SAFETY DATA SHEET
Cre Recombinase Kit, Part Number 600270

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Product name: Cre Recombinase Kit, Part Number 600270
Part No. (Kit): 600270
Part No. (Kit):

1.3 Details of the supplier of the safety data sheet
Agilent Technologies Manufacturing GmbH & Co. KG
Hewlett-Packard-Str. 8
76337 Waldbronn
Germany
0800 603 1000
e-mail address of person responsible for this SDS: pdl-msds_author@agilent.com

1.4 Emergency telephone number
Emergency telephone number (with hours of operation): CHEMTREC®: +(44)-870-8200418

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

<table>
<thead>
<tr>
<th>Identified uses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical reagent.</td>
<td></td>
</tr>
<tr>
<td>Cre Recombinase</td>
<td>30 µl (150 U 5 U/µl)</td>
</tr>
<tr>
<td>10X Cre Reaction Buffer</td>
<td>100 µl</td>
</tr>
</tbody>
</table>

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Product definition:
Cre Recombinase: Mixture
10X Cre Reaction Buffer: Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]
10X Cre Reaction Buffer H319: SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2

Ingredients of unknown toxicity:
Cre Recombinase: Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 30 - 60%
10X Cre Reaction Buffer: Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10%
Percentage of the mixture consisting of ingredient(s) of unknown oral toxicity: 1 - 10%
Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30%
Percentage of the mixture consisting of ingredient(s) of unknown ecotoxicity: Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 7.9%

See Section 16 for the full text of the H statements declared above.
See Section 11 for more detailed information on health effects and symptoms.

Date of issue/Date of revision: 28/06/2017
SECTION 2: Hazards identification

2.2 Label elements

<table>
<thead>
<tr>
<th>Hazard pictograms</th>
<th>Cre Recombinase</th>
<th>10X Cre Reaction Buffer</th>
</tr>
</thead>
</table>

Signal word

- Cre Recombinase: No signal word.
- 10X Cre Reaction Buffer: Warning

Hazard statements

- Cre Recombinase: No known significant effects or critical hazards.
- 10X Cre Reaction Buffer: H319 - Causes serious eye irritation.

Precautionary statements

Prevention

- Cre Recombinase: Not applicable.
- 10X Cre Reaction Buffer: P280 - Wear eye or face protection. P264 - Wash hands thoroughly after handling.

Response

- Cre Recombinase: Not applicable.
- 10X Cre Reaction Buffer: P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage

- Cre Recombinase: Not applicable.
- 10X Cre Reaction Buffer: Not applicable.

Disposal

- Cre Recombinase: Not applicable.
- 10X Cre Reaction Buffer: Not applicable.

Hazardous ingredients

- Cre Recombinase: Not applicable.
- 10X Cre Reaction Buffer: Not applicable.

Supplemental label elements

- Cre Recombinase: Safety data sheet available on request.
- 10X Cre Reaction Buffer: Not applicable.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

- Cre Recombinase: Not applicable.
- 10X Cre Reaction Buffer: Not applicable.

Special packaging requirements

- Cre Recombinase: Not applicable.
- 10X Cre Reaction Buffer: Not applicable.

2.3 Other hazards

Other hazards which do not result in classification

- Cre Recombinase: None known.
- 10X Cre Reaction Buffer: None known.

SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Cre Recombinase</th>
<th>10X Cre Reaction Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium chloride</td>
<td>EC: 231-598-3 CAS: 7647-14-5</td>
<td>&lt;10</td>
</tr>
<tr>
<td>10X Cre Reaction Buffer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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SECTION 3: Composition/information on ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>EC Number</th>
<th>Type</th>
<th>Skin Irrit.</th>
<th>Eye Irrit.</th>
<th>STOT SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride</td>
<td>1185-53-1</td>
<td>214-684-5</td>
<td>&lt;10</td>
<td>Skin Irrit. 2, H315</td>
<td>Eye Irrit. 2, H319</td>
<td>STOT SE 3, H335</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>7647-14-5</td>
<td>231-598-3</td>
<td>≤3</td>
<td>Skin Irrit. 2, H315</td>
<td>Eye Irrit. 2, H319</td>
<td></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.

**Type**

1. Substance classified with a health or environmental hazard
2. Substance with a workplace exposure limit
3. Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
4. Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
5. Substance of equivalent concern
6. Additional disclosure due to company policy

SECTION 4: First aid measures

4.1 Description of first aid measures

**Eye contact**

*Cre Recombinase*

- Wash out mouth with water.
- Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Get medical attention if irritation occurs.

*10X Cre Reaction Buffer*

- Wash out mouth with water.
- Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Get medical attention if irritation occurs.

**Inhalation**

*Cre Recombinase*

- 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.

*10X Cre Reaction Buffer*

- 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.

**Skin contact**

*Cre Recombinase*

- Immediately flush eyes with plenty of water.
- Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Get medical attention if irritation occurs.

*10X Cre Reaction Buffer*

- Immediately flush eyes with plenty of water.
- Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Get medical attention if irritation occurs.

**Ingestion**

*Cre Recombinase*

- Wash out mouth with water.
- Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Get medical attention if symptoms occur.

*10X Cre Reaction Buffer*

- Wash out mouth with water.
- Remove dentures if any.
SECTION 4: First aid measures

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.

Protection of first-aiders:

Cre Recombinase: No action shall be taken involving any personal risk or without suitable training.
10X Cre Reaction Buffer: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact:
Cre Recombinase: No known significant effects or critical hazards.
10X Cre Reaction Buffer: Causes serious eye irritation.

Inhalation:
Cre Recombinase: No known significant effects or critical hazards.
10X Cre Reaction Buffer: No known significant effects or critical hazards.

Skin contact:
Cre Recombinase: No known significant effects or critical hazards.
10X Cre Reaction Buffer: No known significant effects or critical hazards.

Ingestion:
Cre Recombinase: No known significant effects or critical hazards.
10X Cre Reaction Buffer: No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact:
Cre Recombinase: No specific data.
10X Cre Reaction Buffer: Adverse symptoms may include the following: pain or irritation, watering, redness.

Inhalation:
Cre Recombinase: No specific data.
10X Cre Reaction Buffer: No specific data.

Skin contact:
Cre Recombinase: No specific data.
10X Cre Reaction Buffer: No specific data.

Ingestion:
Cre Recombinase: No specific data.
10X Cre Reaction Buffer: No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician:
Cre Recombinase: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
10X Cre Reaction Buffer: No specific data.

Specific treatments:
Cre Recombinase: No specific treatment.
10X Cre Reaction Buffer: No specific treatment.
SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:
- Cre Recombinase
- 10X Cre Reaction Buffer
  - Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media:
- Cre Recombinase
- 10X Cre Reaction Buffer
  - None known.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products:
- Cre Recombinase
- 10X Cre Reaction Buffer
  - Decomposition products may include the following materials:
    - carbon dioxide
    - carbon monoxide
    - halogenated compounds
    - metal oxide/oxides

- Cre Recombinase
- 10X Cre Reaction Buffer
  - Decomposition products may include the following materials:
    - carbon dioxide
    - carbon monoxide
    - nitrogen oxides
    - halogenated compounds
    - metal oxide/oxides

5.3 Advice for firefighters

Special precautions for fire-fighters:
- Cre Recombinase
- 10X Cre Reaction Buffer
  - 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:
- Cre Recombinase
- 10X Cre Reaction Buffer
  - Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:
- Cre Recombinase
- 10X Cre Reaction Buffer
  - 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.

- Cre Recombinase
- 10X Cre Reaction Buffer
  - 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. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
Cre Recombinase Kit, Part Number 600270

SECTION 6: Accidental release measures

<table>
<thead>
<tr>
<th>For emergency responders</th>
<th>Cre Recombinase</th>
<th>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 &quot;For non-emergency personnel&quot;.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cre Reaction Buffer</td>
<td></td>
<td>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 &quot;For non-emergency personnel&quot;.</td>
</tr>
</tbody>
</table>

6.2 Environmental precautions

<table>
<thead>
<tr>
<th>Cre Recombinase</th>
<th>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).</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cre Reaction Buffer</td>
<td>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).</td>
</tr>
</tbody>
</table>

6.3 Methods and material for containment and cleaning up

<table>
<thead>
<tr>
<th>Cre Recombinase</th>
<th>Methods for cleaning up</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cre Reaction Buffer</td>
<td></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>

6.4 Reference to other sections

<table>
<thead>
<tr>
<th>Cre Recombinase</th>
<th>Reference to other sections</th>
<th>See Section 1 for emergency contact information. See Section 8 for information on appropriate personal protective equipment. See Section 13 for additional waste treatment information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cre Reaction Buffer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 7: Handling and storage

7.1 Precautions for safe handling

<table>
<thead>
<tr>
<th>Cre Recombinase</th>
<th>Protective measures</th>
<th>Put on appropriate personal protective equipment (see Section 8).</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cre Reaction Buffer</td>
<td></td>
<td>Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.</td>
</tr>
</tbody>
</table>

Advice on general occupational hygiene

<table>
<thead>
<tr>
<th>Cre Recombinase</th>
<th>Advice on general occupational hygiene</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cre Reaction Buffer</td>
<td></td>
<td>Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.</td>
</tr>
</tbody>
</table>
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SECTION 7: Handling and storage

7.2 Conditions for safe storage, including any incompatibilities

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

| 10X Cre Reaction Buffer | 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. |

7.3 Specific end use(s)

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Cre Recombinase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial applications, Professional applications.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industrial sector specific solutions</th>
<th>Cre Recombinase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable.</td>
<td></td>
</tr>
</tbody>
</table>

| 10X Cre Reaction Buffer | Not applicable. |

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

**Occupational exposure limits**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Exposure limit values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cre Recombinase</td>
<td>EH40/2005 WELs (United Kingdom (UK), 12/2011). TWA: 10 mg/m³ 8 hours. Form: Mist</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
</tr>
</tbody>
</table>

**Recommended monitoring procedures**

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

**DNELs/DMELs**

No DNELs/DMELs available.

**PNECs**

No PNECs available

8.2 Exposure controls
SECTION 8: Exposure controls/personal protection

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

**Individual protection measures**

**Hand protection**
- 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.

**Skin protection**

**Hand protection**
- Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

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

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

**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.

**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.

SECTION 9: Physical and chemical properties

**9.1 Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Cre Recombinase</th>
<th>10X Cre Reaction Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physical state</strong></td>
<td>Liquid.</td>
<td>Liquid.</td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Odour</strong></td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Odour threshold</strong></td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td><strong>Melting point/freezing point</strong></td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Initial boiling point and boiling range</strong></td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

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## SECTION 9: Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Cre Recombinase</th>
<th>10X Cre Reaction Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaporation rate</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Soluble in the following materials: cold water and hot water.</td>
<td>Easily soluble in the following materials: cold water and hot water.</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### 9.2 Other information

No additional information.

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

- **Cre Recombinase**: No specific test data related to reactivity available for this product or its ingredients.
- **10X Cre Reaction Buffer**: No specific test data related to reactivity available for this product or its ingredients.

### 10.2 Chemical stability

- **Cre Recombinase**: The product is stable.
- **10X Cre Reaction Buffer**: The product is stable.

### 10.3 Possibility of hazardous reactions

- **Cre Recombinase**: Under normal conditions of storage and use, hazardous reactions will not occur.
- **10X Cre Reaction Buffer**: Under normal conditions of storage and use, hazardous reactions will not occur.

### 10.4 Conditions to avoid

- **Cre Recombinase**: No specific data.
- **10X Cre Reaction Buffer**: No specific data.

### 10.5 Incompatible materials

- **Cre Recombinase**: May react or be incompatible with oxidising materials.
- **10X Cre Reaction Buffer**: May react or be incompatible with oxidising materials.

---

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SECTION 10: Stability and reactivity

10.6 Hazardous decomposition products

<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>Cre Recombinase</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>3000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>10X Cre Reaction Buffer</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>3000 mg/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

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

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>Cre Recombinase</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>3000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>10X Cre Reaction Buffer</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>3000 mg/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

Acute toxicity estimates
Not available.

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>Cre Recombinase</td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 100 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>10 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>10X Cre Reaction Buffer</td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 100 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>10 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
</tbody>
</table>

Sensitiser

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cre Reaction Buffer</td>
<td>Category 3</td>
<td>Not applicable.</td>
<td>Respiratory tract irritation</td>
</tr>
<tr>
<td>2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Routes of entry anticipated: Oral, Dermal, Inhalation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cre Recombinase</td>
<td>Routes of entry anticipated: Oral, Dermal, Inhalation.</td>
</tr>
<tr>
<td>10X Cre Reaction Buffer</td>
<td>Routes of entry anticipated: Oral, Dermal, Inhalation.</td>
</tr>
</tbody>
</table>

Potential acute health effects

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Product/ingredient name</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Cre Recombinase</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>10X Cre Reaction Buffer</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Cre Recombinase</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>10X Cre Reaction Buffer</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

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SECTION 11: Toxicological information

### Skin contact
- Cre Recombinase: No known significant effects or critical hazards.
- 10X Cre Reaction Buffer: No known significant effects or critical hazards.

### Eye contact
- Cre Recombinase: No known significant effects or critical hazards.
- 10X Cre Reaction Buffer: Causes serious eye irritation.

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

#### Inhalation
- Cre Recombinase: No specific data.
- 10X Cre Reaction Buffer: No specific data.

#### Ingestion
- Cre Recombinase: No specific data.
- 10X Cre Reaction Buffer: No specific data.

#### Skin contact
- Cre Recombinase: No specific data.
- 10X Cre Reaction Buffer: No specific data.

#### Eye contact
- Cre Recombinase: No specific data.
- 10X Cre Reaction Buffer: Adverse symptoms may include the following: pain or irritation watering redness

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

#### Short term exposure
- Potential immediate effects: Not available.
- Potential delayed effects: Not available.

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

### Potential chronic health effects

#### General
- Cre Recombinase: No known significant effects or critical hazards.
- 10X Cre Reaction Buffer: No known significant effects or critical hazards.

#### Carcinogenicity
- Cre Recombinase: No known significant effects or critical hazards.
- 10X Cre Reaction Buffer: No known significant effects or critical hazards.

#### Mutagenicity
- Cre Recombinase: No known significant effects or critical hazards.
- 10X Cre Reaction Buffer: No known significant effects or critical hazards.

#### Teratogenicity
- Cre Recombinase: No known significant effects or critical hazards.
- 10X Cre Reaction Buffer: No known significant effects or critical hazards.

#### Developmental effects
- Cre Recombinase: No known significant effects or critical hazards.
- 10X Cre Reaction Buffer: No known significant effects or critical hazards.

#### Fertility effects
- Cre Recombinase: No known significant effects or critical hazards.
- 10X Cre Reaction Buffer: No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cre Recombinase Sodium chloride</td>
<td>Acute EC50 4.74 g/L Fresh water</td>
<td>Algae - Chlamydomonas reinhardti</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 IC50 6.87 g/L Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 1.56 g/L Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 1000000 μg/l Fresh water</td>
<td>Fish - Morone saxatilis - Larvae</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic LC10 781 mg/l Fresh water</td>
<td>Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling,</td>
<td>3 weeks</td>
</tr>
</tbody>
</table>

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SECTION 12: Ecological information

<table>
<thead>
<tr>
<th>Product</th>
<th>Chronic NOEC 6 g/L Fresh water</th>
<th>Chronic NOEC 0.314 g/L Fresh water</th>
<th>Chronic NOEC 100 mg/l Fresh water</th>
<th>Weanling)</th>
<th>Aquatic plants - Lemna minor</th>
<th>Daphnia - Daphnia pulex</th>
<th>Fish - Gambusia holbrooki - Adult</th>
<th>96 hours</th>
<th>21 days</th>
<th>8 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cre Reaction Buffer</td>
<td>Acute EC50 4.74 g/L Fresh water</td>
<td></td>
<td></td>
<td></td>
<td>Algae - Chlamydomonas reinhardtii</td>
<td>Crustaceans - Cypris subglobosa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>Acute EC50 519.6 mg/l Fresh water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acute IC50 6.87 g/L Fresh water</td>
<td>Acute LC50 1.56 g/L Fresh water</td>
<td>Acute LC50 100000 mg/l Fresh water</td>
<td></td>
<td>Aquatic plants - Lemna minor</td>
<td>Daphnia - Daphnia magna</td>
<td>Fish - Morone saxatilis - Larvae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chronic LC1 781 mg/l Fresh water</td>
<td></td>
<td></td>
<td></td>
<td>Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)</td>
<td>Aquatic plants - Lemna minor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 6 g/L Fresh water</td>
<td>Chronic NOEC 0.314 g/L Fresh water</td>
<td>Chronic NOEC 100 mg/l Fresh water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12.2 Persistence and degradability
Not available.

12.3 Bioaccumulative potential
Not available.

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

12.5 Results of PBT and vPvB assessment
PBT : Not applicable.
vPvB : Not applicable.

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product
Methods of disposal : 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.

Hazardous waste Packaging
Methods of disposal : The classification of the product may meet the criteria for a hazardous waste.

13.2 Methods of disposal
Product
 incineration or landfill should only be considered when recycling is not feasible.

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**SECTION 13: Disposal considerations**

**Special precautions:** This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

**SECTION 14: Transport information**

**ADR/RID / IMDG / IATA:** Not regulated.

**14.6 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.

**14.7 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

**EU Regulation (EC) No. 1907/2006 (REACH)**

- **Annex XIV - List of substances subject to authorisation**
  - **Annex XIV**
    - None of the components are listed.
  - **Substances of very high concern**
    - None of the components are listed.

- **Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles**
  - Cre Recombinase: Not applicable.
  - 10X Cre Reaction Buffer: Not applicable.

**Other EU regulations**

- **Ozone depleting substances (1005/2009/EU)**
  - Not listed.
- **Prior Informed Consent (PIC) (649/2012/EU)**
  - Not listed.
- **Seveso Directive**
  - This product is not controlled under the Seveso Directive.

**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

Australia: All components are listed or exempted.
Canada: All components are listed or exempted.
China: All components are listed or exempted.
Europe: 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: Not determined.
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.

15.2 Chemical safety assessment: This product contains substances for which Chemical Safety Assessments might still be required.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms:
- ATE = Acute Toxicity Estimate
- CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
- DNEL = Derived No Effect Level
- EUH statement = CLP-specific Hazard statement
- PNEC = Predicted No Effect Concentration
- RRN = REACH Registration Number

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

<table>
<thead>
<tr>
<th>Classification</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cre Reaction Buffer Eye Irrit. 2, H319</td>
<td>Calculation method</td>
</tr>
</tbody>
</table>

Full text of abbreviated H statements

Cre Recombinase
- H319: Causes serious eye irritation.

10X Cre Reaction Buffer
- H315: Causes skin irritation.
- H319: Causes serious eye irritation.
- H335: May cause respiratory irritation.

Full text of classifications [CLP/GHS]

Cre Recombinase
- Eye Irrit. 2, H319: SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2

10X Cre Reaction Buffer
- Eye Irrit. 2, H319:
- Skin Irrit. 2, H315:
- STOT SE 3, H335:

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SECTION 16: Other information

Date of previous issue: 30/03/2016.
Version: 2

Notice to reader

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