Section 1. Identification

1.1 Product identifier

Product name: JM110 Competent Cells, Part Number 200239
Part no. (chemical kit): 200239
Part no.: JM110 competent cells 200239-41
pUC 18 DNA Control Plasmid 200231-42
Beta Mercaptoethanol 210200-43

Validation date: 3/27/2019

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

Material uses: Analytical reagent.

JM110 competent cells 1 ml (5 x 0.2 ml)
pUC 18 DNA Control Plasmid 0.01 ml (0.1 ng/µl)
Beta Mercaptoethanol 0.025 ml (25 µl 1.42M)

1.3 Details of the supplier of the safety data sheet

Supplier/Manufacturer: Agilent Technologies, Inc.
5301 Stevens Creek Blvd
Santa Clara, CA 95051, USA
800-227-9770

1.4 Emergency telephone number

In case of emergency: CHEMTREC®: 1-800-424-9300

Section 2. Hazards identification

2.1 Classification of the substance or mixture

OSHA/HCS status: JM110 competent cells
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

pUC 18 DNA Control Plasmid
While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Beta Mercaptoethanol
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

JM110 competent cells
H320 EYE IRRITATION - Category 2B

Beta Mercaptoethanol
H312 ACUTE TOXICITY (dermal) - Category 4
H332 ACUTE TOXICITY (inhalation) - Category 4
H315 SKIN IRRITATION - Category 2
H318 SERIOUS EYE DAMAGE - Category 1
H317 SKIN SENSITIZATION - Category 1
H412 AQUATIC HAZARD (LONG-TERM) - Category 3
# Section 2. Hazards identification

## Ingredients of unknown toxicity
- **JM110 competent cells**

## 2.2 GHS label elements

### Signal word
- **JM110 competent cells**
- pUC 18 DNA Control Plasmid
- Beta Mercaptoethanol

### Hazard statements
- **JM110 competent cells**
- pUC 18 DNA Control Plasmid
- Beta Mercaptoethanol
- H320 - Causes eye irritation.
- No known significant effects or critical hazards.
- H312 + H332 - Harmful in contact with skin or if inhaled.
- H318 - Causes serious eye damage.
- H315 - Causes skin irritation.
- H317 - May cause an allergic skin reaction.
- H412 - Harmful to aquatic life with long lasting effects.

### Precautionary statements

#### Prevention
- **JM110 competent cells**
- pUC 18 DNA Control Plasmid
- Beta Mercaptoethanol

- P264 - Wash hands thoroughly after handling.
- Not applicable.
- P280 - Wear protective gloves. Wear eye or face protection. Wear protective clothing.
- P271 - Use only outdoors or in a well-ventilated area.
- P273 - Avoid release to the environment.
- P261 - Avoid breathing vapor.
- P264 - Wash hands thoroughly after handling.
- P272 (OSHA) - Contaminated work clothing must not be allowed out of the workplace.

#### Response
- **JM110 competent cells**
- pUC 18 DNA Control Plasmid
- Beta Mercaptoethanol

- P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337 + P313 - If skin irritation or rash occurs: Get medical attention.
- P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
- Not applicable.
- P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.
- P302 + P352 + P312 + P363 - IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. Wash contaminated clothing before reuse.
- P333 + P313 - If skin irritation or rash occurs: Get medical attention.

### Date of issue: 03/27/2019
Section 2. Hazards identification

Storage:
- JM110 competent cells: Not applicable.
- pUC 18 DNA Control Plasmid: Not applicable.
- Beta Mercaptoethanol: Not applicable.

Disposal:
- JM110 competent cells: Not applicable.
- pUC 18 DNA Control Plasmid: Not applicable.
- Beta Mercaptoethanol: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements:
- JM110 competent cells: None known.
- pUC 18 DNA Control Plasmid: None known.
- Beta Mercaptoethanol: None known.

2.3 Other hazards

Hazard not otherwise classified:
- JM110 competent cells: None known.
- pUC 18 DNA Control Plasmid: None known.
- Beta Mercaptoethanol: None known.

Section 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM110 competent cells</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>≥10 - ≤25</td>
<td>56-81-5</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</td>
<td>≤10</td>
<td>67-68-5</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>≤3</td>
<td>7447-40-7</td>
</tr>
<tr>
<td>Beta Mercaptoethanol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Mercaptoethanol</td>
<td>≤12</td>
<td>60-24-2</td>
</tr>
</tbody>
</table>

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

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

4.1 Description of necessary first aid measures

Eye contact:
- JM110 competent cells: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
- 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.
- Beta Mercaptoethanol: Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
### Section 4. First aid measures

<table>
<thead>
<tr>
<th>Condition</th>
<th>Substance</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inhalation</strong></td>
<td>JM110 competent cells</td>
<td>Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.</td>
</tr>
<tr>
<td></td>
<td>pUC 18 DNA Control Plasmid</td>
<td>Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.</td>
</tr>
<tr>
<td></td>
<td>Beta Mercaptoethanol</td>
<td>Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.</td>
</tr>
<tr>
<td><strong>Skin contact</strong></td>
<td>JM110 competent cells</td>
<td>Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.</td>
</tr>
<tr>
<td></td>
<td>pUC 18 DNA Control Plasmid</td>
<td>Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.</td>
</tr>
<tr>
<td></td>
<td>Beta Mercaptoethanol</td>
<td>Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.</td>
</tr>
<tr>
<td><strong>Ingestion</strong></td>
<td>JM110 competent cells</td>
<td>Wash out mouth with water. Remove dentures if any. 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. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if necessary.</td>
</tr>
</tbody>
</table>
Section 4. First aid measures

adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

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.

Beta Mercaptoethanol

Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact: JM110 competent cells
pUC 18 DNA Control Plasmid
Beta Mercaptoethanol

Causes eye irritation.
No known significant effects or critical hazards.
Causes serious eye damage.

Inhalation: JM110 competent cells
pUC 18 DNA Control Plasmid
Beta Mercaptoethanol

No known significant effects or critical hazards.
No known significant effects or critical hazards.
Harmful if inhaled.

Skin contact: JM110 competent cells
pUC 18 DNA Control Plasmid
Beta Mercaptoethanol

No known significant effects or critical hazards.
No known significant effects or critical hazards.
Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.

Ingestion: JM110 competent cells
pUC 18 DNA Control Plasmid
Beta Mercaptoethanol

No known significant effects or critical hazards.
No known significant effects or critical hazards.
No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact: JM110 competent cells
pUC 18 DNA Control Plasmid
Beta Mercaptoethanol

Adverse symptoms may include the following:
irritation
watering
redness

No specific data.
Adverse symptoms may include the following:
pain
watering
redness

Date of issue: 03/27/2019
Section 4. First aid measures

| Ingestion | JM110 competent cells | No specific data. |
| pUC 18 DNA Control Plasmid | No specific data. |
| Beta Mercaptoethanol | No specific data. |

| Skin contact | JM110 competent cells | No specific data. |
| pUC 18 DNA Control Plasmid | No specific data. |
| Beta Mercaptoethanol | Adverse symptoms may include the following: pain or irritation, redness, blistering may occur |

| Ingestion | JM110 competent cells | No specific data. |
| pUC 18 DNA Control Plasmid | No specific data. |
| Beta Mercaptoethanol | Adverse symptoms may include the following: stomach pains |

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

Notes to physician: JM110 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.

Beta Mercaptoethanol
Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments: JM110 competent cells
No specific treatment.

pUC 18 DNA Control Plasmid
No specific treatment.

Beta Mercaptoethanol
No specific treatment.

Protection of first-aiders: JM110 competent cells
No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

pUC 18 DNA Control Plasmid
No action shall be taken involving any personal risk or without suitable training.

Beta Mercaptoethanol
No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media: JM110 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.

Beta Mercaptoethanol
Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media: JM110 competent cells
None known.

pUC 18 DNA Control Plasmid
None known.

Beta Mercaptoethanol
None known.
## Section 5. Fire-fighting measures

### 5.2 Special hazards arising from the substance or mixture

<table>
<thead>
<tr>
<th>Specific hazards arising from the chemical</th>
<th>JM110 competent cells</th>
<th>pUC 18 DNA Control Plasmid</th>
<th>Beta Mercaptoethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a fire or if heated, a pressure increase will occur and the container may burst.</td>
<td>In a fire or if heated, a pressure increase will occur and the container may burst.</td>
<td>In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.</td>
<td></td>
</tr>
</tbody>
</table>

#### Hazardous thermal decomposition products

<table>
<thead>
<tr>
<th>Hazardous thermal decomposition products</th>
<th>JM110 competent cells</th>
<th>pUC 18 DNA Control Plasmid</th>
<th>Beta Mercaptoethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decomposition products may include the following materials: carbon dioxide, carbon monoxide, sulfur oxides, halogenated compounds, metal oxide/oxides</td>
<td>No specific data.</td>
<td>Decomposition products may include the following materials: carbon dioxide, carbon monoxide, sulfur oxides</td>
<td></td>
</tr>
</tbody>
</table>

### 5.3 Advice for firefighters

#### Special protective actions for fire-fighters

<table>
<thead>
<tr>
<th>Special protective actions for fire-fighters</th>
<th>JM110 competent cells</th>
<th>pUC 18 DNA Control Plasmid</th>
<th>Beta Mercaptoethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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.</td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

#### Special protective equipment for fire-fighters

<table>
<thead>
<tr>
<th>Special protective equipment for fire-fighters</th>
<th>JM110 competent cells</th>
<th>pUC 18 DNA Control Plasmid</th>
<th>Beta Mercaptoethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.</td>
<td>Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.</td>
<td>Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.</td>
<td></td>
</tr>
</tbody>
</table>
Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: JM110 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 spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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 spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Beta Mercaptoethanol
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 spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders: JM110 competent cells
If specialized 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 specialized 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".

Beta Mercaptoethanol
If specialized 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".

6.2 Environmental precautions: JM110 competent cells
Avoid dispersal of spilled 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 spilled 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).

Beta Mercaptoethanol
Avoid dispersal of spilled 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). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and materials for containment and cleaning up

Date of issue: 03/27/2019
Section 6. Accidental release measures

Methods for cleaning up : JM110 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 inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Beta Mercaptoethanol
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.

Section 7. Handling and storage

7.1 Precautions for safe handling

Protective measures : JM110 competent cells
Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

pUC 18 DNA Control Plasmid
Put on appropriate personal protective equipment (see Section 8).

Beta Mercaptoethanol
Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : JM110 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
### Section 7. Handling and storage

<table>
<thead>
<tr>
<th>Compound</th>
<th>Handling and Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beta Mercaptoethanol</strong></td>
<td>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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.</td>
</tr>
<tr>
<td><strong>pUC 18 DNA Control Plasmid</strong></td>
<td>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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.</td>
</tr>
<tr>
<td><strong>Beta Mercaptoethanol</strong></td>
<td>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. Store locked up. 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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.</td>
</tr>
</tbody>
</table>

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

- **JM110 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. 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.

### 7.3 Specific end use(s)

- **Recommendations**
  - **JM110 competent cells**
  - pUC 18 DNA Control Plasmid
  - Beta Mercaptoethanol

- **Industrial sector specific solutions**
  - **JM110 competent cells**
  - pUC 18 DNA Control Plasmid
  - Beta Mercaptoethanol

- **Industrial applications**, **Professional applications.**

**Date of issue**: 03/27/2019
Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM110 competent cells, Glycerol</td>
<td>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>TWA: 10 mg/m³ 8 hours. Form: Total dust</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</td>
<td>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>TWA: 15 mg/m³ 8 hours. Form: Total dust</td>
</tr>
<tr>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Beta Mercaptoethanol 2-Mercaptoethanol</td>
<td>AIHA WEEL (United States, 5/2018). Absorbed through skin. TWA: 0.2 ppm 8 hours.</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
: If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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. Contaminated work clothing should not be allowed out of the workplace. 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: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

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.
Section 8. Exposure controls/personal protection

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

9.1 Information on basic physical and chemical properties

| Appearance | JM110 competent cells | Liquid. |
| Physical state | pUC 18 DNA Control Plasmid | Liquid. |
| Color | Beta Mercaptoethanol | Liquid. |
| JM110 competent cells | Not available. |
| pUC 18 DNA Control Plasmid | Not available. |
| Beta Mercaptoethanol | Not available. |
| Odor | JM110 competent cells | Not available. |
| Beta Mercaptoethanol | Not available. |
| Odor threshold | pUC 18 DNA Control Plasmid | Not available. |
| Beta Mercaptoethanol | Not available. |
| pH | JM110 competent cells | 6.4 |
| Beta Mercaptoethanol | Not available. |
| Melting point | pUC 18 DNA Control Plasmid | Not available. |
| Beta Mercaptoethanol | Not available. |
| Boiling point | JM110 competent cells | Not applicable. |
| Beta Mercaptoethanol | Not applicable. |
| Flash point | pUC 18 DNA Control Plasmid | Not applicable. |
| Beta Mercaptoethanol | Not applicable. |
| Evaporation rate | JM110 competent cells | Not applicable. |
| Beta Mercaptoethanol | Not applicable. |
| Flammability (solid, gas) | pUC 18 DNA Control Plasmid | Not applicable. |
| Beta Mercaptoethanol | Not applicable. |
| Lower and upper explosive limits (flammable) limits | JM110 competent cells | Not available. |
| Beta Mercaptoethanol | Not available. |
| Vapor pressure | pUC 18 DNA Control Plasmid | Not available. |
| Beta Mercaptoethanol | Not available. |
| Vapor density | JM110 competent cells | Not available. |
| Beta Mercaptoethanol | Not available. |
| Relative density | pUC 18 DNA Control Plasmid | Not available. |
| Beta Mercaptoethanol | Not available. |

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Section 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>JM110 competent cells</th>
<th>pUC 18 DNA Control Plasmid</th>
<th>Beta Mercaptoethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solubility</td>
<td></td>
<td>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>Auto-ignition temperature</td>
<td>JM110 competent cells</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>JM110 competent cells</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>JM110 competent cells</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Section 10. Stability and reactivity

10.1 Reactivity: JM110 competent cells
- The product is stable.
- May react or be incompatible with oxidizing materials.

10.2 Chemical stability: JM110 competent cells
- The product is stable.

10.3 Possibility of hazardous reactions: JM110 competent cells
- Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid: JM110 competent cells
- No specific data.

10.5 Incompatible materials: JM110 competent cells
- May react or be incompatible with oxidizing materials.
Section 10. Stability and reactivity

10.6 Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

- JM110 competent cells
- pUC 18 DNA Control Plasmid
- BetaMercaptoethanol

Section 11. Toxicological information

11.1 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>JM110 competent cells</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>12600 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</td>
<td>LD50 Dermal</td>
<td>Rat</td>
<td>40000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>14500 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>2600 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>Beta Mercaptoethanol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Mercaptoethanol</td>
<td>LD50 Dermal</td>
<td>Rabbit</td>
<td>167.1 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>244 mg/kg</td>
<td>-</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>JM110 competent cells</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>100 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>100 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>Beta Mercaptoethanol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Mercaptoethanol</td>
<td>Eyes - Severe irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>2 milligrams</td>
<td>-</td>
</tr>
</tbody>
</table>

**Sensitization**

Not available.

**Mutagenicity**

Conclusion/Summary : Not available.

**Carcinogenicity**

Conclusion/Summary : Not available.

**Reproductive toxicity**

Conclusion/Summary : Not available.

**Teratogenicity**

Conclusion/Summary : Not available.
Section 11. Toxicological information

Conclusion/Summary: Not available.

Specific target organ toxicity (single exposure)

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM110 competent cells</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pUC 18 DNA Control Plasmid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beta Mercaptoethanol</td>
<td>Category 3</td>
<td>Not applicable.</td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

Information on the likely routes of exposure:

JM110 competent cells Routes of entry anticipated: Oral, Dermal, Inhalation.
pUC 18 DNA Control Plasmid Routes of entry anticipated: Oral, Dermal, Inhalation.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Eye contact:

JM110 competent cells Causes eye irritation.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
Beta Mercaptoethanol Causes serious eye damage.

Inhalation:

JM110 competent cells No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
Beta Mercaptoethanol Harmful if inhaled.

Skin contact:

JM110 competent cells No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
Beta Mercaptoethanol Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.

Ingestion:

JM110 competent cells No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
Beta Mercaptoethanol No known significant effects or critical hazards.

Potential acute health effects

Eye contact:

JM110 competent cells Causes eye irritation.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
Beta Mercaptoethanol Causes serious eye damage.

Inhalation:

JM110 competent cells No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
Beta Mercaptoethanol Harmful if inhaled.

Skin contact:

JM110 competent cells No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
Beta Mercaptoethanol Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.

Ingestion:

JM110 competent cells No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
Beta Mercaptoethanol No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact:

JM110 competent cells Adverse symptoms may include the following:
irritation
watering
redness
pUC 18 DNA Control Plasmid No specific data.
Beta Mercaptoethanol Adverse symptoms may include the following:
pain
watering
redness

Inhalation:

JM110 competent cells No specific data.
pUC 18 DNA Control Plasmid No specific data.
Beta Mercaptoethanol No specific data.

Skin contact:

JM110 competent cells No specific data.
pUC 18 DNA Control Plasmid No specific data.
Beta Mercaptoethanol Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

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Section 11. Toxicological information

Ingestion:
- JM110 competent cells
- pUC 18 DNA Control Plasmid
- BetaMercaptoethanol
  No known significant effects or critical hazards.
  Adverse symptoms may include the following:
  stomach pains

Delayed and immediate effects and also 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:
- General:
  - JM110 competent cells
  - pUC 18 DNA Control Plasmid
  - Beta Mercaptoethanol
  No known significant effects or critical hazards.

Carcinogenicity:
- JM110 competent cells
- pUC 18 DNA Control Plasmid
- Beta Mercaptoethanol
  No known significant effects or critical hazards.

Mutagenicity:
- JM110 competent cells
- pUC 18 DNA Control Plasmid
- Beta Mercaptoethanol
  No known significant effects or critical hazards.

Teratogenicity:
- JM110 competent cells
- pUC 18 DNA Control Plasmid
- Beta Mercaptoethanol
  No known significant effects or critical hazards.

Developmental effects:
- JM110 competent cells
- pUC 18 DNA Control Plasmid
- Beta Mercaptoethanol
  No known significant effects or critical hazards.

Fertility effects:
- JM110 competent cells
- pUC 18 DNA Control Plasmid
- Beta Mercaptoethanol
  No known significant effects or critical hazards.

Numerical measures of toxicity
Acute toxicity estimates

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Oral (mg/kg)</th>
<th>Dermal (mg/kg)</th>
<th>Inhalation (gases) (ppm)</th>
<th>Inhalation (vapors) (mg/l)</th>
<th>Inhalation (dusts and mists) (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM110 competent cells</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JM110 competent cells</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Glycerol</td>
<td>136842.1</td>
<td>12600</td>
<td>40000</td>
<td>40000</td>
<td>40000</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</td>
<td>14500</td>
<td>2600</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>2440</td>
<td>244</td>
<td>1671</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Beta Mercaptoethanol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beta Mercaptoethanol</td>
<td>2440</td>
<td>1671</td>
<td>20</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2-Mercaptoethanol</td>
<td>244</td>
<td></td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

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### Section 11. Toxicological information

#### Section 12. Ecological information

**12.1 Toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JM110 competent cells</strong></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></td>
<td>Acute LC50 25000 ppm Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</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>
<tr>
<td></td>
<td>Acute EC50 1337000 µg/l Fresh water</td>
<td>Algae - Navicula seminulum</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 9.24 g/L Fresh water</td>
<td>Algae - Desmodesmus subspicatus</td>
<td>72 hours</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>Acute EC50 141.46 mg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 12.92 mg/l Fresh water</td>
<td>Crustaceans - Pseudosida ramosa - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 880 mg/l Fresh water</td>
<td>Fish - Pimephales promelas</td>
<td>96 hours</td>
</tr>
</tbody>
</table>

**12.2 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><strong>JM110 competent cells</strong></td>
<td></td>
<td></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>
<tr>
<td>Dimethyl sulfoxide</td>
<td>OECD 310 Ready Biodegradability - CO₂ in Sealed Vessels (Headspace Test)</td>
<td>69 % - Inherent - 60 days</td>
<td>20 mg/l</td>
<td>-</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Readily</td>
</tr>
</tbody>
</table>

**12.3 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><strong>JM110 competent cells</strong></td>
<td></td>
<td></td>
<td></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>Potassium chloride</td>
<td>-0.46</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td><strong>Beta Mercaptoethanol</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Mercaptoethanol</td>
<td>-0.056</td>
<td>-</td>
<td>low</td>
</tr>
</tbody>
</table>

**12.4 Mobility in soil**

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

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12.5 Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

13.1 Waste treatment methods
Disposal methods : The generation of waste should be avoided or minimized 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. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

DOT / TDG / Mexico / IMDG / IATA : Not regulated.

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.

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

Section 15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined
Clean Water Act (CWA) 311: Edetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed
Clean Air Act Section 602 Class I Substances : Not listed

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Section 15. Regulatory information

Clean Air Act Section 602
Class II Substances
: Not listed

DEA List I Chemicals
(Precursor Chemicals)
: Not listed

DEA List II Chemicals
(Essential Chemicals)
: Not listed

SARA 302/304
Composition/information on ingredients
No products were found.

SARA 304 RQ
: Not applicable.

SARA 311/312
Classification
: JM110 competent cells
pUC 18 DNA Control Plasmid
Beta Mercaptoethanol

Composition/information on ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM110 competent cells</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>≥10 - ≤25</td>
<td>EYE IRRITATION - Category 2B</td>
</tr>
<tr>
<td>Dimethyl sulfoxide</td>
<td>≤10</td>
<td>FLAMMABLE LIQUIDS - Category 4</td>
</tr>
<tr>
<td>Sucrose</td>
<td>≤10</td>
<td>EYE IRRITATION - Category 2A</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>≤3</td>
<td>COMBUSTIBLE DUSTS</td>
</tr>
<tr>
<td>Beta Mercaptoethanol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Mercaptoethanol</td>
<td>≤12</td>
<td>EYE IRRITATION - Category 2A</td>
</tr>
</tbody>
</table>

State regulations

Massachusetts : The following components are listed: SUCROSE DUST; GLYCERINE MIST; 2-MERCAPTOETHANOL

New York : None of the components are listed.

New Jersey : The following components are listed: DIMETHYL SULFOXIDE; METHANE, SULFINYLBIS-; GLYCERIN; 1,2,3-PROPANETRIOL; THIOGLYCOL; 2-MERCAPTOETHANOL

Pennsylvania : The following components are listed: .ALPHA.-D-GLUCOPYRANOSIDE, .BETA.-D-FRUCTOFURANOSYL; 1,2,3-PROPANETRIOL; ETHANOL, 2-MERCAPTO-

California Prop. 65
This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals
Not listed.

Montreal Protocol

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Section 15. Regulatory information

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.
- **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. Other information

**History**

- **Date of issue**: 03/27/2019
- **Date of previous issue**: 03/29/2017
- **Version**: 6

**Key to abbreviations**

- 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
- N/A = Not available
- UN = United Nations

**Procedure used to derive the classification**
## Section 16. Other information

<table>
<thead>
<tr>
<th>Classification</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JM110 competent cells</strong></td>
<td></td>
</tr>
<tr>
<td>EYE IRRITATION - Category 2B</td>
<td>Calculation method</td>
</tr>
<tr>
<td><strong>Beta Mercaptoethanol</strong></td>
<td></td>
</tr>
<tr>
<td>ACUTE TOXICITY (dermal) - Category 4</td>
<td>Calculation method</td>
</tr>
<tr>
<td>ACUTE TOXICITY (inhalation) - Category 4</td>
<td>Calculation method</td>
</tr>
<tr>
<td>SKIN IRRITATION - Category 2</td>
<td>Calculation method</td>
</tr>
<tr>
<td>SERIOUS EYE DAMAGE - Category 1</td>
<td>Calculation method</td>
</tr>
<tr>
<td>SKIN SENSITIZATION - Category 1</td>
<td>Calculation method</td>
</tr>
<tr>
<td>AQUATIC HAZARD (LONG-TERM) - Category 3</td>
<td>Calculation method</td>
</tr>
</tbody>
</table>

* Indicates information that has changed from previously issued version.

**Notice to reader**

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