## Section 1. Identification

<table>
<thead>
<tr>
<th>Product identifier</th>
<th>: JM101 Competent Cells, Part Number 200234</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No. (Chemical Kit)</td>
<td>: 200234</td>
</tr>
</tbody>
</table>
| Part No. | : JM101 competent cells 200234-41  
pUC18 Control Plasmid DNA 200231-42  
1.42 M 2-Mercaptoethanol 210200-43 |

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

Analytical reagent.

<table>
<thead>
<tr>
<th>JM101 competent cells</th>
<th>1 ml (0.2 ml / Tube)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pUC18 Control Plasmid DNA</td>
<td>0.01 ml</td>
</tr>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td>0.025 ml</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>1.42 M 2-Mercaptoethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>H312</td>
</tr>
<tr>
<td>H332</td>
</tr>
<tr>
<td>H315</td>
</tr>
<tr>
<td>H318</td>
</tr>
<tr>
<td>H317</td>
</tr>
<tr>
<td>H412</td>
</tr>
</tbody>
</table>

### Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment

<table>
<thead>
<tr>
<th>JM101 competent cells</th>
<th>15%</th>
</tr>
</thead>
<tbody>
<tr>
<td>pUC18 Control Plasmid DNA</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

### GHS label elements

#### Hazard pictograms

![Hazard pictograms](image)

#### Signal word

<table>
<thead>
<tr>
<th>JM101 competent cells</th>
<th>No signal word.</th>
</tr>
</thead>
<tbody>
<tr>
<td>pUC18 Control Plasmid DNA</td>
<td>No signal word.</td>
</tr>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td>DANGER</td>
</tr>
</tbody>
</table>

#### Hazard statements

<table>
<thead>
<tr>
<th>JM101 competent cells</th>
<th>No known significant effects or critical hazards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>pUC18 Control Plasmid DNA</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td>H312 + H332 - Harmful in contact with skin or if inhaled.</td>
</tr>
<tr>
<td></td>
<td>H318 - Causes serious eye damage.</td>
</tr>
<tr>
<td></td>
<td>H315 - Causes skin irritation.</td>
</tr>
<tr>
<td></td>
<td>H317 - May cause an allergic skin reaction.</td>
</tr>
<tr>
<td></td>
<td>H412 - Harmful to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>
Section 2. Hazard(s) identification

Precautionary statements

Prevention: JM101 competent cells Not applicable.
pUC18 Control Plasmid DNA Not applicable.
1.42 M 2-Mercaptoethanol 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 vapour.
P264 - Wash hands thoroughly after handling.
P272 - Contaminated work clothing should not be allowed out of the workplace.

Response: JM101 competent cells Not applicable.
pUC18 Control Plasmid DNA Not applicable.
1.42 M 2-Mercaptoethanol P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.
P302 + P352 + P312 + P362-2 + P363 - IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. Take off contaminated clothing. Wash contaminated clothing before reuse.
P333 + 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.

Storage: JM101 competent cells Not applicable.
pUC18 Control Plasmid DNA Not applicable.
1.42 M 2-Mercaptoethanol Not applicable.

Disposal: JM101 competent cells Not applicable.
pUC18 Control Plasmid DNA Not applicable.
1.42 M 2-Mercaptoethanol P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements: JM101 competent cells Not applicable.
pUC18 Control Plasmid DNA Not applicable.
1.42 M 2-Mercaptoethanol Not applicable.

Other hazards which do not result in classification: JM101 competent cells None known.
pUC18 Control Plasmid DNA None known.
1.42 M 2-Mercaptoethanol None known.

Section 3. Composition and ingredient information

Substance/mixture: JM101 competent cells Mixture.
pUC18 Control Plasmid DNA Mixture.
1.42 M 2-Mercaptoethanol Mixture.

CAS number/other identifiers

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>(w/w)</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM101 competent cells</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>≥10 - &lt;30</td>
<td>56-81-5</td>
</tr>
<tr>
<td>Sucrose</td>
<td>≥5 - &lt;10</td>
<td>57-50-1</td>
</tr>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td>≥10 - &lt;12</td>
<td>60-24-2</td>
</tr>
<tr>
<td>2-Mercaptoethanol</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of issue/Date of revision: 8/28/2015
Date of previous issue: 3/15/2013
Version: 4
Page: 2/16
Section 3. Composition and ingredient information

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

<table>
<thead>
<tr>
<th>Description of necessary first aid measures</th>
<th>Eye contact</th>
<th>Skin contact</th>
<th>Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JM101 competent cells</strong></td>
<td>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.</td>
<td>Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.</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. Get medical attention if symptoms occur.</td>
</tr>
<tr>
<td><strong>pUC18 Control Plasmid DNA</strong></td>
<td>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.</td>
<td>Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.</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><strong>1.42 M 2-Mercaptoethanol</strong></td>
<td>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.</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.</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><strong>JM101 competent cells</strong></td>
<td>Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.</td>
<td>Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.</td>
<td></td>
</tr>
<tr>
<td><strong>pUC18 Control Plasmid DNA</strong></td>
<td>Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1.42 M 2-Mercaptoethanol</strong></td>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>JM101 competent cells</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 4. First-aid measures

**Ingestion**

*JM101 competent cells*
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.

*pUC18 Control Plasmid DNA*
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.

*1.42 M 2-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 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. 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.

**Most important symptoms/effects, acute and delayed**

**Potential acute health effects**

**Eye contact**
*JM101 competent cells*  
No known significant effects or critical hazards.

*pUC18 Control Plasmid DNA*  
No known significant effects or critical hazards.

*1.42 M 2-Mercaptoethanol*  
Causes serious eye damage.

**Inhalation**
*JM101 competent cells*  
No known significant effects or critical hazards.

*pUC18 Control Plasmid DNA*  
No known significant effects or critical hazards.

*1.42 M 2-Mercaptoethanol*  
Harmful if inhaled.

**Skin contact**
*JM101 competent cells*  
No known significant effects or critical hazards.

*pUC18 Control Plasmid DNA*  
No known significant effects or critical hazards.

*1.42 M 2-Mercaptoethanol*  
Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.

**Ingestion**
*JM101 competent cells*  
No known significant effects or critical hazards.

*pUC18 Control Plasmid DNA*  
No known significant effects or critical hazards.

*1.42 M 2-Mercaptoethanol*  
No known significant effects or critical hazards.

**Over-exposure signs/symptoms**

**Eye contact**
*JM101 competent cells*  
No specific data.

*pUC18 Control Plasmid DNA*  
No specific data.

*1.42 M 2-Mercaptoethanol*  
Adverse symptoms may include the following: pain, watering, redness.

**Inhalation**
*JM101 competent cells*  
No specific data.

*pUC18 Control Plasmid DNA*  
No specific data.

*1.42 M 2-Mercaptoethanol*  
No specific data.
Section 4. First-aid measures

Skin contact:
- JM101 competent cells: No specific data.
- pUC18 Control Plasmid DNA: No specific data.
- 1.42 M 2-Mercaptoethanol: Adverse symptoms may include the following: pain or irritation, redness, blistering may occur.

Ingestion:
- JM101 competent cells: No specific data.
- pUC18 Control Plasmid DNA: No specific data.
- 1.42 M 2-Mercaptoethanol: Adverse symptoms may include the following: stomach pains.

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

Notes to physician:
- JM101 competent cells: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- pUC18 Control Plasmid DNA: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- 1.42 M 2-Mercaptoethanol: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments:
- JM101 competent cells: No specific treatment.
- pUC18 Control Plasmid DNA: No specific treatment.
- 1.42 M 2-Mercaptoethanol: No specific treatment.

Protection of first-aiders:
- JM101 competent cells: No action shall be taken involving any personal risk or without suitable training.
- pUC18 Control Plasmid DNA: No action shall be taken involving any personal risk or without suitable training.
- 1.42 M 2-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

Extinguishing media

Suitable extinguishing media:
- JM101 competent cells: Use an extinguishing agent suitable for the surrounding fire.
- pUC18 Control Plasmid DNA: Use an extinguishing agent suitable for the surrounding fire.
- 1.42 M 2-Mercaptoethanol: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media:
- JM101 competent cells: None known.
- pUC18 Control Plasmid DNA: None known.
- 1.42 M 2-Mercaptoethanol: None known.

Specific hazards arising from the chemical:
- JM101 competent cells: In a fire or if heated, a pressure increase will occur and the container may burst.
- pUC18 Control Plasmid DNA: In a fire or if heated, a pressure increase will occur and the container may burst.
- 1.42 M 2-Mercaptoethanol: 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.
**Section 5. Fire-fighting measures**

**Hazardous thermal decomposition products**: JM101 competent cells
- Decomposition products may include the following materials:
  - carbon dioxide
  - carbon monoxide
  - sulfur oxides
  - halogenated compounds
  - metal oxide/oxides

  pUC18 Control Plasmid DNA
  No specific data.

  1.42 M 2-Mercaptoethanol
  Decomposition products may include the following materials:
  - carbon dioxide
  - carbon monoxide
  - sulfur oxides

**Special protective actions for fire-fighters**: JM101 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.

  pUC18 Control Plasmid DNA
  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.

  1.42 M 2-Mercaptoethanol
  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**: JM101 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.

  pUC18 Control Plasmid DNA
  Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

  1.42 M 2-Mercaptoethanol
  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**: JM101 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.

  pUC18 Control Plasmid DNA
  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.

  1.42 M 2-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 spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate protective equipment.
Section 6. Accidental release measures

For emergency responders:JM101 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".

pUC18 Control Plasmid DNA

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".

1.42 M 2-Mercaptoethanol

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:JM101 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).

pUC18 Control Plasmid DNA

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).

1.42 M 2-Mercaptoethanol

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). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and material for containment and cleaning up

Methods for cleaning up:JM101 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.

pUC18 Control Plasmid DNA

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.

1.42 M 2-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

Precautions for safe handling
Section 7. Handling and storage

**Protective measures**

- **JM101 competent cells**: Put on appropriate personal protective equipment (see Section 8).
- **pUC18 Control Plasmid DNA**: Put on appropriate personal protective equipment (see Section 8).
- **1.42 M 2-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 vapour 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**

- **JM101 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.
- **pUC18 Control Plasmid DNA**: 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.
- **1.42 M 2-Mercaptoethanol**: 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**

- **JM101 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.
- **pUC18 Control Plasmid DNA**: 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.
- **1.42 M 2-Mercaptoethanol**: Store in accordance with local regulations. Store in original container protected from direct sunlight in a
Section 7. Handling and storage

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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls and personal protection

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM101 competent cells</td>
<td>Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m³ 8 hours.</td>
</tr>
<tr>
<td>Glycerol</td>
<td>Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m³ 8 hours.</td>
</tr>
<tr>
<td>Sucrose</td>
<td></td>
</tr>
</tbody>
</table>

Appropriate engineering controls

User operations generate dust, fumes, gas, vapour 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, mist, 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.

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.
Section 8. Exposure controls and personal protection

Respiratory protection: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

<table>
<thead>
<tr>
<th>Physical state</th>
<th>JM101 competent cells</th>
<th>pUC18 Control Plasmid DNA</th>
<th>1.42 M 2-Mercaptoethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>JM101 competent cells</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Odour</td>
<td>JM101 competent cells</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>JM101 competent cells</td>
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<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>JM101 competent cells</td>
<td>6.4</td>
<td>7.5</td>
</tr>
<tr>
<td>Melting point</td>
<td>JM101 competent cells</td>
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<td>Not available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>JM101 competent cells</td>
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<td>Not available</td>
</tr>
<tr>
<td>Flash point</td>
<td>JM101 competent cells</td>
<td>Not available</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>JM101 competent cells</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>JM101 competent cells</td>
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<tr>
<td>Lower and upper explosive (flammable) limits</td>
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<td></td>
</tr>
<tr>
<td>Vapour pressure</td>
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<td>Not available</td>
</tr>
<tr>
<td>Vapour density</td>
<td>JM101 competent cells</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Relative density</td>
<td>JM101 competent cells</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility</td>
<td>JM101 competent cells</td>
<td>Soluble in the following materials: cold water and hot water.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pUC18 Control Plasmid DNA</td>
<td>Easily soluble in the following materials: cold water and hot water.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.42 M 2-Mercaptoethanol</td>
<td>Easily soluble in the following materials: cold water and hot water.</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>JM101 competent cells</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pUC18 Control Plasmid DNA</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.42 M 2-Mercaptoethanol</td>
<td>Not available</td>
<td></td>
</tr>
</tbody>
</table>
Section 9. Physical and chemical properties

Auto-ignition temperature: JM101 competent cells Not available.
                      pUC18 Control Plasmid DNA Not available.
                      1.42 M 2-Mercaptoethanol Not available.

Decomposition temperature: JM101 competent cells Not available.
                          pUC18 Control Plasmid DNA Not available.
                          1.42 M 2-Mercaptoethanol Not available.

Viscosity: JM101 competent cells Not available.
             pUC18 Control Plasmid DNA Not available.
             1.42 M 2-Mercaptoethanol Not available.

Section 10. Stability and reactivity

Reactivity: JM101 competent cells No specific test data related to reactivity available for this product or its ingredients.
            pUC18 Control Plasmid DNA No specific test data related to reactivity available for this product or its ingredients.
            1.42 M 2-Mercaptoethanol No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: JM101 competent cells The product is stable.
                     pUC18 Control Plasmid DNA The product is stable.
                     1.42 M 2-Mercaptoethanol The product is stable.

Possibility of hazardous reactions: JM101 competent cells Under normal conditions of storage and use, hazardous reactions will not occur.
                                     pUC18 Control Plasmid DNA Under normal conditions of storage and use, hazardous reactions will not occur.
                                     1.42 M 2-Mercaptoethanol Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid: JM101 competent cells No specific data.
                     pUC18 Control Plasmid DNA No specific data.
                     1.42 M 2-Mercaptoethanol No specific data.

Incompatible materials: JM101 competent cells May react or be incompatible with oxidising materials.
                       pUC18 Control Plasmid DNA May react or be incompatible with oxidising materials.
                       1.42 M 2-Mercaptoethanol May react or be incompatible with oxidising materials.

Hazardous decomposition products: JM101 competent cells Under normal conditions of storage and use, hazardous decomposition products should not be produced.
                                   pUC18 Control Plasmid DNA Under normal conditions of storage and use, hazardous decomposition products should not be produced.
                                   1.42 M 2-Mercaptoethanol 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>JM101 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>Sucrose</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>29700 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Mercaptoethanol</td>
<td>LD50 Dermal</td>
<td>Rabbit</td>
<td>200 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>244 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>pUC18 Control Plasmid DNA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Section 11. Toxicological information

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>JM101 competent cells</td>
<td>Glycerol</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Eyes - Mild irritant</td>
<td></td>
<td></td>
<td>milligrams</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24 hours 500</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>milligrams</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>2 milligrams</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td>Eyes - Severe irritant</td>
<td>Rabbit</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Mercaptoethanol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sensitisation

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

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>1.42 M 2-Mercaptoethanol</td>
<td>Category 3</td>
<td>Not applicable.</td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure

<table>
<thead>
<tr>
<th>Name</th>
<th>Routes of entry anticipated: Oral, Dermal, Inhalation.</th>
<th>Routes of entry anticipated: Oral, Dermal, Inhalation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM101 competent cells</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pUC18 Control Plasmid DNA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Potential acute health effects

Eye contact

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

Inhalation

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

Skin contact

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

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

Symptoms related to the physical, chemical and toxicological characteristics

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Eye contact: JM101 competent cells
pUC18 Control Plasmid DNA
1.42 M 2-Mercaptoethanol
No specific data.
No specific data.
Adverse symptoms may include the following:
pain
watering
redness

Inhalation: JM101 competent cells
pUC18 Control Plasmid DNA
1.42 M 2-Mercaptoethanol
No specific data.
No specific data.

Skin contact: JM101 competent cells
pUC18 Control Plasmid DNA
1.42 M 2-Mercaptoethanol
No specific data.
No specific data.
Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion: JM101 competent cells
pUC18 Control Plasmid DNA
1.42 M 2-Mercaptoethanol
No specific data.
No specific data.
Adverse symptoms may include the following:

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
Not available.

General: JM101 competent cells
pUC18 Control Plasmid DNA
1.42 M 2-Mercaptoethanol
No known significant effects or critical hazards.
No known significant effects or critical hazards.
Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity: JM101 competent cells
pUC18 Control Plasmid DNA
1.42 M 2-Mercaptoethanol
No known significant effects or critical hazards.
No known significant effects or critical hazards.
No known significant effects or critical hazards.

Mutagenicity: JM101 competent cells
pUC18 Control Plasmid DNA
1.42 M 2-Mercaptoethanol
No known significant effects or critical hazards.
No known significant effects or critical hazards.
No known significant effects or critical hazards.

Teratogenicity: JM101 competent cells
pUC18 Control Plasmid DNA
1.42 M 2-Mercaptoethanol
No known significant effects or critical hazards.
No known significant effects or critical hazards.
No known significant effects or critical hazards.

Developmental effects: JM101 competent cells
pUC18 Control Plasmid DNA
1.42 M 2-Mercaptoethanol
No known significant effects or critical hazards.
No known significant effects or critical hazards.
No known significant effects or critical hazards.

Fertility effects: JM101 competent cells
pUC18 Control Plasmid DNA
1.42 M 2-Mercaptoethanol
No known significant effects or critical hazards.
No known significant effects or critical hazards.
No known significant effects or critical hazards.

Numerical measures of toxicity
Acute toxicity estimates

Section 11. Toxicological information

<table>
<thead>
<tr>
<th>Route</th>
<th>ATE value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>2440 mg/kg</td>
</tr>
<tr>
<td>Dermal</td>
<td>2000 mg/kg</td>
</tr>
<tr>
<td>Inhalation (vapours)</td>
<td>20 mg/l</td>
</tr>
</tbody>
</table>

Section 12. Ecological information

Toxicity
Not available.

Persistence and degradability
Not available.

Bioaccumulative potential

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP_{ow}</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM101 competent cells</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>-1.76</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>Sucrose</td>
<td>-3.7</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>1.42 M 2-Mercaptoethanol</td>
<td>-0.056</td>
<td>-</td>
<td>low</td>
</tr>
</tbody>
</table>

Mobility in soil

<table>
<thead>
<tr>
<th>Soil/water partition coefficient (K_{oc})</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not available.</td>
</tr>
</tbody>
</table>

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. 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Regulatory 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.

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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not available.

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons
6

Model Work Health and Safety Regulations - Scheduled Substances
No listed substance

Australia inventory (AICS)
All components are listed or exempted.

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 Inform Consent (PIC)
Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals
Not listed.

International lists

National inventory

Canada
All components are listed or exempted.

China
Not determined.

Europe
All components are listed or exempted.

Japan
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.

United States
All components are listed or exempted.

Section 16. Any other relevant information

History

Date of issue/Date of revision
28/08/2015

Date of previous issue
15/03/2013.

Version
4

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 73/78 = International Convention for the Prevention of Pollution From
Section 16. Any other relevant information

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>1.42 M 2-Mercaptoethanol</td>
<td></td>
</tr>
<tr>
<td>Acute Tox. 4, H312</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Acute Tox. 4, H332</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Skin Irrit. 2, H315</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Eye Dam. 1, H318</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Skin Sens. 1, H317</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Aquatic Chronic 3, H412</td>
<td>Calculation method</td>
</tr>
</tbody>
</table>

References : Not available.

查获信息：信息已经改变，来自之前的版本。

Notice to reader

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