Section 1. Identification

1.1 Product identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>ExAssist Interference-Resistant Helper Phage with XOLR strain, Part Number 211203</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No.</td>
<td>211203</td>
</tr>
</tbody>
</table>

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

Material uses: Analytical reagent.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>0.5 ml</td>
</tr>
<tr>
<td>XL1-Blue MRF' E.coli Strain</td>
<td>0.5 ml</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>1 ml &gt;1 X E10 pfu/ml</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Substance</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>EYE IRRITATION - Category 2A</td>
</tr>
<tr>
<td>XL1-Blue MRF' E.coli Strain</td>
<td>EYE IRRITATION - Category 2A</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>EYE IRRITATION - Category 2A</td>
</tr>
</tbody>
</table>

Ingredients of unknown toxicity:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td></td>
</tr>
<tr>
<td>XL1-Blue MRF' E.coli Strain</td>
<td></td>
</tr>
</tbody>
</table>

2.2 GHS label elements

Date of issue: 08/21/2017
## Section 2. Hazards identification

<table>
<thead>
<tr>
<th>Hazard pictograms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td></td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td></td>
</tr>
</tbody>
</table>

### Signal word

<table>
<thead>
<tr>
<th>Signal word</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>Warning</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Warning</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>No signal word</td>
</tr>
</tbody>
</table>

### Hazard statements

<table>
<thead>
<tr>
<th>Hazard statements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>H319 - Causes serious eye irritation.</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>H319 - Causes serious eye irritation.</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

### Precautionary statements

#### Prevention

<table>
<thead>
<tr>
<th>Prevention</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>P280 - Wear eye or face protection.</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>P264 - Wash hands thoroughly after handling.</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prevention</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>P280 - Wear eye or face protection.</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>P264 - Wash hands thoroughly after handling.</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

#### Response

<table>
<thead>
<tr>
<th>Response</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

#### Storage

<table>
<thead>
<tr>
<th>Storage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>Not applicable</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not applicable</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Storage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>Not applicable</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not applicable</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

#### Disposal

<table>
<thead>
<tr>
<th>Disposal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>Not applicable</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not applicable</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disposal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>Not applicable</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not applicable</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Supplemental label elements

<table>
<thead>
<tr>
<th>Supplemental label elements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>None known</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>None known</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>None known</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supplemental label elements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>None known</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>None known</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>None known</td>
</tr>
</tbody>
</table>

### 2.3 Other hazards

<table>
<thead>
<tr>
<th>2.3 Other hazards</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>None known</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>None known</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>None known</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.3 Other hazards</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>None known</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>None known</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>None known</td>
</tr>
</tbody>
</table>

Date of issue : 08/21/2017
Section 3. Composition/information on ingredients

**Substance/mixture**
- XLOLR E. coli Strain
- XL1-Blue MRF’ E.coli Strain
- ExAssist Interference-Resistant Helper Phage

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>XLOLR E. coli Strain</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>≥10 - ≤25</td>
<td>56-81-5</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>≤3</td>
<td>7647-14-5</td>
</tr>
<tr>
<td><strong>XL1-Blue MRF’ E.coli Strain</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>≥10 - ≤25</td>
<td>56-81-5</td>
</tr>
<tr>
<td>Sodium chloride</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**
- XLOLR 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.

- XL1-Blue MRF’ 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.

- ExAssist Interference-Resistant Helper Phage
  - 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.

**Inhalation**
- XLOLR 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.

- XL1-Blue MRF’ 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.
## Section 4. First aid measures

<table>
<thead>
<tr>
<th>ExAssist Interference-Resistant Helper Phage</th>
<th>ExAssist Interference-Resistant Helper Phage</th>
</tr>
</thead>
<tbody>
<tr>
<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>
</tr>
</tbody>
</table>

**Skin contact**

<table>
<thead>
<tr>
<th>XOLR E. coli Strain</th>
<th>XOLR E. coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<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 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.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XL1-Blue MRF’ E.coli Strain</th>
<th>XL1-Blue MRF’ E.coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wash out mouth with water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XOLR E. coli Strain</th>
<th>XOLR E. coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.</td>
<td></td>
</tr>
</tbody>
</table>

**Ingestion**

<table>
<thead>
<tr>
<th>XOLR E. coli Strain</th>
<th>XOLR E. coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<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 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.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XL1-Blue MRF’ E.coli Strain</th>
<th>XL1-Blue MRF’ E.coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wash out mouth with water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ExAssist Interference-Resistant Helper Phage</th>
<th>ExAssist Interference-Resistant Helper Phage</th>
</tr>
</thead>
<tbody>
<tr>
<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>
</tr>
</tbody>
</table>

**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.
Section 4. First aid measures

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

**Eye contact**

- **XLOLR E. coli Strain**
  - Causes serious eye irritation.

- **XL1-Blue MRF’ E.coli Strain**
  - Causes serious eye irritation.

- **ExAssist Interference-Resistant Helper Phage**
  - No known significant effects or critical hazards.

**Inhalation**

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

- **XL1-Blue MRF’ E.coli Strain**
  - No known significant effects or critical hazards.

- **ExAssist Interference-Resistant Helper Phage**
  - No known significant effects or critical hazards.

**Skin contact**

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

- **XL1-Blue MRF’ E.coli Strain**
  - No known significant effects or critical hazards.

- **ExAssist Interference-Resistant Helper Phage**
  - No known significant effects or critical hazards.

**Ingestion**

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

- **XL1-Blue MRF’ E.coli Strain**
  - No known significant effects or critical hazards.

- **ExAssist Interference-Resistant Helper Phage**
  - No known significant effects or critical hazards.

**Over-exposure signs/symptoms**

**Eye contact**

- **XLOLR E. coli Strain**
  - Adverse symptoms may include the following:
    - pain or irritation
    - watering
    - redness

- **XL1-Blue MRF’ E.coli Strain**
  - Adverse symptoms may include the following:
    - pain or irritation
    - watering
    - redness

- **ExAssist Interference-Resistant Helper Phage**
  - No specific data.

**Inhalation**

- **XLOLR E. coli Strain**
  - No specific data.

- **XL1-Blue MRF’ E.coli Strain**
  - No specific data.

- **ExAssist Interference-Resistant Helper Phage**
  - No specific data.

**Skin contact**

- **XLOLR E. coli Strain**
  - No specific data.

- **XL1-Blue MRF’ E.coli Strain**
  - No specific data.

- **ExAssist Interference-Resistant Helper Phage**
  - No specific data.

**Ingestion**

- **XLOLR E. coli Strain**
  - No specific data.

- **XL1-Blue MRF’ E.coli Strain**
  - No specific data.

- **ExAssist Interference-Resistant Helper Phage**
  - No specific data.

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

**Notes to physician**

- **XLOLR E. coli Strain**
  - Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

- **XL1-Blue MRF’ E.coli Strain**
  - Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

- **ExAssist Interference-Resistant Helper Phage**
  - Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Section 4. First aid measures

### Specific treatments
- **XLOLR E. coli Strain**
- **XL1-Blue MRF’ E.coli Strain**
- **ExAssist Interference-Resistant Helper Phage**

<table>
<thead>
<tr>
<th>Protection of first-aiders</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
</tbody>
</table>

See toxicological information (Section 11)

Section 5. Fire-fighting measures

#### 5.1 Extinguishing media

<table>
<thead>
<tr>
<th>Suitable extinguishing media</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unsuitable extinguishing media</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Specific hazards arising from the chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazardous thermal decomposition products</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
</tbody>
</table>

#### 5.3 Advice for firefighters
Section 5. Fire-fighting measures

Special protective actions for fire-fighters:
- **XLOLR E. coli Strain**: 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.
- **XL1-Blue MRF' E.coli Strain**: 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.
- **ExAssist Interference-Resistant Helper Phage**: 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:
- **XLOLR E. coli Strain**: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- **XL1-Blue MRF' E.coli Strain**: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- **ExAssist Interference-Resistant Helper Phage**: 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

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:
- **XLOLR E. coli Strain**: 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.
- **XL1-Blue MRF' E.coli Strain**: 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.
- **ExAssist Interference-Resistant Helper Phage**: 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.
## Section 6. Accidental release measures

<table>
<thead>
<tr>
<th>For emergency responders</th>
<th>ExAssist Interference-Resistant Helper Phage with XOLR strain, Part Number 211203</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td>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 &quot;For non-emergency personnel&quot;.</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>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 &quot;For non-emergency personnel&quot;.</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>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 &quot;For non-emergency personnel&quot;.</td>
</tr>
</tbody>
</table>

### 6.2 Environmental precautions

<table>
<thead>
<tr>
<th>XLOLR E. coli Strain</th>
<th>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).</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>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).</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>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).</td>
</tr>
</tbody>
</table>

### 6.3 Methods and materials for containment and cleaning up

<table>
<thead>
<tr>
<th>Methods for cleaning up</th>
<th>XLOLR E. coli Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>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.</td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>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.</td>
</tr>
</tbody>
</table>

---

## Section 7. Handling and storage

### 7.1 Precautions for safe handling

**Date of issue:** 08/21/2017
Section 7. Handling and storage

**Advice on general occupational hygiene**

**ExAssist Interference-Resistant Helper Phage**
- 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.

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

**XL1-Blue MRF’ 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. See Section 10 for incompatible materials before handling or use.

**XL1-Blue MRF’ E.coli Strain**
- 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.

**XL1-Blue MRF’ E.coli Strain**
- 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.

**XL1-Blue MRF’ E.coli Strain**
- 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.

**XL1-Blue MRF’ E.coli Strain**
- 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.

**XL1-Blue MRF’ E.coli Strain**
- 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.

**XL1-Blue MRF’ E.coli Strain**
- 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.
Section 7. Handling and storage

ExAssist Interference-Resistant Helper Phage with XOLR strain, Part Number 211203

ExAssist Interference-Resistant Helper Phage 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.

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.

7.3 Specific end use(s)

Recommendations

ExAssist Interference-Resistant Helper Phage

Industrial sector specific solutions

- XLOLR E. coli Strain
- XL1-Blue MRF E.coli Strain
- Not applicable.

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>XLOLR E. coli Strain 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>OSHA PEL 1989 (United States, 6/2016). TWA: 10 mg/m³ 8 hours. Form: Total dust</td>
</tr>
<tr>
<td></td>
<td>TWA: 5 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL (United States, 6/2016). TWA: 15 mg/m³ 8 hours. Form: Total dust</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>None.</td>
</tr>
<tr>
<td>XL1-Blue MRF E.coli Strain 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>OSHA PEL 1989 (United States, 6/2016). TWA: 10 mg/m³ 8 hours. Form: Total dust</td>
</tr>
<tr>
<td></td>
<td>TWA: 5 mg/m³ 8 hours. Form: Respirable fraction</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL (United States, 6/2016). 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

Date of issue : 08/21/2017
# Section 8. Exposure controls/personal protection

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

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

## Individual protection measures

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

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

### 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.

### 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

<table>
<thead>
<tr>
<th>Physical state</th>
<th>XLOLR E. coli Strain</th>
<th>Liquid.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
<td>Liquid.</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Liquid.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Color</th>
<th>XLOLR E. coli Strain</th>
<th>Not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
<td>Not available.</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Odor</th>
<th>XLOLR E. coli Strain</th>
<th>Not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
<td>Not available.</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
</tbody>
</table>
### Section 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>XLOLR E. coli Strain</th>
<th>Not available.</th>
<th>XL1-Blue MRF’ E.coli Strain</th>
<th>Not available.</th>
<th>ExAssist Interference-Resistant Helper Phage</th>
<th>Not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor threshold</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
<tr>
<td>pH</td>
<td>XLOLR E. coli Strain</td>
<td>7</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>7</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>7.5</td>
</tr>
<tr>
<td>Melting point</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>0°C (32°F)</td>
</tr>
<tr>
<td>Boiling point</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>100°C (212°F)</td>
</tr>
<tr>
<td>Flash point</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>XLOLR E. coli Strain</td>
<td>Not applicable.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not applicable.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Lower and upper explosive (flammable)</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor density</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
<tr>
<td>Relative density</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
<tr>
<td>Solubility</td>
<td>XLOLR E. coli Strain</td>
<td>Soluble in the following materials: cold water and hot water.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Soluble in the following materials: cold water and hot water.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Easily soluble in the following materials: cold water and hot water.</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
</tbody>
</table>
### Section 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>XLOLR E. coli Strain</th>
<th>Not available.</th>
<th>XL1-Blue MRF' E.coli Strain</th>
<th>Not available.</th>
<th>ExAssist Interference-Resistant Helper Phage</th>
<th>Not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto-ignition temperature</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF' E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF' E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>XLOLR E. coli Strain</td>
<td>Not available.</td>
<td>XL1-Blue MRF' E.coli Strain</td>
<td>Not available.</td>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Section 10. Stability and reactivity

#### 10.1 Reactivity

<table>
<thead>
<tr>
<th>Property</th>
<th>XLOLR E. coli Strain</th>
<th>No specific test data related to reactivity available for this product or its ingredients.</th>
<th>XL1-Blue MRF' E.coli Strain</th>
<th>No specific test data related to reactivity available for this product or its ingredients.</th>
<th>ExAssist Interference-Resistant Helper Phage</th>
<th>No specific test data related to reactivity available for this product or its ingredients.</th>
</tr>
</thead>
</table>

#### 10.2 Chemical stability

<table>
<thead>
<tr>
<th>Property</th>
<th>XLOLR E. coli Strain</th>
<th>The product is stable.</th>
<th>XL1-Blue MRF' E.coli Strain</th>
<th>The product is stable.</th>
<th>ExAssist Interference-Resistant Helper Phage</th>
<th>The product is stable.</th>
</tr>
</thead>
</table>

#### 10.3 Possibility of hazardous reactions

<table>
<thead>
<tr>
<th>Property</th>
<th>XLOLR E. coli Strain</th>
<th>Under normal conditions of storage and use, hazardous reactions will not occur.</th>
<th>XL1-Blue MRF' E.coli Strain</th>
<th>Under normal conditions of storage and use, hazardous reactions will not occur.</th>
<th>ExAssist Interference-Resistant Helper Phage</th>
<th>Under normal conditions of storage and use, hazardous reactions will not occur.</th>
</tr>
</thead>
</table>

#### 10.4 Conditions to avoid

<table>
<thead>
<tr>
<th>Property</th>
<th>XLOLR E. coli Strain</th>
<th>No specific data.</th>
<th>XL1-Blue MRF' E.coli Strain</th>
<th>No specific data.</th>
<th>ExAssist Interference-Resistant Helper Phage</th>
<th>No specific data.</th>
</tr>
</thead>
</table>

#### 10.5 Incompatible materials

<table>
<thead>
<tr>
<th>Property</th>
<th>XLOLR E. coli Strain</th>
<th>May react or be incompatible with oxidizing materials.</th>
<th>XL1-Blue MRF' E.coli Strain</th>
<th>May react or be incompatible with oxidizing materials.</th>
<th>ExAssist Interference-Resistant Helper Phage</th>
<th>May react or be incompatible with oxidizing materials.</th>
</tr>
</thead>
</table>

#### 10.6 Hazardous decomposition products

<table>
<thead>
<tr>
<th>Property</th>
<th>XLOLR E. coli Strain</th>
<th>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</th>
<th>XL1-Blue MRF' E.coli Strain</th>
<th>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</th>
<th>ExAssist Interference-Resistant Helper Phage</th>
<th>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</th>
</tr>
</thead>
</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><strong>XLOLR E. coli Strain</strong></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>Sodium chloride</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>3000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td><strong>XL1-Blue MRF’ E.coli Strain</strong></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>Sodium chloride</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>3000 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><strong>XLOLR E. coli Strain</strong></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</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500</td>
<td></td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500</td>
<td></td>
</tr>
<tr>
<td><strong>XL1-Blue MRF’ E.coli Strain</strong></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</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500</td>
<td></td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500</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.
Section 11. Toxicological information

Information on the likely routes of exposure

<table>
<thead>
<tr>
<th>Route</th>
<th>Strain/Phage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
</tbody>
</table>

Potential acute health effects

<table>
<thead>
<tr>
<th>Route</th>
<th>Strain/Phage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
<tr>
<td></td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td></td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td></td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
<tr>
<td></td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
<tr>
<td></td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
<tr>
<td></td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

Symptoms related to the physical, chemical and toxicological characteristics

<table>
<thead>
<tr>
<th>Route</th>
<th>Strain/Phage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
<tr>
<td></td>
<td>Adverse symptoms may include the following:</td>
</tr>
<tr>
<td></td>
<td>pain or irritation</td>
</tr>
<tr>
<td></td>
<td>watering</td>
</tr>
<tr>
<td></td>
<td>redness</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
<tr>
<td></td>
<td>Adverse symptoms may include the following:</td>
</tr>
<tr>
<td></td>
<td>pain or irritation</td>
</tr>
<tr>
<td></td>
<td>watering</td>
</tr>
<tr>
<td></td>
<td>redness</td>
</tr>
<tr>
<td></td>
<td>No specific data.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
<tr>
<td></td>
<td>No specific data.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
<tr>
<td></td>
<td>No specific data.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>XLOLR E. coli Strain</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
</tr>
<tr>
<td></td>
<td>ExAssist Interference-Resistant Helper Phage</td>
</tr>
<tr>
<td></td>
<td>No specific data.</td>
</tr>
</tbody>
</table>

Delayed and immediate effects and also chronic effects from short and long term exposure

<table>
<thead>
<tr>
<th>Route</th>
<th>Strain/Phage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short term exposure</td>
<td>Not available.</td>
</tr>
<tr>
<td>Potential immediate effects</td>
<td>Not available.</td>
</tr>
</tbody>
</table>
Section 11. Toxicological information

Potential delayed effects : Not available.

Long term exposure
Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects
General : XLOLR E. coli Strain No known significant effects or critical hazards.
XL1-Blue MRF’ E.coli Strain No known significant effects or critical hazards.
ExAssist Interference-Resistant Helper Phage No known significant effects or critical hazards.

Carcinogenicity : XLOLR E. coli Strain No known significant effects or critical hazards.
XL1-Blue MRF’ E.coli Strain No known significant effects or critical hazards.
ExAssist Interference-Resistant Helper Phage No known significant effects or critical hazards.

Mutagenicity : XLOLR E. coli Strain No known significant effects or critical hazards.
XL1-Blue MRF’ E.coli Strain No known significant effects or critical hazards.
ExAssist Interference-Resistant Helper Phage No known significant effects or critical hazards.

Teratogenicity : XLOLR E. coli Strain No known significant effects or critical hazards.
XL1-Blue MRF’ E.coli Strain No known significant effects or critical hazards.
ExAssist Interference-Resistant Helper Phage No known significant effects or critical hazards.

Developmental effects : XLOLR E. coli Strain No known significant effects or critical hazards.
XL1-Blue MRF’ E.coli Strain No known significant effects or critical hazards.
ExAssist Interference-Resistant Helper Phage No known significant effects or critical hazards.

Fertility effects : XLOLR E. coli Strain No known significant effects or critical hazards.
XL1-Blue MRF’ E.coli Strain No known significant effects or critical hazards.
ExAssist Interference-Resistant Helper Phage 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>XLOLR E. coli Strain Oral</td>
<td>300000 mg/kg</td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain Oral</td>
<td>300000 mg/kg</td>
</tr>
</tbody>
</table>

Section 12. Ecological information

12.1 Toxicity
### Section 12. Ecological information

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>XLOLR E. coli Strain</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 EC50 4.74 g/L Fresh water</td>
<td>Algae - Chlamydomonas reinhardtii</td>
<td>96 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 1000000 µg/l Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic LC10 781 mg/l Fresh water</td>
<td>Fish - Morone saxatilis Larvae</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 6 g/L Fresh water</td>
<td>Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)</td>
<td>3 weeks</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.314 g/L Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 100 mg/l Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daphnia - Daphnia pulex</td>
<td>8 weeks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fish - Gambusia holbrooki - Adult</td>
<td></td>
</tr>
<tr>
<td><strong>XL1-Blue MRF’ E.coli Strain</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 EC50 4.74 g/L Fresh water</td>
<td>Algae - Chlamydomonas reinhardtii</td>
<td>96 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 1000000 µg/l Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>96 hours</td>
</tr>
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<td></td>
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<td>Fish - Morone saxatilis Larvae</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 6 g/L Fresh water</td>
<td>Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)</td>
<td>3 weeks</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.314 g/L Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 100 mg/l Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Daphnia - Daphnia pulex</td>
<td>8 weeks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fish - Gambusia holbrooki - Adult</td>
<td></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>XLOLR E. coli Strain</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><strong>XL1-Blue MRF’ E.coli Strain</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>
</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>XLOLR E. coli Strain</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><strong>XL1-Blue MRF’ E.coli Strain</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>-1.76</td>
<td>-</td>
<td>low</td>
</tr>
</tbody>
</table>
Section 12. Ecological information

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.

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 Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Date of issue : 08/21/2017
### Section 15. Regulatory information

**Clean Air Act Section 602 Class II Substances**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**DEA List I Chemicals (Precursor Chemicals)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**DEA List II Chemicals (Essential Chemicals)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**SARA 302/304**

**Composition/information on ingredients**

No products were found.

**SARA 304 RQ**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**SARA 311/312**

**Classification**

<table>
<thead>
<tr>
<th></th>
<th>Immediate (acute) health hazard</th>
<th>Immediate (acute) health hazard</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLOLR E. coli Strain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XL1-Blue MRF’ E.coli Strain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ExAssist Interference-Resistant Helper Phage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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><strong>XLOLR E. coli Strain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>XL1-Blue MRF’ E.coli Strain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**State regulations**

**Massachusetts**

The following components are listed: 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: 1,2,3-PROPANETRIOL

**California Prop. 65**

**WARNING:** This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Cancer</th>
<th>Reproductive</th>
<th>No significant risk level</th>
<th>Maximum acceptable dosage level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>XLOLR E. coli Strain</strong></td>
<td></td>
<td>Yes.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tetracycline</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>XL1-Blue MRF’ E.coli Strain</strong></td>
<td></td>
<td>Yes.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tetracycline</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**International regulations**

**Chemical Weapon Convention List Schedules I, II & III Chemicals**

Not listed.

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

**Date of issue:** 08/21/2017
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**: Not determined.
- **China**: All components are listed or exempted.
- **Europe**: All components are listed or exempted.
- **Japan**: Japan inventory (ENCS): All components are listed or exempted. Japan inventory (ISHL): All components are listed or exempted.
- **Malaysia**: Not determined.
- **New Zealand**: All components are listed or exempted.
- **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**: 08/21/2017
- **Date of previous issue**: 01/21/2016
- **Version**: 6

*Indicates information that has changed from previously issued version.

**Notice to reader**

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