Section 1. Identification

Product identifier: pBK-CMV Phagemid Vector, Part Number 212209
Part no. (chemical kit): 212209
Part no.: pBK-CMV Phagemid Vector 212209-51
                     XL1-Blue MRF'E.coli Strain 200301-81
                     R408 Interference-Resistant Helper Phage 200252-81

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

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

Section 2. Hazard(s) identification

Classification of the substance or mixture
Not classified.

GHS label elements

Signal word: pBK-CMV Phagemid Vector No signal word.
              XL1-Blue MRF'E.coli Strain No signal word.
              R408 Interference-Resistant Helper Phage No signal word.

Hazard statements: pBK-CMV Phagemid Vector
                      No known significant effects or critical hazards.
                      XL1-Blue MRF'E.coli Strain
                      No known significant effects or critical hazards.
                      R408 Interference-Resistant Helper Phage
                      No known significant effects or critical hazards.

Precautionary statements

Prevention: pBK-CMV Phagemid Vector
              XL1-Blue MRF'E.coli Strain
              R408 Interference-Resistant Helper Phage
              Not applicable.

Response: pBK-CMV Phagemid Vector
            XL1-Blue MRF'E.coli Strain
            R408 Interference-Resistant Helper Phage
            Not applicable.

Storage: pBK-CMV Phagemid Vector
         XL1-Blue MRF'E.coli Strain
         R408 Interference-Resistant Helper Phage
         Not applicable.
Section 2. Hazards identification

**Disposal**
- pBK-CMV Phagemid Vector
- XL1-Blue MRF' E.coli Strain
- R408 Interference-Resistant Helper Phage

**Supplemental label elements**

**Additional warning phrases**
- pBK-CMV Phagemid Vector
- XL1-Blue MRF' E.coli Strain
- R408 Interference-Resistant Helper Phage

**Other hazards which do not result in classification**
- pBK-CMV Phagemid Vector
- XL1-Blue MRF' E.coli Strain
- R408 Interference-Resistant Helper Phage

Section 3. Composition and ingredient information

**Substance/mixture**
- pBK-CMV Phagemid Vector
- XL1-Blue MRF' E.coli Strain
- R408 Interference-Resistant Helper Phage

**CAS number/other identifiers**

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>% (w/w)</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue MRF' E.coli Strain Glycerol</td>
<td>≥10 - ≤30</td>
<td>56-81-5</td>
</tr>
</tbody>
</table>

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

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

Section 4. First aid measures

**Description of necessary first aid measures**

**Eye contact**
- pBK-CMV Phagemid Vector
- XL1-Blue MRF' E.coli Strain
- R408 Interference-Resistant Helper Phage

**Inhalation**
- pBK-CMV Phagemid Vector
- XL1-Blue MRF' E.coli Strain
- R408 Interference-Resistant Helper Phage

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**Date of previous issue**: 29/03/2017  
**Version**: 5
### Section 4. First aid measures

#### Skin contact
- **pBK-CMV Phagemid Vector**: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- **XL1-Blue MRF' E.coli Strain**: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- **R408 Interference-Resistant Helper Phage**: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

#### Ingestion
- **pBK-CMV Phagemid Vector**: 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.
- **XL1-Blue MRF' 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.
- **R408 Interference-Resistant Helper Phage**: 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.

#### Flushing skin contamination
- **pBK-CMV Phagemid Vector**: Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- **XL1-Blue MRF' E.coli Strain**: Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- **R408 Interference-Resistant Helper Phage**: Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

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

##### Potential acute health effects

<table>
<thead>
<tr>
<th>Eye contact</th>
<th>Inhalation</th>
<th>Skin contact</th>
<th>Ingestion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pBK-CMV Phagemid Vector</strong></td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td><strong>XL1-Blue MRF' E.coli Strain</strong></td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td><strong>R408 Interference-Resistant Helper Phage</strong></td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

#### Over-exposure signs/symptoms

<table>
<thead>
<tr>
<th>Eye contact</th>
<th>Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pBK-CMV Phagemid Vector</strong></td>
<td>No specific data.</td>
</tr>
<tr>
<td><strong>XL1-Blue MRF' E.coli Strain</strong></td>
<td>No specific data.</td>
</tr>
<tr>
<td><strong>R408 Interference-Resistant Helper Phage</strong></td>
<td>No specific data.</td>
</tr>
</tbody>
</table>
**Section 4. First aid measures**

| **Skin contact** | pBK-CMV Phagemid Vector | No specific data. |
| XL1-Blue MRF' E.coli Strain | No specific data. |
| R408 Interference-Resistant Helper Phage | No specific data. |

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

**Notes to physician**

| pBK-CMV Phagemid Vector | 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. |
| R408 Interference-Resistant Helper Phage | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |

**Specific treatments**

| pBK-CMV Phagemid Vector | No specific treatment. |
| XL1-Blue MRF' E.coli Strain | No specific treatment. |
| R408 Interference-Resistant Helper Phage | No specific treatment. |

**Protection of first-aiders**

| pBK-CMV Phagemid Vector | No action shall be taken involving any personal risk or without suitable training. |
| XL1-Blue MRF' E.coli Strain | No action shall be taken involving any personal risk or without suitable training. |
| R408 Interference-Resistant Helper Phage | No action shall be taken involving any personal risk or without suitable training. |

See toxicological information (Section 11)

**Section 5. Firefighting measures**

**Extinguishing media**

**Suitable extinguishing media**

| pBK-CMV Phagemid Vector | Use an extinguishing agent suitable for the surrounding fire. |
| XL1-Blue MRF' E.coli Strain | Use an extinguishing agent suitable for the surrounding fire. |
| R408 Interference-Resistant Helper Phage | Use an extinguishing agent suitable for the surrounding fire. |

**Unsuitable extinguishing media**

| pBK-CMV Phagemid Vector | None known. |
| XL1-Blue MRF' E.coli Strain | None known. |
| R408 Interference-Resistant Helper Phage | None known. |

**Specific hazards arising from the chemical**

| pBK-CMV Phagemid Vector | In a fire or if heated, a pressure increase will occur and the container may burst. |
| XL1-Blue MRF' E.coli Strain | In a fire or if heated, a pressure increase will occur and the container may burst. |
| R408 Interference-Resistant Helper Phage | In a fire or if heated, a pressure increase will occur and the container may burst. |

**Hazardous thermal decomposition products**

| pBK-CMV Phagemid Vector | No specific data. Decomposition products may include the following materials: carbon dioxide, carbon monoxide, halogenated compounds, metal oxide/oxides. |
| XL1-Blue MRF' E.coli Strain | No specific data. |
| R408 Interference-Resistant Helper Phage | No specific data. |
Section 5. Firefighting measures

Special protective actions for fire-fighters:

- **pBK-CMV Phagemid Vector**: 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.

- **R408 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:

- **pBK-CMV Phagemid Vector**: 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.

- **R408 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

**Personal precautions, protective equipment and emergency procedures**

For non-emergency personnel:

- **pBK-CMV Phagemid Vector**: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

- **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 spilt material. Put on appropriate personal protective equipment.

- **R408 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 spilt material. Put on appropriate personal protective equipment.

For emergency responders:

- **pBK-CMV Phagemid Vector**: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- **XL1-Blue MRF’ E.coli Strain**: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- **R408 Interference-Resistant Helper Phage**: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
## Section 6. Accidental release measures

**Environmental precautions**
- **pBK-CMV Phagemid Vector**: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- **XL1-Blue MRF’ E.coli Strain**: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- **R408 Interference-Resistant Helper Phage**: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### Methods and material for containment and cleaning up

**Methods for cleaning up**
- **pBK-CMV Phagemid Vector**: 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.
- **XL1-Blue MRF’ 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.
- **R408 Interference-Resistant Helper Phage**: 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.

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## Section 7. Handling and storage

**Precautions for safe handling**
- **Protective measures**
  - **pBK-CMV Phagemid Vector**: Put on appropriate personal protective equipment (see Section 8).
  - **XL1-Blue MRF’ E.coli Strain**: Put on appropriate personal protective equipment (see Section 8).
  - **R408 Interference-Resistant Helper Phage**: Put on appropriate personal protective equipment (see Section 8).

**Advice on general occupational hygiene**
- **pBK-CMV Phagemid Vector**: 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.
- **R408 Interference-Resistant Helper Phage**: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and
Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities

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

**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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

**R408 Interference-Resistant Helper Phage**
Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls and personal protection

Control parameters

**Occupational exposure limits**

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue MRF’ E.coli Strain Glycerol</td>
<td><strong>Safe Work Australia (Australia, 1/2014).</strong> TWA: 10 mg/m³ 8 hours.</td>
</tr>
</tbody>
</table>

**Appropriate engineering controls**

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

**Environmental exposure controls**

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

**Individual protection measures**

Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m³ 8 hours.
Section 8. Exposure controls and personal protection

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

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

**Skin protection**

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

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

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

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

Section 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Physical state</th>
<th>Colour</th>
<th>Odour</th>
<th>Odour threshold</th>
<th>pH</th>
<th>Melting point</th>
<th>Boiling point</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pBK-CMV Phagemid Vector</td>
<td>7.5</td>
<td>Not available.</td>
<td>Not available.</td>
<td>7</td>
<td>0°C (32°F)</td>
<td>100°C (212°F)</td>
</tr>
<tr>
<td></td>
<td>XL1-Blue MRF' E.coli Strain</td>
<td>7</td>
<td>Not available.</td>
<td>Not available.</td>
<td>7</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td></td>
<td>R408 Interference-Resistant Helper Phage</td>
<td>7</td>
<td>Not available.</td>
<td>Not available.</td>
<td>7</td>
<td>0°C (32°F)</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

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Date of previous issue: 29/03/2017
Version: 5
Section 9. Physical and chemical properties

Flash point
- pBK-CMV Phagemid Vector: Not available.
- XL1-Blue MRF' E.coli Strain: Not available.
- R408 Interference-Resistant Helper Phage: Not available.

Evaporation rate
- pBK-CMV Phagemid Vector: Not available.
- XL1-Blue MRF' E.coli Strain: Not available.
- R408 Interference-Resistant Helper Phage: Not available.

Flammability (solid, gas)
- pBK-CMV Phagemid Vector: Not applicable.
- XL1-Blue MRF' E.coli Strain: Not applicable.
- R408 Interference-Resistant Helper Phage: Not applicable.

Lower and upper explosive (flammable) limits
- pBK-CMV Phagemid Vector: Not available.
- XL1-Blue MRF' E.coli Strain: Not available.
- R408 Interference-Resistant Helper Phage: Not available.

Vapour pressure
- pBK-CMV Phagemid Vector: Not available.
- XL1-Blue MRF' E.coli Strain: Not available.
- R408 Interference-Resistant Helper Phage: Not available.

Vapour density
- pBK-CMV Phagemid Vector: Not available.
- XL1-Blue MRF' E.coli Strain: Not available.
- R408 Interference-Resistant Helper Phage: Not available.

Relative density
- pBK-CMV Phagemid Vector: Not available.
- XL1-Blue MRF' E.coli Strain: Not available.
- R408 Interference-Resistant Helper Phage: Not available.

Solubility
- pBK-CMV Phagemid Vector: Easily soluble in the following materials: cold water and hot water.
- XL1-Blue MRF' E.coli Strain: Soluble in the following materials: cold water and hot water.
- R408 Interference-Resistant Helper Phage: Easily soluble in the following materials: cold water and hot water.

Partition coefficient: n-octanol/water
- pBK-CMV Phagemid Vector: Not available.
- XL1-Blue MRF' E.coli Strain: Not available.
- R408 Interference-Resistant Helper Phage: Not available.

Auto-ignition temperature
- pBK-CMV Phagemid Vector: Not available.
- XL1-Blue MRF' E.coli Strain: Not available.
- R408 Interference-Resistant Helper Phage: Not available.

Decomposition temperature
- pBK-CMV Phagemid Vector: Not available.
- XL1-Blue MRF' E.coli Strain: Not available.
- R408 Interference-Resistant Helper Phage: Not available.

Viscosity
- pBK-CMV Phagemid Vector: Not available.
- XL1-Blue MRF' E.coli Strain: Not available.
- R408 Interference-Resistant Helper Phage: Not available.

Section 10. Stability and reactivity

Reactivity
- pBK-CMV Phagemid Vector: No specific test data related to reactivity available for this product or its ingredients.
- XL1-Blue MRF' E.coli Strain: No specific test data related to reactivity available for this product or its ingredients.
- R408 Interference-Resistant Helper Phage: No specific test data related to reactivity available for this product or its ingredients.
Section 10. Stability and reactivity

Chemical stability: pBK-CMV Phagemid Vector
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

XL1-Blue MRF' E.coli Strain
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

R408 Interference-Resistant Helper Phage
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Possibility of hazardous reactions: pBK-CMV Phagemid Vector
May react or be incompatible with oxidising materials.

XL1-Blue MRF' E.coli Strain
May react or be incompatible with oxidising materials.

R408 Interference-Resistant Helper Phage
May react or be incompatible with oxidising materials.

Conditions to avoid: pBK-CMV Phagemid Vector
No specific data.

XL1-Blue MRF' E.coli Strain
No specific data.

R408 Interference-Resistant Helper Phage
No specific data.

Incompatible materials: pBK-CMV Phagemid Vector
May react or be incompatible with oxidising materials.

XL1-Blue MRF' E.coli Strain
May react or be incompatible with oxidising materials.

R408 Interference-Resistant Helper Phage
May react or be incompatible with oxidising materials.

Hazardous decomposition products: pBK-CMV Phagemid Vector
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

XL1-Blue MRF' E.coli Strain
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

R408 Interference-Resistant Helper Phage
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue MRF' E.coli Strain Glycerol</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>12600 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>XL1-Blue MRF' E.coli Strain Glycerol</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
</tbody>
</table>

Sensitisation
Not available.

Mutagenicity

Conclusion/Summary: Not available.

Carcinogenicity

Conclusion/Summary: Not available.

Reproductive toxicity
Section 11. Toxicological information

**Teratogenicity**

**Conclusion/Summary**: Not available.

**Specific target organ toxicity (single exposure)**

Not available.

**Specific target organ toxicity (repeated exposure)**

Not available.

**Aspiration hazard**

Not available.

**Information on likely routes of exposure**

- **Inhalation**: pBK-CMV Phagemid Vector
  - XL1-Blue MRF' E.coli Strain
  - R408 Interference-Resistant Helper Phage
  - No known significant effects or critical hazards.

**Potential acute health effects**

- **Eye contact**: pBK-CMV Phagemid Vector
  - XL1-Blue MRF' E.coli Strain
  - R408 Interference-Resistant Helper Phage
  - No specific data.

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

- **Eye contact**: pBK-CMV Phagemid Vector
  - XL1-Blue MRF' E.coli Strain
  - R408 Interference-Resistant Helper Phage
  - No specific data.

- **Inhalation**: pBK-CMV Phagemid Vector
  - XL1-Blue MRF' E.coli Strain
  - R408 Interference-Resistant Helper Phage
  - No specific data.

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

**Potential immediate effects**: Not available.
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 : pBK-CMV Phagemid Vector
           XL1-Blue MRF’ E.coli Strain
           R408 Interference-Resistant Helper Phage
           No known significant effects or critical hazards.

Carcinogenicity : pBK-CMV Phagemid Vector
                  XL1-Blue MRF’ E.coli Strain
                  R408 Interference-Resistant Helper Phage
                  No known significant effects or critical hazards.

Mutagenicity : pBK-CMV Phagemid Vector
               XL1-Blue MRF’ E.coli Strain
               R408 Interference-Resistant Helper Phage
               No known significant effects or critical hazards.

Teratogenicity : pBK-CMV Phagemid Vector
                 XL1-Blue MRF’ E.coli Strain
                 R408 Interference-Resistant Helper Phage
                 No known significant effects or critical hazards.

Developmental effects : pBK-CMV Phagemid Vector
                        XL1-Blue MRF’ E.coli Strain
                        R408 Interference-Resistant Helper Phage
                        No known significant effects or critical hazards.

Fertility effects : pBK-CMV Phagemid Vector
                   XL1-Blue MRF’ E.coli Strain
                   R408 Interference-Resistant Helper Phage
                   No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates
Not available.

Section 12. Ecological information

Toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue MRF’ E.coli</td>
<td>Acute LC50 54000 mg/l Fresh water</td>
<td>Fish - Oncorhynchus mykiss</td>
<td>96 hours</td>
</tr>
<tr>
<td>Strain Glycerol</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence and degradability

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Result</th>
<th>Dose</th>
<th>Inoculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue MRF’ E.coli</td>
<td>301D Ready Biodegradability - Closed Bottle Test</td>
<td>93 % - 30 days</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Strain Glycerol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bioaccumulative potential

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Version : 5
12/14
Section 12. Ecological information

<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>XL1-Blue MRF&lt;sup&gt;+&lt;/sup&gt; E.coli Strain Glycerol</td>
<td>-1.76</td>
<td>-</td>
<td>low</td>
</tr>
</tbody>
</table>

Mobility in soil

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

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

Section 13. Disposal considerations

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

Section 14. Transport information

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

Special precautions for user : Transport within user’s premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

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

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons
Not regulated.

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

International regulations

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

- Montreal Protocol (Annexes A, B, C, E)
  Not listed.

- Stockholm Convention on Persistent Organic Pollutants
  Not listed.

- Rotterdam Convention on Prior Informed Consent (PIC)
  Not listed.

- UNECE Aarhus Protocol on POPs and Heavy Metals
  Not listed.

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Section 15. Regulatory information

**Inventory list**

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>All components are listed or exempted.</td>
</tr>
<tr>
<td>Canada</td>
<td>All components are listed or exempted.</td>
</tr>
<tr>
<td>China</td>
<td>All components are listed or exempted.</td>
</tr>
<tr>
<td>Europe</td>
<td>All components are listed or exempted.</td>
</tr>
</tbody>
</table>
| 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      | All components are listed or exempted. |
| Republic of Korea| All components are listed or exempted. |
| Taiwan           | All components are listed or exempted. |
| Thailand         | Not determined.                 |
| Turkey           | Not determined.                 |
| United States    | All components are listed or exempted. |
| Viet Nam         | Not determined.                 |

Section 16. Any other relevant information

**History**

- **Date of issue/Date of revision**: 24/09/2018
- **Date of previous issue**: 29/03/2017
- **Version**: 5

**Key to abbreviations**

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

**Procedure used to derive the classification**

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

**References**

- Not available.

> Indicates information that has changed from previously issued version.

**Notice to reader**

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