Conforms to Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals

SAFETY DATA SHEET

BL21-Gold Competent Cells, Part Number 230130

Section 1. Identification

Product identifier : BL21-Gold Competent Cells, Part Number 230130
Part no. (chemical kit) : 230130
Part no. : BL21-Gold competent cells 230130-41
 : pUC 18 DNA Control Plasmid 200231-42

Relevant identified uses of the substance or mixture and uses advised against

Material uses : Analytical reagent.
BL21-Gold competent cells : 1 ml (10 x 0.1 mL)
pUC 18 DNA Control Plasmid : 0.01 ml (0.1 ng/µl)

Supplier/Manufacturer : Agilent Technologies Australia Pty Ltd
 : 679 Springvale Road
 : Mulgrave
 : Victoria 3170, Australia
 : 1800 802 402

Emergency telephone number (with hours of operation) : CHEMTREC®: +(61)-290372994

Section 2. Hazard(s) identification

Classification of the substance or mixture
Not classified.

GHS label elements

Signal word
BL21-Gold competent cells : No signal word.
pUC 18 DNA Control Plasmid : No signal word.

Hazard statements
BL21-Gold competent cells : No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid : No known significant effects or critical hazards.

Precautionary statements

Prevention
BL21-Gold competent cells : Not applicable.
pUC 18 DNA Control Plasmid : Not applicable.

Response
BL21-Gold competent cells : Not applicable.
pUC 18 DNA Control Plasmid : Not applicable.

Storage
BL21-Gold competent cells : Not applicable.
pUC 18 DNA Control Plasmid : Not applicable.

Disposal
BL21-Gold competent cells : Not applicable.
pUC 18 DNA Control Plasmid : Not applicable.

Supplemental label elements

Additional warning phrases
BL21-Gold competent cells : Not applicable.
pUC 18 DNA Control Plasmid : Not applicable.

Other hazards which do not result in classification
BL21-Gold competent cells : None known.
pUC 18 DNA Control Plasmid : None known.

Date of issue/Date of revision : 31/10/2018
Date of previous issue : 29/09/2016
Version : 5
Section 3. Composition and ingredient information

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Ingredient name</th>
<th>% (w/w)</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL21-Gold competent cells</td>
<td>Glycerol</td>
<td>≥10 - ≤30</td>
<td>56-81-5</td>
</tr>
<tr>
<td></td>
<td>Dimethyl sulfoxide</td>
<td>≤10</td>
<td>67-68-5</td>
</tr>
<tr>
<td></td>
<td>Sucrose</td>
<td>≤10</td>
<td>57-50-1</td>
</tr>
</tbody>
</table>

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

<table>
<thead>
<tr>
<th>Description of necessary first aid measures</th>
<th>Substances/mixtures</th>
</tr>
</thead>
</table>
| Eye contact                                | BL21-Gold competent cells
|                                             | pUC 18 DNA Control Plasmid
|                                             | Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
|                                             | Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
| Inhalation                                 | BL21-Gold competent cells
|                                             | pUC 18 DNA Control Plasmid
|                                             | Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
|                                             | Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
| Skin contact                               | BL21-Gold competent cells
|                                             | pUC 18 DNA Control Plasmid
|                                             | Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
|                                             | Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
| Ingestion                                  | BL21-Gold competent cells
|                                             | pUC 18 DNA Control Plasmid
|                                             | Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
|                                             | Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

<table>
<thead>
<tr>
<th>Description of necessary first aid measures</th>
<th>Substances/mixtures</th>
</tr>
</thead>
</table>
| Eye contact                                | BL21-Gold competent cells
|                                             | pUC 18 DNA Control Plasmid
|                                             | No known significant effects or critical hazards.
| Inhalation                                 | BL21-Gold competent cells
|                                             | pUC 18 DNA Control Plasmid
|                                             | No known significant effects or critical hazards.
Section 4. First aid measures

Skin contact : BL21-Gold competent cells  No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.

Ingestion : BL21-Gold competent cells  No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : BL21-Gold competent cells  No specific data.
pUC 18 DNA Control Plasmid No specific data.

Inhalation : BL21-Gold competent cells  No specific data.
pUC 18 DNA Control Plasmid No specific data.

Skin contact : BL21-Gold competent cells  No specific data.
pUC 18 DNA Control Plasmid No specific data.

Ingestion : BL21-Gold competent cells  No specific data.
pUC 18 DNA Control Plasmid No specific data.

Notes to physician : BL21-Gold competent cells  Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
pUC 18 DNA Control Plasmid Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : BL21-Gold competent cells  No specific treatment.
pUC 18 DNA Control Plasmid No specific treatment.

Protection of first-aiders : BL21-Gold competent cells  No action shall be taken involving any personal risk or without suitable training.
pUC 18 DNA Control Plasmid No action shall be taken involving any personal risk or without suitable training.

Indication of immediate medical attention and special treatment needed, if necessary

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media : BL21-Gold competent cells Use an extinguishing agent suitable for the surrounding fire.
pUC 18 DNA Control Plasmid Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : BL21-Gold competent cells None known.
pUC 18 DNA Control Plasmid None known.

Specific hazards arising from the chemical : BL21-Gold competent cells In a fire or if heated, a pressure increase will occur and the container may burst.
pUC 18 DNA Control Plasmid In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : BL21-Gold competent cells Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides.
pUC 18 DNA Control Plasmid No specific data.
Section 5. Firefighting measures

Special protective actions for fire-fighters: BL21-Gold competent cells
Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

pUC 18 DNA Control Plasmid
Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters: BL21-Gold competent cells
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

pUC 18 DNA Control Plasmid
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
For non-emergency personnel: BL21-Gold competent cells
No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

pUC 18 DNA Control Plasmid
No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

For emergency responders: BL21-Gold competent cells
If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

pUC 18 DNA Control Plasmid
If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions: BL21-Gold competent cells
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

pUC 18 DNA Control Plasmid
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and material for containment and cleaning up
Methods for cleaning up: BL21-Gold competent cells
Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

pUC 18 DNA Control Plasmid
Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an...
### Section 6. Accidental release measures

Inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

### Section 7. Handling and storage

#### Precautions for safe handling

<table>
<thead>
<tr>
<th>Protective measures</th>
<th>BL21-Gold competent cells</th>
<th>Put on appropriate personal protective equipment (see Section 8).</th>
</tr>
</thead>
<tbody>
<tr>
<td>pUC 18 DNA Control Plasmid</td>
<td>Put on appropriate personal protective equipment (see Section 8).</td>
<td></td>
</tr>
</tbody>
</table>

**Advice on general occupational hygiene**

- **BL21-Gold competent cells:**
  - Potentially biohazardous material. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- **pUC 18 DNA Control Plasmid:**
  - Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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

- **BL21-Gold competent cells:**
  - Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
- **pUC 18 DNA Control Plasmid:**
  - Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

### Section 8. Exposure controls and personal protection

- **Control parameters**
- **Occupational exposure limits**
### Section 8. Exposure controls and personal protection

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL21-Gold competent cells</td>
<td>Safe Work Australia (Australia, 1/2014).</td>
</tr>
<tr>
<td>Glycerol</td>
<td>TWA: 10 mg/m³ 8 hours.</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</td>
<td>DFG MAC-values list (Germany, 7/2017).</td>
</tr>
<tr>
<td></td>
<td>Absorbed through skin.</td>
</tr>
<tr>
<td></td>
<td>PEAK: 320 mg/m³, 4 times per shift, 15 minutes.</td>
</tr>
<tr>
<td></td>
<td>TWA: 160 mg/m³ 8 hours.</td>
</tr>
<tr>
<td></td>
<td>PEAK: 100 ppm, 4 times per shift, 15 minutes.</td>
</tr>
<tr>
<td></td>
<td>TWA: 50 ppm 8 hours.</td>
</tr>
<tr>
<td>Sucrose</td>
<td>Safe Work Australia (Australia, 1/2014).</td>
</tr>
<tr>
<td></td>
<td>TWA: 10 mg/m³ 8 hours.</td>
</tr>
</tbody>
</table>

**Appropriate engineering controls**: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

**Environmental exposure controls**: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

**Individual protection measures**

**Hygiene measures**: Handle as biohazard material (Biosafety level 1). Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Eye/face protection**: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

**Skin protection**

**Hand protection**: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

**Body protection**: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Other skin protection**: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection**: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

### Section 9. Physical and chemical properties

**Appearance**

**Physical state**: BL21-Gold competent cells Liquid. pUC 18 DNA Control Plasmid Liquid.

**Colour**: BL21-Gold competent cells Not available. pUC 18 DNA Control Plasmid Not available.

**Odour**: BL21-Gold competent cells Not available. pUC 18 DNA Control Plasmid Not available.
## Section 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>BL21-Gold competent cells</th>
<th>pUC 18 DNA Control Plasmid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odour threshold</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>6.4</td>
<td>7.5</td>
</tr>
<tr>
<td>Melting point</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Lower and upper explosive (flammable) limits</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Easily soluble in the following materials: cold water and hot water.</td>
<td>Easily soluble in the following materials: cold water and hot water.</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available</td>
<td>Not available</td>
</tr>
</tbody>
</table>

## Section 10. Stability and reactivity

<table>
<thead>
<tr>
<th>Property</th>
<th>BL21-Gold competent cells</th>
<th>pUC 18 DNA Control Plasmid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity</td>
<td>No specific test data related to reactivity available for this product or its ingredients.</td>
<td>No specific test data related to reactivity available for this product or its ingredients.</td>
</tr>
<tr>
<td>Chemical stability</td>
<td>The product is stable.</td>
<td>The product is stable.</td>
</tr>
<tr>
<td>Possibility of hazardous reactions</td>
<td>Under normal conditions of storage and use, hazardous reactions will not occur.</td>
<td>Under normal conditions of storage and use, hazardous reactions will not occur.</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Incompatible materials</td>
<td>May react or be incompatible with oxidising materials.</td>
<td>May react or be incompatible with oxidising materials.</td>
</tr>
</tbody>
</table>

**Date of issue/Date of revision**: 31/10/2018  
**Date of previous issue**: 29/09/2016  
**Version**: 5
Section 10. Stability and reactivity

Hazardous decomposition products

BL21-Gold competent cells Under normal conditions of storage and use, hazardous decomposition products should not be produced.

pUC 18 DNA Control Plasmid Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL21-Gold competent cells</td>
<td>Glycerol</td>
<td>RD50 Oral</td>
<td>Rat</td>
<td>12600 mg/kg</td>
</tr>
<tr>
<td>BL21-Gold competent cells</td>
<td>Dimethyl sulfoxide</td>
<td>LD50 Dermal</td>
<td>Rat</td>
<td>40000 mg/kg</td>
</tr>
<tr>
<td>BL21-Gold competent cells</td>
<td>Sucrose</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>14500 mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rat</td>
<td>29700 mg/kg</td>
</tr>
</tbody>
</table>

Irritation/Corrosion

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Score</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL21-Gold competent cells</td>
<td>Glycerol</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>BL21-Gold competent cells</td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>BL21-Gold competent cells</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>BL21-Gold competent cells</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>100 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>BL21-Gold competent cells</td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>BL21-Gold competent cells</td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>100 milligrams</td>
<td>-</td>
</tr>
</tbody>
</table>

Sensitisation

Not available.

Mutagenicity

Conclusion/Summary: Not available.

Carcinogenicity

Conclusion/Summary: Not available.

Reproductive toxicity

Conclusion/Summary: Not available.

Teratogenicity

Conclusion/Summary: Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure

BL21-Gold competent cells Routes of entry anticipated: Oral, Dermal, Inhalation.
pUC 18 DNA Control Plasmid Not available.

Potential acute health effects
## Section 11. Toxicological information

### Eye contact
- **BL21-Gold competent cells**: No known significant effects or critical hazards.
- **pUC 18 DNA Control Plasmid**: No known significant effects or critical hazards.

### Inhalation
- **BL21-Gold competent cells**: No known significant effects or critical hazards.
- **pUC 18 DNA Control Plasmid**: No known significant effects or critical hazards.

### Skin contact
- **BL21-Gold competent cells**: No known significant effects or critical hazards.
- **pUC 18 DNA Control Plasmid**: No known significant effects or critical hazards.

### Ingestion
- **BL21-Gold competent cells**: No known significant effects or critical hazards.
- **pUC 18 DNA Control Plasmid**: No known significant effects or critical hazards.

### Symptoms related to the physical, chemical and toxicological characteristics

<table>
<thead>
<tr>
<th>Source</th>
<th>BL21-Gold competent cells</th>
<th>pUC 18 DNA Control Plasmid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
</tbody>
</table>

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

#### Short term exposure
- **Potential immediate effects**: Not available.
- **Potential delayed effects**: Not available.

#### Long term exposure
- **Potential immediate effects**: Not available.
- **Potential delayed effects**: Not available.

### Potential chronic health effects

<table>
<thead>
<tr>
<th>Category</th>
<th>BL21-Gold competent cells</th>
<th>pUC 18 DNA Control Plasmid</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Teratogenicity</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Developmental effects</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Fertility effects</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

### Numerical measures of toxicity

**Acute toxicity estimates**
Not available.
Section 12. Ecological information

Toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL21-Gold competent cells</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>Acute LC50 54000 mg/l Fresh water</td>
<td>Fish - Oncorhynchus mykiss</td>
<td>96 hours</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</td>
<td>Acute LC50 18299 μg/l Marine water</td>
<td>Algae - Nitzschia pungens</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 37.437 mg/l Marine water</td>
<td>Crustaceans - Artemia sp.</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 25000 ppm Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 34000000 μg/l Fresh water</td>
<td>Fish - Pimephales promelas</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 3323 μg/l Marine water</td>
<td>Algae - Nitzschia pungens</td>
<td>96 hours</td>
</tr>
</tbody>
</table>

Persistence and degradability

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Result</th>
<th>Dose</th>
<th>Inoculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL21-Gold competent cells</td>
<td>301D Ready Biodegradability - Closed Bottle Test</td>
<td>93 % - 30 days</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Glycerol</td>
<td>301D Ready Biodegradability - Closed Bottle Test</td>
<td>93 % - 30 days</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Bioaccumulative potential

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP&lt;sub&gt;ow&lt;/sub&gt;</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL21-Gold competent cells</td>
<td>-1.76</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>Glycerol</td>
<td>-1.76</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</td>
<td>-1.35</td>
<td>3.16</td>
<td>low</td>
</tr>
<tr>
<td>Sucrose</td>
<td>-3.7</td>
<td>-</td>
<td>low</td>
</tr>
</tbody>
</table>

Mobility in soil

| Soil/water partition coefficient (K<sub>oc</sub>) | Not available. |

Other adverse effects

: No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

: The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

ADG / IMDG / IATA

: Not regulated as Dangerous Goods according to the ADG Code.

Special precautions for user

: **Transport within user's premises**: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Section 14. Transport information

Transport in bulk according to Annex II of Marpol and the IBC Code: Not available.

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia: All components are listed or exempted.
Canada: All components are listed or exempted.
China: Not determined.
Europe: All components are listed or exempted.
Japan: Japan inventory (ENCS): Not determined. Japan inventory (ISHL): All components are listed or exempted.
Malaysia: Not determined.
New Zealand: Not determined.
Philippines: Not determined.
Republic of Korea: All components are listed or exempted.
Taiwan: All components are listed or exempted.
Thailand: Not determined.
Turkey: Not determined.
United States: All components are listed or exempted.
Viet Nam: Not determined.

Section 16. Any other relevant information

History

Date of issue/Date of revision: 31/10/2018
Date of previous issue: 29/09/2016
Version: 5
Section 16. Any other relevant information

Key to abbreviations:  
  ADG = Australian Dangerous Goods  
  ATE = Acute Toxicity Estimate  
  BCF = Bioconcentration Factor  
  GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
  IATA = International Air Transport Association  
  IBC = Intermediate Bulk Container  
  IMDG = International Maritime Dangerous Goods  
  LogPow = logarithm of the octanol/water partition coefficient  
  MARPOL = International Convention for the Prevention of Pollution From Ships,  
  1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
  NOHSC = National Occupational Health and Safety Commission  
  SUSMP = Standard Uniform Schedule of Medicine and Poisons  
  UN = United Nations

Procedure used to derive the classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not classified.</td>
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</tr>
</tbody>
</table>

References: Not available.

持って情報は以前の発行版との変更を示します。

Notice to reader

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