Section 1. Identification

1.1 Product identifier

Product name: Gigapack III Plus-4 Packaging Extract, Part Number 200204
Part No. (Chemical Kit): 200204
Part No.: Gigapack III packaging extract 200201-41
Wild-Type Lambda DNA c1857ind 1 Sam7 246203-51
VCS257 E. coli Strain 200256-51

Validation date: 2016-02-29

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

Material uses:
- Gigapack III packaging extract: 0.275 ml (11 x 0.025 ml)
- Wild-Type Lambda DNA c1857ind 1 Sam7: 0.005 ml (0.21 µg/µl)
- VCS257 E. coli Strain: 1 ml

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: Gigapack III packaging extract
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.

Wild-Type Lambda DNA c1857ind 1 Sam7
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.

VCS257 E. coli Strain
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

VCS257 E. coli Strain
H319 EYE IRRITATION - Category 2A

2.2 GHS label elements

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Section 2. Hazards identification

Signal word:

- Gigapack III packaging extract: No signal word.
- Wild-Type Lambda DNA c1857ind 1 Sam7: No signal word.
- VCS257 E. coli Strain: Warning

Hazard statements:

- Gigapack III packaging extract: No known significant effects or critical hazards.
- Wild-Type Lambda DNA c1857ind 1 Sam7: No known significant effects or critical hazards.
- VCS257 E. coli Strain: GHS SYMBOL - Exclamation mark - H319 - Causes serious eye irritation.

Precautionary statements

Prevention:

- Gigapack III packaging extract: Not applicable.
- Wild-Type Lambda DNA c1857ind 1 Sam7: Not applicable.
- VCS257 E. coli Strain: P280 - Wear eye or face protection. P264 - Wash hands thoroughly after handling.

Response:

- Gigapack III packaging extract: Not applicable.
- Wild-Type Lambda DNA c1857ind 1 Sam7: Not applicable.
- VCS257 E. coli Strain: 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 eye irritation persists: Get medical attention.

Storage:

- Gigapack III packaging extract: Not applicable.
- Wild-Type Lambda DNA c1857ind 1 Sam7: Not applicable.
- VCS257 E. coli Strain: Not applicable.

Disposal:

- Gigapack III packaging extract: Not applicable.
- Wild-Type Lambda DNA c1857ind 1 Sam7: Not applicable.
- VCS257 E. coli Strain: Not applicable.

Supplemental label elements:

- Gigapack III packaging extract: None known.
- Wild-Type Lambda DNA c1857ind 1 Sam7: None known.
- VCS257 E. coli Strain: None known.

2.3 Other hazards

Hazards not otherwise classified:

- Gigapack III packaging extract: None known.
- Wild-Type Lambda DNA c1857ind 1 Sam7: None known.
- VCS257 E. coli Strain: None known.

Section 3. Composition/information on ingredients

Substance/mixture:

- Gigapack III packaging extract: Mixture
- Wild-Type Lambda DNA c1857ind 1 Sam7: Mixture
- VCS257 E. coli Strain: Mixture
Section 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCS257 E. coli Strain</td>
<td>≥10 - ≤25</td>
<td>56-81-5</td>
</tr>
<tr>
<td>Glycerol</td>
<td>≤3</td>
<td>7647-14-5</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**
- **Gigapack III packaging extract**: 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.

  - **Wild-Type Lambda DNA c1857ind 1 Sam7**: 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.

  - **VCS257 E. coli Strain**: 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. Get medical attention.

**Inhalation**
- **Gigapack III packaging extract**: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

  - **Wild-Type Lambda DNA c1857ind 1 Sam7**: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

  - **VCS257 E. coli Strain**: 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.

**Skin contact**
- **Gigapack III packaging extract**: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

  - **Wild-Type Lambda DNA c1857ind 1 Sam7**: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

  - **VCS257 E. coli Strain**: 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.
Section 4. First aid measures

Ingestion:

- **Gigapack III packaging extract**
  - 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.

- **Wild-Type Lambda DNA c1857ind 1 Sam7**
  - 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.

- **VCS257 E. coli Strain**
  - 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.

4.2 Most important symptoms/effects, acute and delayed

**Potential acute health effects**

- **Eye contact**
  - **Gigapack III packaging extract**
    - No known significant effects or critical hazards.
  - **Wild-Type Lambda DNA c1857ind 1 Sam7**
    - No known significant effects or critical hazards.
  - **VCS257 E. coli Strain**
    - Causes serious eye irritation.

- **Inhalation**
  - **Gigapack III packaging extract**
    - No known significant effects or critical hazards.
  - **Wild-Type Lambda DNA c1857ind 1 Sam7**
    - No known significant effects or critical hazards.
  - **VCS257 E. coli Strain**
    - No known significant effects or critical hazards.

- **Skin contact**
  - **Gigapack III packaging extract**
    - No known significant effects or critical hazards.
  - **Wild-Type Lambda DNA c1857ind 1 Sam7**
    - No known significant effects or critical hazards.
  - **VCS257 E. coli Strain**
    - No known significant effects or critical hazards.

- **Ingestion**
  - **Gigapack III packaging extract**
    - No known significant effects or critical hazards.
  - **Wild-Type Lambda DNA c1857ind 1 Sam7**
    - No known significant effects or critical hazards.
  - **VCS257 E. coli Strain**
    - No known significant effects or critical hazards.

**Over-exposure signs/symptoms**

- **Eye contact**
  - **Gigapack III packaging extract**
    - No specific data.
  - **Wild-Type Lambda DNA c1857ind 1 Sam7**
    - No specific data.
  - **VCS257 E. coli Strain**
    - Adverse symptoms may include the following: pain or irritation, watering, redness.

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Section 4. First aid measures

Inhalation:
- Gigapack III packaging extract: No specific data.
- Wild-Type Lambda DNA c1857ind 1 Sam7: No specific data.
- VCS257 E. coli Strain: No specific data.

Skin contact:
- Gigapack III packaging extract: No specific data.
- Wild-Type Lambda DNA c1857ind 1 Sam7: No specific data.
- VCS257 E. coli Strain: No specific data.

Ingestion:
- Gigapack III packaging extract: No specific data.
- Wild-Type Lambda DNA c1857ind 1 Sam7: No specific data.
- VCS257 E. coli Strain: No specific data.

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

Notes to physician:
- Gigapack III packaging extract: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Wild-Type Lambda DNA c1857ind 1 Sam7: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- VCS257 E. coli Strain: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments:
- Wild-Type Lambda DNA c1857ind 1 Sam7: No specific treatment.
- VCS257 E. coli Strain: No specific treatment.

Protection of first-aiders:
- Gigapack III packaging extract: No action shall be taken involving any personal risk or without suitable training.
- Wild-Type Lambda DNA c1857ind 1 Sam7: No action shall be taken involving any personal risk or without suitable training.
- VCS257 E. coli Strain: 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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media:
- Gigapack III packaging extract: Use an extinguishing agent suitable for the surrounding fire.
- Wild-Type Lambda DNA c1857ind 1 Sam7: Use an extinguishing agent suitable for the surrounding fire.
- VCS257 E. coli Strain: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media:
- Gigapack III packaging extract: None known.
- Wild-Type Lambda DNA c1857ind 1 Sam7: None known.
- VCS257 E. coli Strain: None known.

5.2 Special hazards arising from the substance or mixture

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Section 5. Fire-fighting measures

Specific hazards arising from the chemical

<table>
<thead>
<tr>
<th>Material</th>
<th>Gigapack III packaging extract</th>
<th>Wild-Type Lambda DNA c1857ind 1 Sam7</th>
<th>VCS257 E. coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decomposition products</td>
<td></td>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>VCS257 E. coli Strain</td>
</tr>
<tr>
<td>Hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>In a fire or if heated, a pressure increase will occur and the container may burst.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>In a fire or if heated, a pressure increase will occur and the container may burst.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halogenated compounds</td>
<td>In a fire or if heated, a pressure increase will occur and the container may burst.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hazardous thermal decomposition products

<table>
<thead>
<tr>
<th>Material</th>
<th>Gigapack III packaging extract</th>
<th>Wild-Type Lambda DNA c1857ind 1 Sam7</th>
<th>VCS257 E. coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decomposition products</td>
<td></td>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>VCS257 E. coli Strain</td>
</tr>
<tr>
<td>Hazards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>Decomposition products may include the following materials: carbon dioxide carbon monoxide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>No specific data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halogenated compounds</td>
<td>Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal oxide/oxides</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.3 Advice for firefighters

Special protective actions for fire-fighters

<table>
<thead>
<tr>
<th>Material</th>
<th>Gigapack III packaging extract</th>
<th>Wild-Type Lambda DNA c1857ind 1 Sam7</th>
<th>VCS257 E. coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire-fighters</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>
<td></td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</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>
<td></td>
</tr>
<tr>
<td>VCS257 E. coli Strain</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>
<td></td>
</tr>
</tbody>
</table>

Special protective equipment for fire-fighters

<table>
<thead>
<tr>
<th>Material</th>
<th>Gigapack III packaging extract</th>
<th>Wild-Type Lambda DNA c1857ind 1 Sam7</th>
<th>VCS257 E. coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire-fighters</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>
<td></td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</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>
<td></td>
</tr>
<tr>
<td>VCS257 E. coli Strain</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>
<td></td>
</tr>
</tbody>
</table>

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

<table>
<thead>
<tr>
<th>Material</th>
<th>Gigapack III packaging extract</th>
<th>Wild-Type Lambda DNA c1857ind 1 Sam7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal precautions</td>
<td>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. Put on appropriate personal protective equipment.</td>
<td></td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>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. Put on appropriate personal protective equipment.</td>
<td></td>
</tr>
</tbody>
</table>
Section 6. Accidental release measures

VCS257 E. coli Strain

6.2 Environmental precautions

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).

Wild-Type Lambda DNA c1857ind 1 Sam7

VCS257 E. coli Strain

Methods for cleaning up

For emergency responders: Gigapack III packaging extract

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".

Wild-Type Lambda DNA c1857ind 1 Sam7

VCS257 E. coli Strain

Methods for cleaning up: Gigapack III packaging extract

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.

Wild-Type Lambda DNA c1857ind 1 Sam7

VCS257 E. coli Strain

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 6. Accidental release measures

Dispose of via a licensed waste disposal contractor.

## Section 7. Handling and storage

### 7.1 Precautions for safe handling

<table>
<thead>
<tr>
<th>Protective measures</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigapack III packaging extract</td>
<td>Put on appropriate personal protective equipment (see Section 8).</td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>Put on appropriate personal protective equipment (see Section 8).</td>
</tr>
<tr>
<td>VCS257 E. coli Strain</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Advice on general occupational hygiene</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigapack III packaging extract</td>
<td>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.</td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>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.</td>
</tr>
<tr>
<td>VCS257 E. coli Strain</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigapack III packaging extract</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.</td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</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</td>
</tr>
</tbody>
</table>

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Section 7. Handling and storage

VCS257 E. coli Strain

- 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.

7.3 Specific end use(s)

Recommendations:

- Gigapack III packaging extract
- Wild-Type Lambda DNA c1857ind 1 Sam7
- VCS257 E. coli Strain

Industrial sector specific solutions:

- Gigapack III packaging extract
- Wild-Type Lambda DNA c1857ind 1 Sam7
- VCS257 E. coli Strain

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>Glycerol</td>
<td>TWA: 5 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>TWA: 10 mg/m³ 8 hours. Form: Total dust TWA: 15 mg/m³ 8 hours. Form: Total dust</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>None.</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls:

- Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls:

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

Individual protection measures

Hygiene measures:

- Handle as biohazard material (Biosafety level 1). Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Section 8. Exposure controls/personal protection

**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.

**Skin protection**

**Hand protection**

Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. During use that the respirators 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.

**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**

**Physical state**

- Gigapack III packaging extract: Liquid.
- Wild-Type Lambda DNA c1857ind 1 Sam7: Liquid.
- VCS257 E. coli Strain: Liquid.

**Color**

- Gigapack III packaging extract: Not available.
- Wild-Type Lambda DNA c1857ind 1 Sam7: Not available.
- VCS257 E. coli Strain: Not available.

**Odor**

- Gigapack III packaging extract: Not available.
- Wild-Type Lambda DNA c1857ind 1 Sam7: Not available.
- VCS257 E. coli Strain: Not available.

**Odor threshold**

- Gigapack III packaging extract: Not available.
- Wild-Type Lambda DNA c1857ind 1 Sam7: Not available.
- VCS257 E. coli Strain: Not available.

**pH**

- Gigapack III packaging extract: 8
- Wild-Type Lambda DNA c1857ind 1 Sam7: 7
- VCS257 E. coli Strain: 7

**Melting point**

- Gigapack III packaging extract: Not available.
- Wild-Type Lambda DNA c1857ind 1 Sam7: 0°C (32°F)
- VCS257 E. coli Strain: Not available.

**Boiling point**

- Gigapack III packaging extract: Not available.
- Wild-Type Lambda DNA c1857ind 1 Sam7: 100°C (212°F)
- VCS257 E. coli Strain: Not available.
### Section 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Gigapack III packaging extract</th>
<th>Wild-Type Lambda DNA c1857ind 1 Sam7</th>
<th>VCS257 E. coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flash point</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
<td>Not applicable.</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Lower and upper explosive (flammable limits)</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Vapor pressure</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Vapor density</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Solubility</strong></td>
<td>Easily soluble in the following materials: cold water and hot water.</td>
<td>Easily soluble in the following materials: cold water and hot water.</td>
<td>Easily soluble in the following materials: cold water and hot water.</td>
</tr>
<tr>
<td><strong>Partition coefficient: n-octanol/water</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Auto-ignition temperature</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>
Section 10. Stability and reactivity

10.1 Reactivity

<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>Gigapack III packaging extract</td>
<td>No specific test data related to reactivity available for this product or its ingredients.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>No specific test data related to reactivity available for this product or its ingredients.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCS257 E. coli Strain</td>
<td>No specific test data related to reactivity available for this product or its ingredients.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10.2 Chemical stability

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigapack III packaging extract</td>
<td>The product is stable.</td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>The product is stable.</td>
</tr>
<tr>
<td>VCS257 E. coli Strain</td>
<td>The product is stable.</td>
</tr>
</tbody>
</table>

10.3 Possibility of hazardous reactions

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigapack III packaging extract</td>
<td>Under normal conditions of storage and use, hazardous reactions will not occur.</td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>Under normal conditions of storage and use, hazardous reactions will not occur.</td>
</tr>
<tr>
<td>VCS257 E. coli Strain</td>
<td>Under normal conditions of storage and use, hazardous reactions will not occur.</td>
</tr>
</tbody>
</table>

10.4 Conditions to avoid

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigapack III packaging extract</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>No specific data.</td>
</tr>
<tr>
<td>VCS257 E. coli Strain</td>
<td>No specific data.</td>
</tr>
</tbody>
</table>

10.5 Incompatible materials

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigapack III packaging extract</td>
<td>May react or be incompatible with oxidizing materials.</td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>May react or be incompatible with oxidizing materials.</td>
</tr>
<tr>
<td>VCS257 E. coli Strain</td>
<td>May react or be incompatible with oxidizing materials.</td>
</tr>
</tbody>
</table>

10.6 Hazardous decomposition products

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gigapack III packaging extract</td>
<td>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</td>
</tr>
<tr>
<td>Wild-Type Lambda DNA c1857ind 1 Sam7</td>
<td>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</td>
</tr>
<tr>
<td>VCS257 E. coli Strain</td>
<td>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</td>
</tr>
</tbody>
</table>

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>VCS257 E. coli Strain Glycerol</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>12600 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>3000 mg/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

**Irritation/Corrosion**
Section 11. Toxicological information

<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>VCS257 E. coli Strain</td>
<td>Nights of exposure: 24 hours 500 milligrams</td>
<td>Rabbit</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Glycerol</td>
<td>Not available.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium chloride</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 100 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>10 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>
</tbody>
</table>

Sensitization
Not available.

Mutagenicity
Not available.

Carcinogenicity
Not available.

Reproductive toxicity
Not available.

Teratogenicity
Not available.

Specific target organ toxicity (single exposure)
Not available.

Specific target organ toxicity (repeated exposure)
Not available.

Aspiration hazard
Not available.

Information on the likely routes of exposure
Gigapack III packaging extract
Wild-Type Lambda DNA c1857ind 1 Sam7
VCS257 E. coli Strain
Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects
Eye contact
Gigapack III packaging extract
Wild-Type Lambda DNA c1857ind 1 Sam7
VCS257 E. coli Strain
No known significant effects or critical hazards.

Inhalation
Gigapack III packaging extract
Wild-Type Lambda DNA c1857ind 1 Sam7
VCS257 E. coli Strain
No known significant effects or critical hazards.

Skin contact
Gigapack III packaging extract
Wild-Type Lambda DNA c1857ind 1 Sam7
VCS257 E. coli Strain
No known significant effects or critical hazards.

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Section 11. Toxicological information

Ingestion:
- Gigapack III packaging extract
  - No known significant effects or critical hazards.
- Wild-Type Lambda DNA c1857ind 1 Sam7
  - No known significant effects or critical hazards.
- VCS257 E. coli Strain
  - No known significant effects or critical hazards.

Wild-Type Lambda DNA c1857ind 1 Sam7
- No known significant effects or critical hazards.

VCS257 E. coli Strain
- No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact:
- Gigapack III packaging extract
  - No specific data.
- Wild-Type Lambda DNA c1857ind 1 Sam7
  - No specific data.
- VCS257 E. coli Strain
  - Adverse symptoms may include the following:
    - pain or irritation
    - watering
    - redness

Inhalation:
- Gigapack III packaging extract
  - No specific data.
- Wild-Type Lambda DNA c1857ind 1 Sam7
  - No specific data.
- VCS257 E. coli Strain
  - No specific data.

Skin contact:
- Gigapack III packaging extract
  - No specific data.
- Wild-Type Lambda DNA c1857ind 1 Sam7
  - No specific data.
- VCS257 E. coli Strain
  - No specific data.

Ingestion:
- Gigapack III packaging extract
  - No specific data.
- Wild-Type Lambda DNA c1857ind 1 Sam7
  - No specific data.
- VCS257 E. coli Strain
  - No specific data.

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:
- Gigapack III packaging extract
  - No known significant effects or critical hazards.
- Wild-Type Lambda DNA c1857ind 1 Sam7
  - No known significant effects or critical hazards.
- VCS257 E. coli Strain
  - No known significant effects or critical hazards.

Carcinogenicity:
- Gigapack III packaging extract
  - No known significant effects or critical hazards.
- Wild-Type Lambda DNA c1857ind 1 Sam7
  - No known significant effects or critical hazards.
- VCS257 E. coli Strain
  - No known significant effects or critical hazards.

Mutagenicity:
- Gigapack III packaging extract
  - No known significant effects or critical hazards.
- Wild-Type Lambda DNA c1857ind 1 Sam7
  - No known significant effects or critical hazards.
- VCS257 E. coli Strain
  - No known significant effects or critical hazards.

Teratogenicity:
- Gigapack III packaging extract
  - No known significant effects or critical hazards.
- Wild-Type Lambda DNA c1857ind 1 Sam7
  - No known significant effects or critical hazards.
- VCS257 E. coli Strain
  - No known significant effects or critical hazards.

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Section 11. Toxicological information

Developmental effects
- Gigapack III packaging extract
  - Wild-Type Lambda DNA c1857ind 1 Sam7
  - No known significant effects or critical hazards.
- VCS257 E. coli Strain
  - No known significant effects or critical hazards.

Fertility effects
- Gigapack III packaging extract
  - Wild-Type Lambda DNA c1857ind 1 Sam7
  - No known significant effects or critical hazards.
- VCS257 E. coli Strain
  - No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

<table>
<thead>
<tr>
<th>Route</th>
<th>ATE value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCS257 E. coli Strain Oral</td>
<td>300000 mg/kg</td>
</tr>
</tbody>
</table>

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>VCS257 E. coli Strain</td>
<td>Acute LC50 54000 mg/l Fresh water</td>
<td>Fish - Oncorhynchus mykiss</td>
<td>96 hours</td>
</tr>
<tr>
<td>Glycerol</td>
<td>Acute EC50 2430000 µg/l Fresh water</td>
<td>Algae - Navicula seminulum</td>
<td>96 hours</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>Acute EC50 28.85 mg/dm3 Fresh water</td>
<td>Algae - Pseudokirchneriella subcapitata</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 519.6 mg/l Fresh water</td>
<td>Crustaceans - Cypris subglobosa</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 6.87 g/L Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 1661 mg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 1000000 µg/l Fresh water</td>
<td>Fish - Morone saxatilis - Larvae</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic LC10 781 mg/l Fresh water</td>
<td>Crustaceans - Hyalella azteca - Juvenile</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 6 g/L Fresh water</td>
<td>(Fledgling, Hatchling, Weanling)</td>
<td>3 weeks</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.314 g/L Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 100 mg/l Fresh water</td>
<td>Daphnia - Daphnia pulex</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fish - Gambusia holbrooki - Adult</td>
<td>8 weeks</td>
</tr>
</tbody>
</table>

12.2 Persistence and degradability
Not available.

12.3 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>VCS257 E. coli Strain</td>
<td>-1.76</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12.4 Mobility in soil
Soil/water partition coefficient (\(K_{oc}\)) : Not available.

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

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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/PERS ONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

Regulatory information

DOT / IMDG / IATA : Not regulated.

Section 15. Regulatory information

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

U.S. Federal regulations : United States inventory (TSCA 8b): All components are listed or exempted. Clean Water Act (CWA) 311: Edetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed
Clean Air Act Section 602 Class I Substances : Not listed
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 : Immediate (acute) health hazard
Section 15. Regulatory information

Composition/information on ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>Fire hazard</th>
<th>Sudden release of pressure</th>
<th>Reactive</th>
<th>Immediate (acute) health hazard</th>
<th>Delayed (chronic) health hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium chloride</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

State regulations

Massachusetts: The following components are listed: SUCROSE DUST; GLYCERINE MIST
New York: None of the components are listed.
New Jersey: The following components are listed: GLYCERIN; 1,2,3-PROPANETRIOL
Pennsylvania: The following components are listed: .ALPHA.-D-GLUCOPYRANOSIDE, .BETA.-D-FRUCTOFURANOSYL; 1,2,3-PROPANETRIOL

California Prop. 65
No products were found.

Canada inventory: At least one component is not listed in DSL but all such components are listed in NDSL.

International regulations

International lists

Australia inventory (AICS): Not determined.
China inventory (IECSC): Not determined.
Japan inventory (ENCS): Not determined.
Japan inventory (ISHL): Not determined.
Korea inventory: Not determined.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): Not determined.
Taiwan Chemical Substances Inventory (TCSI): All components are listed or exempted.
Turkey inventory: Not determined.

Chemical Weapons Convention List Schedule I Chemicals: Not listed
Chemical Weapons Convention List Schedule II Chemicals: Not listed
Chemical Weapons Convention List Schedule III Chemicals: Not listed

Section 16. Other information

History

Date of issue: 02/29/2016
Date of previous issue: 04/17/2014.
Version: 3.01

Indicates information that has changed from previously issued version.

Notice to reader

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Date of issue: 02/29/2016