible products

None.

SECTION 8. Exposure controls/personal protection

Control parameters

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

Appropriate engineering controls

Shower, eyewash stations, and ventilation systems.

Individual protective equipment

Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency/duration of work activities and the concentrations of the hazardous substances.

Emergency telephone number

CHEMTREC 24 hours a day, 7 days a week, 365 days a year

Privacy statement

May cause an allergic reaction. May cause an allergic skin reaction.

Signal word

Warning

Hazard statement(s)

Avoid breathing dust/fume/gas/mist/vapors/spray. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves.

Precautionary statement(s)

Use personal protective equipment.

General advice

Use personal protective equipment.

Protection of first-aiders

This substance/mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Supplementary Hazard Information

No information available.

Protective Equipment and Precautions for Firefighters

UK Department of Environment Information

This product does not contain any substances regulated under the UK’s Environmental Protection Regulations.

U.S. Drug Enforcement Administration Information

This product does not contain any substances regulated under the Controlled Substance Act (CSA).

U.S. Environmental Protection Information

This product does not contain any substances regulated under the federal Resource Conservation and Recovery Act (RCRA).

U.S. EPA Label Information

This product does not contain any substances regulated as pesticides.

U.S. EPA Hazard Communication Information

This product does not contain any substances regulated under the Toxic Substances Control Act (TSCA).

U.S. Department of Transportation Information

This product does not contain any substances regulated under the Hazardous Materials Regulations (HMR).

U.S. Department of Transportation Radioactive Information

This product does not contain any substances regulated as radioactive.

U.S. Department of Transportation Explosives Information

This product does not contain any substances regulated as explosives.

U.S. Department of Transportation Transportation of Hazardous Materials (DOT) Information

This product does not contain any substances regulated under the DOT Hazard Classifications and DOT Hazard Communication Program.

U.S. Department of Transportation Hazard Communication Information

This product does not contain any substances regulated under OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Globally Harmonized System (GHS).

U.S. Department of Transportation International Transport Information

This product does not contain any substances regulated under the CLP Regulation (EC) No 1272/2008, the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and the United Nations Recommendations on the transport of dangerous goods, model test series 3 (ADR/IMDG/RID of 1998).

U.S. FIFRA Label Information

This product is not intended for use in diagnostic procedures or therapeutics. This product is not intended for use in humans or animals.

Washington State Department of Health Information

This product is not intended for research purposes only.

California Department of Health Services Information

This product is not intended for use in diagnostic procedures or therapeutics. This product is not intended for use in humans or animals.

Export Control Regulations Information

This product does not contain any substances regulated as export controlled under the Export Administration Regulations (EAR).

End of Safety Data Sheet
This material should only be handled by, or under the close supervision of, those properly qualified in the handling and use of hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of the compound is not well-defined.

**SECTION 13: Stability and reactivity**

Physical stability. No information available.

Chemical stability. No information available.

Hazardous reactions. None under normal processing.

**SECTION 15: Disposal considerations**

Disposal methods. No information available.

Disposal considerations. No information available.

**SECTION 14: Transport information**

This material is not subject to regulation as a hazardous material for shipping.

**SECTION 16: Regulatory information**

A. Asbestos-related listing. No information available.


End of Safety Data Sheet
**SECTION 1. Identification**

**Product identifier**

**Product number** GT/J80

**Product name** HRP-linked Antibody Diluent

**Recommended use of the chemical and restrictions on use**

**Identified uses**

This product is intended for research purposes only.

**Users advised against**

This product is not intended for use in diagnostic procedures or therapies. This product is not intended for use in humans or animals.

**Manufacturer, importer, supplier**

Cell Signaling Technology, Inc.
3 Trade Lane
Danvers, MA 01923
United States

**Website**

www.cellsignal.com

**Emergency telephone number**

CHEMTREC 24 hours a day, 7 days a week, 365 days a year
+1 703 327 3671 (INTERNATIONAL) +1 500-624-9300 (NORTH AMERICA)

**SECTION 2. Hazard(s) identification**

**Classification**

This substance/mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

**Risk statement**

Category 1

**GHS Label elements, including precautionary statements**

**Signal Word** Warning

**Hazard statement(s)**

May cause an allergic skin reaction.

**Precautionary Statement(s)**

Avoid inhalation of dust, fume, or spray. Avoid contact with the skin and the eyes.

**Sensitivity to Static Discharge**

None.

**SECTION 6. Accidental release measures**

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

**For non-emergency personnel**

Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid contact with the skin and the eyes. No information available.

**For emergency personnel**

Use self-contained breathing apparatus. May be harmful if inhaled. May irritate the eyes, nose, and throat. May cause an allergic reaction.

**Environmental precautions**

Prevent entry into sewers, sewers, basements or closed areas. Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

**Methods and material for containment and cleaning up**

Prevent further leakage or spillage if safe to do so. Scoop up with inert absorbent material. Pick up and transfer to properly labeled containers. After cleaning, flush away traces with water. Prevent product from entering drains.

**Precautions for safe handling**

Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Wear personal protective equipment.

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

Keep out of the reach of children. Keep container tightly closed. Cool, dry, well-ventilated place. Explosive properties

**Technical measures/Storage conditions**

Keep out of the reach of children. Keep container tightly closed. Cool, well-ventilated place. Explosive properties

**Incompatible products**

None known based on information supplied.

**SECTION 9. Physical and chemical properties**

**Property**

**Values**

**PD**

No information available.

**SECTION 10. Stability and reactivity**

**Reactivity**

No information available.

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

No information available.
**SECTION 3. Composition/Information on ingredients**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0%</td>
<td></td>
</tr>
</tbody>
</table>

**SECTION 4. First-aid measures**

**Eye contact**
Rinse thoroughly with plenty of water, also under the eyelids. Keep eyes wide open while rinsing. Get medical attention if irritation persists.

**Skin contact**
In case of contact with skin, wash immediately with soap and water. Get medical attention if irritation persists.

**Inhalation**
If inhaled: Remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention immediately if symptoms occur.

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

**Most important symptoms and effects, both acute and delayed**
Symptoms of overexposure may be headache, dizziness, lightheadedness, nausea and vomiting.

**Indication of any immediate medical attention and special treatment needed**
Treat symptomatically.

**Advice for emergency responders**

**SECTION 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**
Internal combustion can lead to release of flammable gases and vapors.

**Exposure Data**

**Sensitivity to Mechanical Impact**
None.

**Protective Equipment and Precautions for Firefighters**

**SECTION 9. Physical and chemical properties**

**Physical state**
Liquid

**Appearance**
Clear

**Color**
Colours or light pink

**Odor**
No information available.

**Density**
No information available.

**Reactivity**
No information available.

**Stability and reactivity**

**SECTION 10. Ecotoxicity**

<table>
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<tr>
<th>Chemical Name</th>
<th>EC50</th>
<th>LC50</th>
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<tbody>
<tr>
<td>Ethanol</td>
<td>65000 mg/L</td>
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<tr>
<td>Ethyl alcohol</td>
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**SECTION 11. Toxicological information**

**Information on likely routes of exposure**

**Inhalation**
Avoid breathing vapors or mists. May cause irritation of respiratory tract.

**Eye contact**
Avoid contact with eyes. May cause irritation.

**Skin contact**
Avoid contact with skin.

**Ingestion**
May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Information on toxicological effects**
This material should only be handled by, or under the close supervision of, those property qualified in the handling and use of potentially hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of this compound are not well defined.

**SECTION 12. Ecological information**

**Ecotoxicity**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Toxicity to algae</th>
<th>Toxicity to fish</th>
<th>Toxicity to other aquatic invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>EC50 19890 mg/L</td>
<td>LC50 46300 mg/L</td>
<td></td>
</tr>
</tbody>
</table>

**Persistence and degradability**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>As it is any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.</th>
</tr>
</thead>
</table>
**SECTION 13. Disposal considerations**

**Waste Disposal Methods**

Dispose of in accordance with all applicable national environmental laws and regulations.

**Disposal considerations**

Do not empty into drains; dispose of this material and its container in a safe way.

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**SECTION 14. Transport information**

This material is not subject to regulation as a hazardous material for shipping.

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**SECTION 15. Regulatory information**

**Non-US Inventory Listing**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA 8(b)</th>
<th>TSCA 12(b)</th>
<th>DSL</th>
<th>NDSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>trometamol</td>
<td>Listed</td>
<td>Not Listed</td>
<td>Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>ethanediol</td>
<td>Listed</td>
<td>Not Listed</td>
<td>Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

**Canadian Workplace Hazardous Materials Information System (WHMIS) Classification**

This product does not meet the criteria for classification under the Hazardous Products Act.

**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>CAS No</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SARA 313 - Threshold Values %</td>
</tr>
<tr>
<td>Acute Health Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Chronic Health Hazard</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sudden Release of Pressure Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

**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 42 U.S.C. 9601 et seq.) or the Superfund Amendments and Reauthorization Act (SARA) 42 U.S.C. 7611 et seq. There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

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**SECTION 16. Other information**

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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End of Safety Data Sheet