SAFETY DATA SHEET
Date Revised: June 22, 2015

1. PRODUCT AND COMPANY IDENTIFICATION
   Product Name: D-Luciferin
   Catalog Number: 99907/99908
   Unit Size: 1 mg/10 mg
   Manufacturer/Supplier: Biotium, Inc.
   46117 Landing Parkway, Fremont, CA 94538, USA
   Phone: 1-510-265-1027, Fax: 1-510-265-1352
   Web: http://www.biotium.com

2. HAZARDS IDENTIFICATION
   Classification according to Regulation (EC) No 1272/2008[CLP]
   None
   Classification according to Directive 1999/45/EC
   None

   Labelling according to Regulation (EC) No 1272/2008[CLP]
   Hazard pictogram None
   Signal word None
   Hazard statements None
   Precautionary statements None

   HMIS Classification
   Health hazard: 0
   Flammability: 0
   Physical hazards: 0

   NFPA Rating
   Health hazard: 0
   Fire: 0
   Reactivity Hazard: 0

3. COMPOSITION/INFORMATION ON INGREDIENTS
   No ingredients at concentrations that require reporting.

4. FIRST-AID MEASURES
   General advice
   Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
   If inhaled
   If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
   In case of skin contact
   Wash off with soap and plenty of water. Consult a physician.
   In case of eye contact
   Flush eyes with water as a precaution.
   If swallowed
   Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

SDS
PSF008
Suitable extinguishing media
Carbon dioxide, dry chemical extinguishers, foam extinguishers or water.

Special protective equipment for firefighters
Wear self contained breathing apparatus for firefighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Avoid breathing vapors, mist or gas. Remove all sources of ignition.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up
Contain spillage. Soak up spilled substance with inert absorbent material. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid inhalation of vapor or mist.
Avoid direct contact with substance.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.
Store at -20 °C or below.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters
None

Personal protective equipment
Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Respiratory protection
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Eye protection
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>D-Luciferin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Solid</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
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<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

**Chemical stability**
Stable under recommended storage conditions.

**Possibility of hazardous reactions**
No data available

**Conditions to avoid**
Heat, flames and sparks.

**Materials to avoid**
No data available

**Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

<table>
<thead>
<tr>
<th>Route</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50</td>
<td>None</td>
</tr>
<tr>
<td>Inhalation LC50</td>
<td>None</td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>None</td>
</tr>
</tbody>
</table>

**Other information on acute toxicity**
No data available

**Skin corrosion/irritation**
No data available

**Serious eye damage/eye irritation**
No data available

**Respiratory or skin sensitization**
No data available

**Germ cell mutagenicity**
No data available

**Carcinogenicity**

<table>
<thead>
<tr>
<th>Source</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>IARC</td>
<td>No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.</td>
</tr>
<tr>
<td>ACGIH</td>
<td>No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.</td>
</tr>
<tr>
<td>NTP</td>
<td>No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.</td>
</tr>
<tr>
<td>OSHA</td>
<td>No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.</td>
</tr>
</tbody>
</table>

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure (Globally Harmonized System)**
No data available

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**
No data available
no data available

**Aspiration hazard**
no data available

**Potential health effects**
- Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.
- Ingestion: May be harmful if swallowed.
- Skin: May be harmful if absorbed through skin. May cause skin irritation.
- Eyes: May cause eye irritation.

**Additional Information**
RTECS: None

### 12. ECOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Category</th>
<th>Information Available</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Toxicity</strong></td>
<td>no information available</td>
</tr>
<tr>
<td><strong>Persistence and degradability</strong></td>
<td>no information available</td>
</tr>
<tr>
<td><strong>Biodegradation</strong></td>
<td>no information available</td>
</tr>
<tr>
<td><strong>Mobility in soil</strong></td>
<td>no information available</td>
</tr>
<tr>
<td><strong>Results of PBT and vPvB assessment</strong></td>
<td>no information available</td>
</tr>
<tr>
<td><strong>Other adverse effects</strong></td>
<td>no information available</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>no information available</td>
</tr>
</tbody>
</table>

### 13. DISPOSAL CONSIDERATIONS

Do not dispose product directly into sewage. Consult local state or national regulation for proper disposal.

### 14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Category</th>
<th>Information Available</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IATA, IMDG, DOT (US)</strong></td>
<td>not dangerous good during transportation</td>
</tr>
<tr>
<td>UN number</td>
<td>none</td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>none</td>
</tr>
<tr>
<td>Transport hazard class</td>
<td>none</td>
</tr>
<tr>
<td>Packing group</td>
<td>none</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>none</td>
</tr>
<tr>
<td>Special precaution for user</td>
<td>none</td>
</tr>
</tbody>
</table>

### 15. REGULATION INFORMATION

**US Federal Regulations**
- US Toxic Substances Control Act (TSCA): Not listed
- SARA 302: No chemicals were found.
- SARA 313: No chemicals were found.
- SARA 311/312 Hazards: No chemicals were found.

### 16. OTHER INFORMATION

Classification according to Regulation (EC) Nr. 1272/2008
Refer to section 2 and section 3

Prepared by: Regulatory Department
Biotium Inc.

Version no. 2
The information provided above is believed to be correct to our best knowledge, but does not purport to be all inclusive, and shall be used only as a guide. This material is sold for research purposes only and is not required to appear on the TSCA inventory. It is not intended for food, drug, household, agricultural or cosmetic use. Its use must be supervised by a technically qualified individual experienced in handling potentially hazardous chemicals. Biotium shall not be held liable for any damage resulting from handling or contact with the above product.
SAFETY DATA SHEET
Date Revised: March 23, 2016

1. PRODUCT AND COMPANY IDENTIFICATION

   Product Name: Firefly Luciferase
   Catalog Number: 99984/99930
   Unit Size: 50 uL/200 uL
   Manufacturer/Supplier: Biotium, Inc.
   46117 Landing Parkway, Fremont, CA 94538, USA
   Phone: 1-510-265-1027, Fax: 1-510-265-1352
   Web: http://www.biotium.com

2. HAZARDS IDENTIFICATION

   Classification according to Regulation (EC) No 1272/2008[CLP]
   Not classified

   Classification according to Directive 1999/45/EC
   Not classified

   Labelling according to Regulation (EC) No 1272/2008[CLP]
   Hazard pictogram
   None
   Signal word
   None
   Hazard statements
   None

   Precautionary statements
   None

   HMIS Classification (Triton X-100)
   Health hazard: 2
   Flammability: 1
   Physical hazards: 0

   NFPA Rating (Triton X-100)
   Health hazard: 2
   Fire: 1
   Reactivity Hazard: 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>Index No.</th>
<th>Weight %</th>
<th>Classification according to 67/548/EEC</th>
<th>Classification according to regulation (EC)No1278/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triton X-100</td>
<td>9002-93-1</td>
<td>N/A</td>
<td>N/A</td>
<td>1-5%</td>
<td>N/A</td>
<td>Acute Tox. 4</td>
</tr>
<tr>
<td>Glycerol</td>
<td>56-81-5</td>
<td>200-289-5</td>
<td>N/A</td>
<td>50%</td>
<td>N/A</td>
<td>Skin Irrit. 2</td>
</tr>
</tbody>
</table>

   Acute Tox. 4
   Skin Irrit. 2
   Eye Dam. 1
   Aquatic Chronic 2
   STOT RE 2
   STOT RE 1
4. FIRST-AID MEASURES

   General advice
   Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
   If inhaled
   If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
   In case of skin contact
   Wash off with soap and plenty of water. Consult a physician.
   In case of eye contact
   Flush eyes with water as a precaution.
   If swallowed
   Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water.
   Consult a physician.

5. FIREFIGHTING MEASURES

   Suitable extinguishing media
   Carbon dioxide, dry chemical extinguishers, foam extinguishers or water.
   Special protective equipment for firefighters
   Wear self contained breathing apparatus for firefighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

   Personal precautions
   Avoid breathing vapors, mist or gas. Remove all sources of ignition.
   Environmental precautions
   Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
   Methods and materials for containment and cleaning up
   Contain spillage. Soak up spilled substance with inert absorbent material. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

   Precautions for safe handling
   Avoid inhalation of vapor or mist.
   Avoid direct contact with substance.
   Conditions for safe storage
   Keep container tightly closed in a dry and well-ventilated place.
   Store at -70 °C.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

   Components with workplace control parameters
   Substance Glycerol
   CAS no. 56-81-5

<table>
<thead>
<tr>
<th>country</th>
<th>Austria</th>
<th>Belgium</th>
<th>Denmark</th>
<th>European Union</th>
<th>France</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit value, 8 hours</td>
<td>--</td>
<td>10 mg/m³</td>
<td>--</td>
<td>--</td>
<td>10 mg/m³</td>
<td>50 mg/m³</td>
</tr>
<tr>
<td>Limit value, short term</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>100 mg/m³</td>
</tr>
<tr>
<td>country</td>
<td>Hungary</td>
<td>Italy</td>
<td>Poland</td>
<td>Spain</td>
<td>Sweden</td>
<td>Netherlands</td>
</tr>
<tr>
<td>---------------</td>
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<td>-------</td>
<td>--------</td>
<td>------------------------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>Limit value, 8 hours</td>
<td>--</td>
<td>--</td>
<td>10 mg/m³</td>
<td>10 mg/m³</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Limit value, short term</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>country</th>
<th>United Kingdom</th>
<th>USA-NIOSH</th>
<th>USA-OSHA</th>
<th>Australia</th>
<th>Canada</th>
<th>Japan</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit value, 8 hours</td>
<td>10 mg/m³</td>
<td>--</td>
<td>15 mg/m³ inhalable dust 5 mg/m³ respirable dust</td>
<td>10 mg/m³ (1)</td>
<td>10 mg/m³</td>
<td>--</td>
<td>10 mg/m³</td>
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<tr>
<td>Limit value, short term</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Australia (1) This value is for inhalable dust containing no asbestos and < 1% crystalline silica.
Germany STV 15 minutes average value

**Personal protective equipment**

**Hand protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Respiratory protection**
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Eye protection**
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Hygiene measures**
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Firefly Luciferase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
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<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
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<tr>
<td>Evaporate rate</td>
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<td>Flammability</td>
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<tr>
<td>Explosive limits</td>
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<tr>
<td>Vapor pressure</td>
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<tr>
<td>Vapor density</td>
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<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water</td>
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</table>
10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
No data available

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
No data available

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

<table>
<thead>
<tr>
<th>Mode</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50</td>
<td>LD50 Oral – Rat - 1,800 mg/kg (Triton X-100)</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral – Rat - 12,600 mg/kg (Glycerol)</td>
</tr>
<tr>
<td>Inhalation LC50</td>
<td>No data available</td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>LD50 Dermal – Rabbit - 8,000 mg/kg (Triton X-100)</td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal – Rabbit - &gt; 10,000 mg/kg (Glycerol)</td>
</tr>
</tbody>
</table>

Other information on acute toxicity - no data available

Skin corrosion/irritation
Skin – Rabbit Result: Mild skin irritation - 24 h (Glycerol)

Serious eye damage/eye irritation
Eyes – Rabbit Result: Moderate eye irritation - 24 h (Triton X-100)
Eyes – Rabbit Result: Mild eye irritation - 24 h (Glycerol)

Respiratory or skin sensitization - no data available

Germ cell mutagenicity - no data available

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity - no data available

Specific target organ toxicity - single exposure (Globally Harmonized System) - no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System) - no data available

Aspiration hazard - no data available

Potential health effects - no data available
Inhalation May be harmful if inhaled. May cause respiratory tract irritation. 
Ingestion May be harmful if swallowed. 
Skin May be harmful if absorbed through skin. May cause skin irritation. 
Eyes May cause eye irritation. 

Additional Information 
RTECS: Triton X-100: MD0907700; Glycerol: MA8050000 
Prolonged or repeated exposure may cause: Nausea, Headache, Vomiting, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. 
Kidney – Irregularities - Based on Human Evidence (Glycerol)

12. ECOLOGICAL INFORMATION 

Toxicity 
Toxicity to fish (Triton X-100): LC50-Pimephales promelas (fathead minnow) - 8.9 mg/l-96.0 h 
Toxicity to daphnia and other aquatic invertebrates (Triton X-100): EC50-Daphnia (water flea)-26 mg/l-48 h

Persistence and degradability 
Biodegradation 
Biotic/Aerobic Biochemical oxygen demand (Triton X-100) - Exposure time 28 d 
Result: 36 % - Not readily biodegradable. (Closed Bottle test)

Mobility in soil 
no information available

Results of PBT and vPvB assessment 
no information available

Other adverse effects 
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life with long lasting effects

Additional information 
no information available

13. DISPOSAL CONSIDERATIONS 

Do not dispose product directly into sewage. Consult local state or national regulation for proper disposal.

14. TRANSPORT INFORMATION 

IATA, IMDG, DOT(US) 
UN number 3082 
UN proper shipping name Environmentally hazardous substance, liquid, n.o.s. (p-tertiary-Octylphenoxy polyethanol) 
Transport hazard class 9 
Packing group III 
Environmental hazards Marine pollutant 
Special precaution for user none

15. REGULATION INFORMATION 

US Federal Regulations 
US Toxic Substances Control Act (TSCA): Not listed 
SARA 302: No chemicals were found. 
SARA 313: No chemicals were found. 
SARA 311/312 Hazards: No chemicals were found.
16. OTHER INFORMATION

Classification according to Regulation (EC) Nr. 1272/2008

Prepared by: Regulatory Department
Biotium Inc.
Version no. 4
Reason for revision Correction to hazard classification

The information provided above is believed to be correct to our best knowledge, but does not purport to be all inclusive, and shall be used only as a guide. This material is sold for research purposes only and is not required to appear on the TSCA inventory. It is not intended for food, drug, household, agricultural or cosmetic use. Its use must be supervised by a technically qualified individual experienced in handling potentially hazardous chemicals. Biotium shall not be held liable for any damage resulting from handling or contact with the above product.
SAFETY DATA SHEET
Date Revised: March 23, 2016

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Assay Buffer
Catalog Number: 30020CT/30020C1/30020C2
Unit Size: 5 mL/10 mL/100 mL
Manufacturer/Supplier: Biotium, Inc.
46117 Landing Parkway, Fremont, CA 94538, USA
Phone: 1-510-265-1027, Fax: 1-510-265-1352
Web: http://www.biotium.com

2. HAZARDS IDENTIFICATION

Classification according to Regulation (EC) No 1272/2008[CLP]
Not classified

Classification according to Directive 1999/45/EC
Not classified

Labelling according to Regulation (EC) No 1272/2008[CLP]
Hazard pictogram
None

Signal word
None

Hazard statements
None

Precautionary statements
None

HMIS Classification (Triton X-100)
Health hazard: 2
Flammability: 1
Physical hazards: 0

NFPA Rating (Triton X-100)
Health hazard: 2
Fire: 1
Reactivity Hazard: 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>Index No.</th>
<th>Weight %</th>
<th>Classification according to 67/548/EEC</th>
<th>Classification according to regulation (EC)No1278/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triton X-100</td>
<td>9002-93-1</td>
<td>N/A</td>
<td>N/A</td>
<td>1-5%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Glycerol</td>
<td>56-81-5</td>
<td>200-289-5</td>
<td>N/A</td>
<td>50%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

4. FIRST-AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**
Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**
Flush eyes with water as a precaution.

**If swallowed**
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### 5. FIREFIGHTING MEASURES

**Suitable extinguishing media**
Carbon dioxide, dry chemical extinguishers, foam extinguishers or water.

**Special protective equipment for firefighters**
Wear self contained breathing apparatus for firefighting if necessary.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**
Avoid breathing vapors, mist or gas. Remove all sources of ignition.

**Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**Methods and materials for containment and cleaning up**
Contain spillage. Soak up spilled substance with inert absorbent material. Keep in suitable, closed containers for disposal.

### 7. HANDLING AND STORAGE

**Precautions for safe handling**
Avoid inhalation of vapor or mist.
Avoid direct contact with substance.

**Conditions for safe storage**
Keep container tightly closed in a dry and well-ventilated place.
Store at -70°C.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Components with workplace control parameters**
Substance Glycerol
CAS no. 56-81-5

<table>
<thead>
<tr>
<th>country</th>
<th>Austria</th>
<th>Belgium</th>
<th>Denmark</th>
<th>European Union</th>
<th>France</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit value, 8hours</td>
<td>--</td>
<td>10 mg/m³</td>
<td>--</td>
<td>--</td>
<td>10 mg/m³</td>
<td>50 mg/m³ inhalable aerosol</td>
</tr>
<tr>
<td>Limit value, short term</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>100 mg/m³ inhalable aerosol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>country</th>
<th>Hungary</th>
<th>Italy</th>
<th>Poland</th>
<th>Spain</th>
<th>Sweden</th>
<th>Netherlands</th>
<th>Switzerland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit</td>
<td>--</td>
<td>--</td>
<td>10 mg/m³</td>
<td>10 mg/m³</td>
<td>--</td>
<td>--</td>
<td>50 mg/m³</td>
</tr>
</tbody>
</table>
**Limit value, short term**

<table>
<thead>
<tr>
<th>country</th>
<th>United Kingdom</th>
<th>USA- NIOSH</th>
<th>USA- OSHA</th>
<th>Australia</th>
<th>Canada</th>
<th>Japan</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit value, 8hours</td>
<td>10 mg/m³</td>
<td>--</td>
<td>15 mg/m³</td>
<td>--</td>
<td>10 mg/m³</td>
<td>--</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Limit value, short term</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Australia (1) This value is for inhalable dust containing no asbestos and < 1% crystalline silica.

Germany STV 15 minutes average value

**Personal protective equipment**

**Hand protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Respiratory protection**
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Eye protection**
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Hygiene measures**
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Assay Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporate rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water</td>
</tr>
<tr>
<td>Partition coefficient:n-octanol/water</td>
<td>No data available</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.
Possibility of hazardous reactions
No data available
Conditions to avoid
Heat, flames and sparks.
Materials to avoid
No data available
Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50</td>
<td>Rat - 1,800 mg/kg (Triton X-100)</td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>Rabbit - 8,000 mg/kg (Triton X-100)</td>
</tr>
<tr>
<td>Inhalation LC50</td>
<td>No data available</td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>Rabbit - &gt; 10,000 mg/kg (Glycerol)</td>
</tr>
</tbody>
</table>

Other information on acute toxicity
no data available

Skin corrosion/irritation
Skin – Rabbit Result: Mild skin irritation - 24 h (Glycerol)

Serious eye damage/eye irritation
Eyes – Rabbit Result: Moderate eye irritation - 24 h (Triton X-100)
Eyes – Rabbit Result: Mild eye irritation - 24 h (Glycerol)

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects
Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion May be harmful if swallowed.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.

**Additional Information**

RTECS: Triton X-100: MD0907700; Glycerol: MA8050000

Prolonged or repeated exposure may cause: Nausea, Headache, Vomiting, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Kidney – Irregularities - Based on Human Evidence (Glycerol)

### 12. ECOLOGICAL INFORMATION

**Toxicity**

Toxicity to fish (Triton X-100): LC50-Pimephales promelas (fathead minnow) - 8.9 mg/l-96.0 h

Toxicity to daphnia and other aquatic invertebrates (Triton X-100): EC50-Daphnia (water flea)-26 mg/l-48 h

**Persistence and degradability**

- **Biodegradation**
  
  Biotic/Aerobic Biochemical oxygen demand (Triton X-100) - Exposure time 28 d
  
  Result: 36 % - Not readily biodegradable. (Closed Bottle test)

- **Mobility in soil**
  
  no information available

- **Results of PBT and vPvB assessment**
  
  no information available

- **Other adverse effects**
  
  An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life with long lasting effects

- **Additional information**
  
  no information available

### 13. DISPOSAL CONSIDERATIONS

Do not dispose product directly into sewage. Consult local state or national regulation for proper disposal.

### 14. TRANSPORT INFORMATION

**IATA, IMDG, DOT(US)**

- UN number: 3082
- UN proper shipping name: Environmentally hazardous substance, liquid, n.o.s. (p-tertiary-Octylphenoxy polyethyl alcohol)
- Transport hazard class: 9
- Packing group: III
- Environmental hazards: Marine pollutant
- Special precaution for user: none

### 15. REGULATION INFORMATION

**US Federal Regulations**

- US Toxic Substances Control Act (TSCA): Not listed
- SARA 302: No chemicals were found.
- SARA 313: No chemicals were found.
- SARA 311/312 Hazards: No chemicals were found.
16. OTHER INFORMATION

Classification according to Regulation (EC) Nr. 1272/2008

Prepared by: Regulatory Department
Biotium Inc.
Version no. 4
Reason for revision Correction to hazard classification.

The information provided above is believed to be correct to our best knowledge, but does not purport to be all inclusive, and shall be used only as a guide. This material is sold for research purposes only and is not required to appear on the TSCA inventory. It is not intended for food, drug, household, agricultural or cosmetic use. Its use must be supervised by a technically qualified individual experienced in handling potentially hazardous chemicals. Biotium shall not be held liable for any damage resulting from handling or contact with the above product.
SAFETY DATA SHEET
Date Revised: June 22, 2015

1. PRODUCT AND COMPANY IDENTIFICATION
   Product Name: ATP (2 mM)
   Catalog Number: 99931
   Unit Size: 100 µL
   Manufacturer/Supplier: Biotium, Inc.
   46117 Landing Parkway, Fremont, CA 94538, USA
   Phone: 1-510-265-1027, Fax: 1-510-265-1352
   Web: http://www.biotium.com

2. HAZARDS IDENTIFICATION
   Classification according to Regulation (EC) No 1272/2008[CLP]
   None
   Classification according to Directive 1999/45/EC
   None
   Labelling according to Regulation (EC) No 1272/2008[CLP]
   Hazard pictogram None
   Signal word None
   Hazard statements None
   Precautionary statements None

   HMIS Classification
   Health hazard: 0
   Flammability: 0
   Physical hazards: 0

   NFPA Rating
   Health hazard: 0
   Fire: 0
   Reactivity Hazard: 0

3. COMPOSITION/INFORMATION ON INGREDIENTS
   No ingredients present at concentrations that require reporting.

4. FIRST-AID MEASURES
   General advice
   Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
   If inhaled
   If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
   In case of skin contact
   Wash off with soap and plenty of water. Consult a physician.
   In case of eye contact
   Flush eyes with water as a precaution.
   If swallowed
   Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water.
   Consult a physician.

5. FIREFIGHTING MEASURES

SDS
PSF008
Suitable extinguishing media
Carbon dioxide, dry chemical extinguishers, foam extinguishers or water.

Special protective equipment for firefighters
Wear self contained breathing apparatus for firefighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

   Personal precautions
   Avoid breathing vapors, mist or gas. Remove all sources of ignition.

   Environmental precautions
   Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

   Methods and materials for containment and cleaning up
   Contain spillage. Soak up spilled substance with inert absorbent material. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

   Precautions for safe handling
   Avoid inhalation of vapor or mist.
   Avoid direct contact with substance.

   Conditions for safe storage
   Keep container tightly closed in a dry and well-ventilated place.
   Store at -70°C.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

   Components with workplace control parameters
   None

   Personal protective equipment

   Hand protection
   Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

   Respiratory protection
   Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

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<th>ATP, 2 mM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
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</tr>
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Possibility of hazardous reactions
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Conditions to avoid
Heat, flames and sparks.

Materials to avoid
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<td>None</td>
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Other information on acute toxicity: no data available

Skin corrosion/irritation: no data available
Serious eye damage/eye irritation: no data available
Respiratory or skin sensitization: no data available
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no data available

Potential health effects
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Ingestion May be harmful if swallowed.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.

Additional Information
RTECS: None

12. ECOLOGICAL INFORMATION

Toxicity no information available
Persistence and degradability no information available
Biodegradation no information available
Mobility in soil no information available
Results of PBT and vPvB assessment no information available
Other adverse effects no information available
Additional information no information available

13. DISPOSAL CONSIDERATIONS

Do not dispose product directly into sewage. Consult local state or national regulation for proper disposal.

14. TRANSPORT INFORMATION

IATA, IMDG, DOT (US) not dangerous good during transportation
UN number none
UN proper shipping name none
Transport hazard class none
Packing group none
Environmental hazards none
Special precaution for user none

15. REGULATION INFORMATION

US Federal Regulations
US Toxic Substances Control Act (TSCA): Not listed
SARA 302: No chemicals were found.
SARA 313: No chemicals were found.
SARA 311/312 Hazards: No chemicals were found.

16. OTHER INFORMATION

Classification according to Regulation (EC) Nr. 1272/2008
Refer to section 2 and section 3
Prepared by: Regulatory Department
Biotium Inc.
Version no. 2
Reason for revision Application of CLP labeling and corresponding requirements

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