<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N3050</td>
<td>Nano-Glo® HiBiT Lytic Detection System</td>
</tr>
</tbody>
</table>

Components:

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N246C</td>
<td>Nano-Glo® HiBiT Lytic Substrate</td>
</tr>
<tr>
<td>N247A</td>
<td>Nano-Glo® HiBiT Lytic Buffer</td>
</tr>
<tr>
<td>N401</td>
<td>LgBiT protein</td>
</tr>
</tbody>
</table>
1 Identification

Product identifier
Trade name: Nano-Glo® HiBiT Lytic Substrate

Article number: N246C

Application of the substance / the mixture Laboratory chemicals

Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Promega Corporation
2800 Woods Hollow Road
Madison, WI 53711
U.S.A.
1-800-356-9526 or (608)-274-4330

Information department: SDS author: Regulatory.Affairs@promega.com

Emergency telephone number:
For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

2 Hazard(s) identification

Classification of the substance or mixture

GHS02 Flame

Flam. Liq. 2 H225 Highly flammable liquid and vapor.

Label elements
GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
Hazard pictograms GHS02
Signal word Danger

Hazard statements
Highly flammable liquid and vapor.

Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
In case of fire: Use for extinction: CO2, powder or water spray.
Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local/regional/national/international regulations.
# Classification system:

**NFPA ratings (scale 0 - 4)**
- Health = 0
- Fire = 3
- Reactivity = 0

**HMIS-ratings (scale 0 - 4)**
- Health = 0
- Fire = 3
- Reactivity = 0

**OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Flammable**

**Primary route(s) of entry:**
- Inhalation
- Oral

**Target Organ(s):**
- May cause Liver damage (Hepatotoxin)
- May affect Nervous system (Neurotoxin)

**Other hazards:**
- Keep away from sources of ignition.

**Results of PBT and vPvB assessment**
- PBT: Not applicable.
- vPvB: Not applicable.

## 3 Composition/information on ingredients

**Chemical characterization:** Mixtures

**Description:**
The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances. The exact concentration percentages of the hazardous substances may be withheld as a Promega Corp. trade secret.

**Dangerous components:**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td>25-50%</td>
</tr>
<tr>
<td>57-55-6 propane-1,2-diol</td>
<td>25-50%</td>
</tr>
</tbody>
</table>

**Additional information:**
For the wording of the listed risk phrases refer to section 15.

## 4 First-aid measures

**Description of first aid measures**

- **After inhalation:** If the patient feels unwell or is concerned, obtain medical advice.
- **After skin contact:** Generally the product does not irritate the skin.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If the patient feels unwell or is concerned, obtain medical advice.

**Information for doctor:**

**Most important symptoms and effects, both acute and delayed**
- Headache
- Dizziness
- Nausea

**Indication of any immediate medical attention and special treatment needed**
No further relevant information available.
5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents:
CO2, sand, extinguishing powder. Do not use water.
Use fire fighting measures that suit the environment.
For safety reasons unsuitable extinguishing agents:
Water
Water with full jet
Special hazards arising from the substance or mixture None known
Advice for firefighters In the case of fire, wear respiratory protective equipment and chemical protective suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Remove persons from danger area.
Wear protective equipment. Keep unprotected persons away.
Keep away from ignition sources
Wear protective clothing.
Environmental precautions:
Prevent seepage into sewage system, workpits and cellars.
Do not allow to enter sewers/ surface or ground water.
Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
Reference to other sections
See Section 7 for information on safe handling.
See Section 13 for disposal information.
Protective Action Criteria for Chemicals

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td>1,800 ppm</td>
</tr>
<tr>
<td>57-55-6 propane-1,2-diol</td>
<td>30 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td>3300* ppm</td>
</tr>
<tr>
<td>57-55-6 propane-1,2-diol</td>
<td>1,300 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td>15000* ppm</td>
</tr>
<tr>
<td>57-55-6 propane-1,2-diol</td>
<td>7,900 mg/m³</td>
</tr>
</tbody>
</table>

7 Handling and storage

Handling:
Precautions for safe handling Use only in well ventilated areas.
Information about protection against explosions and fires:
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Trade name: Nano-Glo® HiBiT Lytic Substrate

Conditions for safe storage, including any incompatibilities

Storage:
Requirements to be met by storerooms and receptacles: Store in a cool location.
Information about storage in one common storage facility: Not required.
Further information about storage conditions:
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Control parameters

Components with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Component</th>
<th>PEL Long-term value</th>
<th>REL Long-term value</th>
<th>TLV Short-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td>1900 mg/m³, 1000 ppm</td>
<td>1900 mg/m³, 1000 ppm</td>
<td>1880 mg/m³, 1000 ppm</td>
</tr>
<tr>
<td>57-55-6 propane-1,2-diol</td>
<td>10 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional information: The lists that were valid during the creation were used as basis.

Exposure controls
Personal protective equipment:
General protective and hygienic measures: Wash hands before breaks and at the end of work.
Breathing equipment: Not required.
Protection of hands:
Protective gloves
Select the glove material considering penetration time, rate of diffusion and degradation time.
It is recommended that the selected protective gloves be tested and approved under NIOSH or EU Directive 89/686/EEC and the standard EN 374 derived from it.
Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
Eye protection:
Safety glasses
Use equipment for eye protection tested and approved under government NIOSH standards.

9 Physical and chemical properties

Information on basic physical and chemical properties
General Information
Appearance:
Form: Fluid
Color: Red-Orange
Odor: Not determined
Odor threshold: Not determined.

Change in condition
Melting point/Melting range: Undetermined.
**Safety Data Sheet**

*acc. to OSHA HCS*

Printing date 08/18/2017  
Reviewed on 08/18/2017

---

**Trade name:** Nano-Glo® HiBiT Lytic Substrate

---

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling point/Boiling range:</td>
<td>78°C (°F)</td>
</tr>
<tr>
<td>Flash point:</td>
<td>&lt; 23°C (°F)</td>
</tr>
<tr>
<td>Flammability (solid, gaseous):</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Ignition temperature:</td>
<td>371°C (°F)</td>
</tr>
<tr>
<td>Decomposition temperature:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Auto igniting:</td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td>Danger of explosion:</td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>Product is not explosive. However, formation of explosive air/vapor mixtures are possible.</td>
<td></td>
</tr>
<tr>
<td>Explosion limits:</td>
<td></td>
</tr>
<tr>
<td>Lower:</td>
<td>2.6 Vol %</td>
</tr>
<tr>
<td>Upper:</td>
<td>15 Vol %</td>
</tr>
<tr>
<td>Vapor pressure at 20°C (68 °F):</td>
<td>59 hPa (mm Hg)</td>
</tr>
<tr>
<td>Density:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Relative density:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Vapor density:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Evaporation rate:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Solubility in / Miscibility with Water:</td>
<td>Not miscible or difficult to mix.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water):</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Viscosity:</td>
<td></td>
</tr>
<tr>
<td>Dynamic:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Kinematic:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Organic solvents:</td>
<td>99.9 %</td>
</tr>
<tr>
<td>VOC content:</td>
<td>99.85 %</td>
</tr>
<tr>
<td>Solids content:</td>
<td>0.2 %</td>
</tr>
<tr>
<td>Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

---

**10 Stability and reactivity**

- **Reactivity:** No further relevant information available.
- **Chemical stability:**
  - **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
  - **Possibility of hazardous reactions:** No dangerous reactions known.
  - **Conditions to avoid:** No further relevant information available.
  - **Incompatible materials:** Oxidizing agents
  - **Hazardous decomposition products:** No dangerous decomposition products known.

---

**11 Toxicological information**

- **Information on toxicological effects**
  - **Acute toxicity:**
    - **LD/LC50 values that are relevant for classification:** No data available
  - **Primary irritant effect:**
    - **on the skin:** No irritant effect.
    - **on the eye:** Irritating effect.
  - **Sensitization:** No sensitizing effects known.
Additional toxicological information:

Carcinogenic categories

IARC (International Agency for Research on Cancer)
- 64-17-5 ethanol: 1

NTP (National Toxicology Program)
- None of the ingredients are listed.

OSHA-Ca (Occupational Safety & Health Administration)
- None of the ingredients are listed.

12 Ecological information

Toxicity
- Aquatic toxicity: Not harmful to the aquatic environment
- Persistence and degradability: Not available
- Behavior in environmental systems:
- Bioaccumulative potential: Not known
- Mobility in soil: No further relevant information available.
- Ecotoxicological effects:
- Remark: Not available

Additional ecological information:
- General notes:
  - Water hazard class 1 (Self-assessment): slightly hazardous for water
  - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
- Other adverse effects: No further relevant information available.

13 Disposal considerations

Waste treatment methods
- Recommendation:
  - Disposal should be in accordance with applicable regional, national and local laws and regulations.
  - Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

Uncleaned packagings:
- Recommendation: Disposal must be made according to official regulations.

14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN1170</td>
<td>Ethanol</td>
</tr>
<tr>
<td>DOT</td>
<td>1170 Ethanol</td>
</tr>
<tr>
<td>ADR</td>
<td>ETHANOL (ETHYL ALCOHOL)</td>
</tr>
<tr>
<td>IMDG</td>
<td>ETHANOL</td>
</tr>
<tr>
<td>IATA</td>
<td></td>
</tr>
</tbody>
</table>
### Transport hazard class(es)

#### DOT

<table>
<thead>
<tr>
<th>Class</th>
<th>3 Flammable liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>3</td>
</tr>
</tbody>
</table>

#### ADR

<table>
<thead>
<tr>
<th>Class</th>
<th>3 (F1) Flammable liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>3</td>
</tr>
</tbody>
</table>

#### IMDG, IATA

<table>
<thead>
<tr>
<th>Class</th>
<th>3 Flammable liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Packing group

DOT, ADR, IMDG, IATA: II

#### Environmental hazards:

Not applicable.

#### Special precautions for user

Warning: Flammable liquids

#### Danger code (Kemler): 33

#### EMS Number: F-E-S-D

#### Stowage Category: A

#### Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

#### Transport/Additional information:

**ADR**

**Excepted quantities (EQ)**

- Code: E2
- Maximum net quantity per inner packaging: 30 ml
- Maximum net quantity per outer packaging: 500 ml

**IMDG**

**Limited quantities (LQ):** 1L

**Excepted quantities (EQ):**

- Code: E2
- Maximum net quantity per inner packaging: 30 ml
- Maximum net quantity per outer packaging: 500 ml

**UN "Model Regulation":** UN 1170 ETHANOL, 3, II
### 15 Regulatory information

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

#### Sara

<table>
<thead>
<tr>
<th>Section 355 (extremely hazardous substances):</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 313 (Specific toxic chemical listings):</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TSCA (Toxic Substances Control Act):</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
</tr>
<tr>
<td>57-55-6 propane-1,2-diol</td>
</tr>
</tbody>
</table>

#### Proposition 65

<table>
<thead>
<tr>
<th>Chemicals known to cause cancer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemicals known to cause reproductive toxicity for females:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemicals known to cause reproductive toxicity for males:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemicals known to cause developmental toxicity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
</tr>
</tbody>
</table>

#### Cancerogenity categories

<table>
<thead>
<tr>
<th>EPA (Environmental Protection Agency)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TLV (Threshold Limit Value established by ACGIH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
</tr>
<tr>
<td><strong>A3</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NIOSH-Ca (National Institute for Occupational Safety and Health)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients are listed.</td>
</tr>
</tbody>
</table>

**GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

**Signal word** Danger

**Hazard statements**

- Highly flammable liquid and vapor.

**Precautionary statements**

- Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- Keep container tightly closed.
- Ground/bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting/equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Wear protective gloves/protective clothing/eye protection/face protection.
- If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- In case of fire: Use for extinction: CO2, powder or water spray.
- Store in a well-ventilated place. Keep cool.
- Dispose of contents/container in accordance with local/regional/national/international regulations.

**National regulations:**

**Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS:
Promega Corporation
Environmental Health and Safety Department
2800 Woods Hollow Road
Madison, WI
Ph: (608)274-4330

Date of preparation / last revision 08/18/2017 / -

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Flam. Liq. 2: Flammable liquids – Category 2

* Data compared to the previous version altered.
**1 Identification**

**Product identifier**

*Trade name:* Nano-Glo® HiBiT Lytic Buffer

**Article number:** N247A

**Application of the substance / the mixture** Laboratory chemicals

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:**

Promega Corporation  
2800 Woods Hollow Road  
Madison, WI 53711  
U.S.A.  
1-800-356-9526 or (608)-274-4330

**Information department:** SDS author: Regulatory.Affairs@promega.com

**Emergency telephone number:**  
For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300  
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

---

**2 Hazard(s) identification**

**Classification of the substance or mixture**

- GHS08 Health hazard

  - Carc. 2 H351 Suspected of causing cancer.
  - Repr. 2 H361 Suspected of damaging fertility or the unborn child.

**Label elements**

- **GHS label elements**: The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms** GHS08
- **Signal word** Warning
- **Hazard statements**
  - Suspected of causing cancer.
  - Suspected of damaging fertility or the unborn child.
  - **Precautionary statements**
  - Obtain special instructions before use.
  - Do not handle until all safety precautions have been read and understood.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - IF exposed or concerned: Get medical advice/attention.
  - Store locked up.
  - Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 2)
Trade name: Nano-Glo® HiBiT Lytic Buffer

Classification system:
NFPA ratings (scale 0 - 4)
Health = 0  
Fire = 0  
Reactivity = 0  

HMIS-ratings (scale 0 - 4)
Health = 0  
Fire = 0  
Reactivity = 0  

OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Suspected Carcinogen  
Primary route(s) of entry: Oral  
Target Organ(s): Not applicable or unknown  
Other hazards: Limited evidence of carcinogenic effect.  

Results of PBT and vPvB assessment  
PBT: Not applicable.  
vPvB: Not applicable.  

3 Composition/Information on ingredients

Chemical characterization: Mixtures  
Description:
The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances. The exact concentration percentages of the hazardous substances may be withheld as a Promega Corp. trade secret.  

Dangerous components:  
<table>
<thead>
<tr>
<th>Chemical formula</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>125572-95-4 trans-1,2-Diaminocyclohexane-N,N,N',N'-tetraacetic acid monohydrate</td>
<td>&lt;2%</td>
</tr>
<tr>
<td>127087-87-0 Nonylphenol Ethoxylate</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>62-56-6 thiourea</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

Additional information: For the wording of the listed risk phrases refer to section 15.  

4 First-aid measures

Description of first aid measures  
After inhalation: If the patient feels unwell or is concerned, obtain medical advice.  
After skin contact: Generally the product does not irritate the skin.  
After eye contact: Rinse opened eye for several minutes under running water.  
After swallowing: If the patient feels unwell or is concerned, obtain medical advice.  

Information for doctor:  
Most important symptoms and effects, both acute and delayed: Dizziness  
Indication of any immediate medical attention and special treatment needed: No relevant information available.  

5 Fire-fighting measures

Extinguishing media  
Suitable extinguishing agents:  
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.  
Special hazards arising from the substance or mixture: None known
6 Accidental release measures

**Personal precautions, protective equipment and emergency procedures**
Remove persons from danger area.
Wear protective clothing.

**Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/surface or ground water.

**Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to Section 13.

**Reference to other sections**
See Section 7 for information on safe handling.
See Section 13 for disposal information.

### Protective Action Criteria for Chemicals

#### PAC-1:
- 127087-87-0 Nonylphenol Ethoxylate 30 mg/m³
- 62-56-6 thiourea 0.38 mg/m³
- 25322-68-3 Polyethyleneglycol 30 mg/m³

#### PAC-2:
- 127087-87-0 Nonylphenol Ethoxylate 330 mg/m³
- 62-56-6 thiourea 4.1 mg/m³
- 25322-68-3 Polyethyleneglycol 1,300 mg/m³

#### PAC-3:
- 127087-87-0 Nonylphenol Ethoxylate 2,000 mg/m³
- 62-56-6 thiourea 25 mg/m³
- 25322-68-3 Polyethyleneglycol 7,700 mg/m³

7 Handling and storage

**Handling:**
Precautions for safe handling Keep receptacles tightly sealed.

Information about protection against explosions and fires: The product is not flammable.

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

**Storage:**
Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: None.

Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

**Control parameters**
Components with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
**Additional information:** The lists that were valid during the creation were used as basis.

**Exposure controls**

**Personal protective equipment:**

**General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Do not eat or drink while working.

**Breathing equipment:** Not required.

**Protection of hands:**
Protective gloves
Select the glove material considering penetration time, rate of diffusion and degradation time.
It is recommended that the selected protective gloves be tested and approved under NIOSH or EU Directive 89/686/EEC and the standard EN 374 derived from it.

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

**Eye protection:**
Safety glasses
Use equipment for eye protection tested and approved under government NIOSH standards.

---

### 9 Physical and chemical properties

**Information on basic physical and chemical properties**

**General Information**

**Appearance:**
- **Form:** Fluid
- **Color:** Colorless
- **Odor:** Not determined
- **Odor threshold:** Not determined.

**pH-value at 20°C (68 °F):** 6

**Change in condition**
- **Melting point/Melting range:** Undetermined.
- **Boiling point/Boiling range:** 100°C (°F)
- **Flash point:** Not applicable.

**Flammability (solid, gaseous):** Not applicable.

**Ignition temperature:**
- **Decomposition temperature:** Not determined.

**Auto igniting:** Product is not selfigniting.

**Danger of explosion:**
- **Explosion limits:**
  - **Lower:** Not determined.
  - **Upper:** Not determined.
- **Vapor pressure:** Not determined.

**Density at 20°C (68 °F):** 1.02 g/cm³ (lbs/gal)

**Relative density**
Not determined.

**Vapor density**
Not determined.
**Evaporation rate**
Not determined.

**Solubility in / Miscibility with Water:**
Fully miscible.

**Partition coefficient (n-octanol/water):**
Not determined.

**Viscosity:**
- **Dynamic:** Not determined.
- **Kinematic:** Not determined.
- **Water:** 93.7 %
- **VOC content:** 0.00 %

**Solids content:** 0.3 %

**Other information**
No further relevant information available.

---

**10 Stability and reactivity**

**Reactivity**
No further relevant information available.

**Chemical stability**

**Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.

**Possibility of hazardous reactions**
No dangerous reactions known.

**Conditions to avoid**
No further relevant information available.

**Incompatible materials:**
No further relevant information available.

**Hazardous decomposition products:**
No dangerous decomposition products known.

---

**11 Toxicological information**

**Information on toxicological effects**

**Acute toxicity:**

**LD/LC50 values that are relevant for classification:**
No data available

**Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** Irritating effect.

**Sensitization:**
No sensitizing effects known.

**Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:

**Carcinogenic categories**

**IARC (International Agency for Research on Cancer)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Compound</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>62-56-6</td>
<td>thiourea</td>
<td>3</td>
</tr>
</tbody>
</table>

**NTP (National Toxicology Program)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Compound</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>62-56-6</td>
<td>thiourea</td>
<td>R</td>
</tr>
</tbody>
</table>

**OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients are listed.

---

**12 Ecological information**

**Toxicity**

**Aquatic toxicity:**
Not harmful to the aquatic environment

**Persistence and degradability:**
Not available

**Behavior in environmental systems:**

**Bioaccumulative potential:**
Not known

---

(Contd. on page 6)
Mobility in soil: No further relevant information available.

Ecotoxicological effects:
Remark: Not available

Additional ecological information:
General notes:
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation:
Disposal should be in accordance with applicable regional, national and local laws and regulations.
Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, ADR, ADN, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not hazardous for transportation</td>
<td>Void</td>
</tr>
</tbody>
</table>

<table>
<thead>
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</tr>
</thead>
<tbody>
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<td>Void</td>
</tr>
</tbody>
</table>

<table>
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</thead>
<tbody>
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</table>

<table>
<thead>
<tr>
<th>Environmental hazards: Marine pollutant</th>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special precautions for user</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Not applicable.</td>
<td>Void</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</th>
<th>DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable.</td>
<td>Void</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UN &quot;Model Regulation&quot;:</th>
<th>DOT, ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Void</td>
<td>Void</td>
</tr>
</tbody>
</table>
**15 Regulatory information**

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

Sara

**Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

**Section 313 (Specific toxic chemical listings):**

| 62-56-6 | thiourea |

**TSCA (Toxic Substances Control Act):**

| 4432-31-9 | 2-morpholinoethanesulphonic acid |
| 127087-87-0 | Nonylphenol Ethoxylate |
| 62-56-6 | thiourea |
| 7732-18-5 | water |

**Proposition 65**

**Chemicals known to cause cancer:**

| 62-56-6 | thiourea |

**Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

**Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

**Cancerogenity categories**

**EPA (Environmental Protection Agency)**

None of the ingredients are listed.

**TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients are listed.

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients are listed.

**GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

**Signal word** Warning

**Hazard statements**

Suspected of causing cancer.

Suspected of damaging fertility or the unborn child.

**Precautionary statements**

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Wear protective gloves/protective clothing/eye protection/face protection.

IF exposed or concerned: Get medical advice/attention.

Store locked up.

Dispose of contents/container in accordance with local/regional/national/international regulations.

**National regulations:**

**Additional classification according to Decree on Hazardous Materials:** Can cause cancer.

**Water hazard class:** Water hazard class 2 (Self-assessment): hazardous for water.
16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS:
Promega Corporation
Environmental Health and Safety Department
2800 Woods Hollow Road
Madison, WI
Ph:(608)274-4330

Date of preparation / last revision 08/18/2017 / -

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Carc. 2: Carcinogenicity – Category 2
Repr. 2: Reproductive toxicity – Category 2

* Data compared to the previous version altered.
1 Identification

Product identifier
Trade name: LgBiT protein
Article number: N401
Application of the substance / the mixture Laboratory chemicals

Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Promega Corporation
2800 Woods Hollow Road
Madison, WI 53711
U.S.A.
1-800-356-9526 or (608)-274-4330

Information department: SDS author: Regulatory.Affairs@promega.com
Emergency telephone number:
For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300 Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

2 Hazard(s) identification

Classification of the substance or mixture
The product is not classified as hazardous according to the Globally Harmonized System (GHS).

Label elements
GHS label elements Void
Hazard pictograms Void
Signal word Void
Hazard statements Void
Classification system:
NFPA ratings (scale 0 - 4)
Health = 0
Fire = 0
Reactivity = 0
HMIS-ratings (scale 0 - 4)
Health = 1
Fire = 0
Reactivity = 0

OSHA Hazard Overview (Criteria according to 29CFR1910.1200): Not applicable
Target Organ(s): May cause Kidney damage (Nephrotoxin)

Other hazards
This mixture has not been tested to determine the overall health hazard; therefore in accordance with 29CFR1910.1200, the data reported above pertains to the hazardous ingredients of this mixture.

Results of PBT and vPvB assessment
PBT: Not applicable.

(Contd. on page 2)
**Trade name:** LgBiT protein

**vPvB:** Not applicable.

---

### 3 Composition/information on ingredients

**Chemical characterization:** Mixtures

**Description:**
The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances. The exact concentration percentages of the hazardous substances may be withheld as a Promega Corp. trade secret.

<table>
<thead>
<tr>
<th>Dangerous components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>56-81-5 glycerol</td>
<td>25-50%</td>
</tr>
</tbody>
</table>

**Additional information:** For the wording of the listed risk phrases refer to section 15.

---

### 4 First-aid measures

**Description of first aid measures**

**General information:** No special measures required.

**After inhalation:** If the patient feels unwell or is concerned, obtain medical advice.

**After skin contact:** Generally the product does not irritate the skin.

**After eye contact:** Rinse opened eye for several minutes under running water.

**After swallowing:** If the patient feels unwell or is concerned, obtain medical advice.

**Information for doctor:**

- **Most important symptoms and effects, both acute and delayed:** Dizziness

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

  No further relevant information available.

---

### 5 Fire-fighting measures

**Extinguishing media**

**Suitable extinguishing agents:**

- CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture:** None known

**Advice for firefighters**

- No special advice

**Protective equipment:** No special measures required.

---

### 6 Accidental release measures

**Personal precautions, protective equipment and emergency procedures:** Not required.

**Environmental precautions:** No special measures required.

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

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

**Reference to other sections**

See Section 7 for information on safe handling.

See Section 13 for disposal information.

**Protective Action Criteria for Chemicals**

**PAC-1:**

| 56-81-5 glycerol | 45 mg/m3 |

(Contd. on page 3)
### 7 Handling and storage

**Handling:**

**Precautions for safe handling** No special measures required.

**Information about protection against explosions and fires:** The product is not flammable.

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

**Storage:**

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** None.

**Specific end use(s)** No further relevant information available.

### 8 Exposure controls/personal protection

**Control parameters**

**Components with limit values that require monitoring at the workplace:**

<table>
<thead>
<tr>
<th>Substance Code</th>
<th>Substance Name</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>56-81-5</td>
<td>glycerol</td>
<td>180 mg/m³</td>
</tr>
<tr>
<td>1185-53-1</td>
<td>2-Amino-2-(hydroxymethyl)-1,3-propanediolhydrochloride</td>
<td>130 mg/m³</td>
</tr>
<tr>
<td>77-86-1</td>
<td>2-Amino-2-(hydroxymethyl)-1,3-propanediol</td>
<td>190 mg/m³</td>
</tr>
</tbody>
</table>

**Additional information:** The lists that were valid during the creation were used as basis.

**Exposure controls**

**General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

**Breathing equipment:** Not required.

**Protection of hands:** Not required.

**Material of gloves**

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

**Eye protection:** Not required.
**9 Physical and chemical properties**

<table>
<thead>
<tr>
<th>Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Information</strong></td>
</tr>
<tr>
<td><strong>Appearance:</strong></td>
</tr>
<tr>
<td>Form: Fluid</td>
</tr>
<tr>
<td>Color: Colorless</td>
</tr>
<tr>
<td>Odor: Not determined</td>
</tr>
<tr>
<td>Odor threshold: Not determined.</td>
</tr>
<tr>
<td><strong>Change in condition</strong></td>
</tr>
<tr>
<td>Melting point/Melting range: Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range: 100°C (°F)</td>
</tr>
<tr>
<td>Flash point: Not applicable.</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous):</strong></td>
</tr>
<tr>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Ignition temperature:</strong></td>
</tr>
<tr>
<td>400°C (°F)</td>
</tr>
<tr>
<td><strong>Decomposition temperature:</strong></td>
</tr>
<tr>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Auto igniting:</strong></td>
</tr>
<tr>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td><strong>Danger of explosion:</strong></td>
</tr>
<tr>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td><strong>Explosion limits:</strong></td>
</tr>
<tr>
<td>Lower: Not determined</td>
</tr>
<tr>
<td>Upper: Not determined</td>
</tr>
<tr>
<td><strong>Vapor pressure at 20°C (68 °F):</strong></td>
</tr>
<tr>
<td>0.1 hPa (mm Hg)</td>
</tr>
<tr>
<td><strong>Density:</strong></td>
</tr>
<tr>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
</tr>
<tr>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapor density</strong></td>
</tr>
<tr>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
</tr>
<tr>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with Water:</strong></td>
</tr>
<tr>
<td>Not miscible or difficult to mix.</td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water):</strong></td>
</tr>
<tr>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Viscosity:</strong></td>
</tr>
<tr>
<td>Dynamic: Not determined</td>
</tr>
<tr>
<td>Kinematic: Not determined</td>
</tr>
<tr>
<td><strong>Organic solvents:</strong></td>
</tr>
<tr>
<td>50.0 %</td>
</tr>
<tr>
<td><strong>Water:</strong></td>
</tr>
<tr>
<td>48.4 %</td>
</tr>
<tr>
<td><strong>VOC content:</strong></td>
</tr>
<tr>
<td>0.00 %</td>
</tr>
<tr>
<td><strong>Other information</strong></td>
</tr>
<tr>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

**10 Stability and reactivity**

**Reactivity** No further relevant information available.

**Chemical stability**

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**Possibility of hazardous reactions** No dangerous reactions known.

**Conditions to avoid** No further relevant information available.

**Incompatible materials:** No further relevant information available.

**Hazardous decomposition products:** No dangerous decomposition products known.
11 Toxicological information

Information on toxicological effects
Acute toxicity:
LD/LC50 values that are relevant for classification: No data available
Primary irritant effect:
on the skin: No irritant effect.
on the eye: Irritating effect.
Sensitization: No sensitizing effects known.
Additional toxicological information:
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

Carcinogenic categories

IARC (International Agency for Research on Cancer)
None of the ingredients are listed.

NTP (National Toxicology Program)
None of the ingredients are listed.

OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients are listed.

12 Ecological information

Toxicity
Aquatic toxicity: Not harmful to the aquatic environment
Persistencc and degradability Not available
Behavior in environmental systems:
Bioaccumulative potential Not known
Mobility in soil No further relevant information available.
Ecotoxic effects:
Remark: Not available
Additional ecological information:
General notes: Generally not hazardous for water.
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation:
Disposal should be in accordance with applicable regional, national and local laws and regulations.
Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.
### 14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
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</thead>
<tbody>
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<table>
<thead>
<tr>
<th>UN proper shipping name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>DOT, ADR, ADN, IMDG, IATA</td>
<td>Void</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
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</tr>
</thead>
<tbody>
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<td>DOT, ADR, ADN, IMDG, IATA</td>
<td>Void</td>
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<th>Packing group</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Environmental hazards:</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Special precautions for user</th>
<th>Not applicable.</th>
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<table>
<thead>
<tr>
<th>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</th>
<th>Not applicable.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>UN &quot;Model Regulation&quot;:</th>
<th>Void</th>
</tr>
</thead>
</table>

### 15 Regulatory information

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

**Sara**

**Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

**Section 313 (Specific toxic chemical listings):**

None of the ingredients are listed.

**TSCA (Toxic Substances Control Act):**

All ingredients are listed.

**Proposition 65**

**Chemicals known to cause cancer:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

**Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.
Trade name: LgBiT protein

Cancerogenity categories
EPA (Environmental Protection Agency)
None of the ingredients are listed.

TLV (Threshold Limit Value established by ACGIH)
None of the ingredients are listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients are listed.

GHS label elements Void
Signal word Void
Hazard statements Void

National regulations:
Water hazard class: Generally not hazardous for water.
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS:
Promega Corporation
Environmental Health and Safety Department
2800 Woods Hollow Road
Madison, WI
Ph: (608)274-4330
Date of preparation / last revision 08/18/2017 / -

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit

* Data compared to the previous version altered.