SAFETY DATA SHEET

Section 1. Identification

Product identifier : Cloned Pfu DNA Polymerase- 100 U, Part Number 600153
Part no. (chemical kit) : 600153
Part no. : Cloned Pfu DNA Polymerase 600153-81
10X Cloned Pfu Reaction Buffer 600153-82

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

Identified uses : Analytical reagent.
Cloned Pfu DNA Polymerase 0.04 ml (100 U 2.5 U/µl)
10X Cloned Pfu Reaction Buffer 1 ml

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

Cloned Pfu DNA Polymerase
H320 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2B

10X Cloned Pfu Reaction Buffer
H319 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A
H412 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3

GHS label elements

Hazard pictograms : 10X Cloned Pfu Reaction Buffer

Signal word : WARNING

Hazard statements : Cloned Pfu DNA Polymerase
H320 - Causes eye irritation.

10X Cloned Pfu Reaction Buffer
H319 - Causes serious eye irritation.
H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Not applicable.
P280 - Wear eye or face protection.
P273 - Avoid release to the environment.
Section 2. Hazard(s) identification

Response:

Cloned Pfu DNA Polymerase

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 - If eye irritation persists: Get medical advice or attention.

10X Cloned Pfu 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.
P337 + P313 - If eye irritation persists: Get medical advice or attention.

Storage:

Cloned Pfu DNA Polymerase

Not applicable.

10X Cloned Pfu Reaction Buffer

Not applicable.

Disposal:

Cloned Pfu DNA Polymerase

Not applicable.

10X Cloned Pfu Reaction Buffer

P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements:

Additional warning phrases:

Cloned Pfu DNA Polymerase

Not applicable.

10X Cloned Pfu Reaction Buffer

Not applicable.

Other hazards which do not result in classification:

Cloned Pfu DNA Polymerase

None known.

10X Cloned Pfu Reaction Buffer

None known.

Section 3. Composition and ingredient information

Substance/mixture:

Cloned Pfu DNA Polymerase  Mixture

10X Cloned Pfu Reaction Buffer  Mixture

CAS number/other identifiers:

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>% (w/w)</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycerol</td>
<td>≥30 - ≤60</td>
<td>56-81-5</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td>&lt;2.5</td>
<td>9002-93-1</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 and hence require reporting in this section.

The total concentration of ingredients in this product, reported or not in this section, is 100%.

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

Section 4. First aid measures

Description of necessary first aid measures:

Eye contact:

Cloned Pfu DNA Polymerase

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. If irritation persists, get medical attention.

10X Cloned Pfu Reaction Buffer

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue
Section 4. First aid measures

**Inhalation**: Cloned Pfu DNA Polymerase

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.

10X Cloned Pfu Reaction Buffer

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. 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.

**Skin contact**: Cloned Pfu DNA Polymerase

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

10X Cloned Pfu Reaction Buffer

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**Ingestion**: Cloned Pfu DNA Polymerase

Wash out mouth with water. Remove dentures if any. 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.

10X Cloned Pfu Reaction Buffer

Wash out mouth with water. Remove dentures if any. 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.
Section 4. First aid measures

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

### Potential acute health effects

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cloned Pfu DNA Polymerase</th>
<th>10X Cloned Pfu Reaction Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eye contact</strong></td>
<td>Causes eye irritation.</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td><strong>Skin contact</strong></td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td><strong>Ingestion</strong></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>Condition</th>
<th>Cloned Pfu DNA Polymerase</th>
<th>10X Cloned Pfu Reaction Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eye contact</strong></td>
<td>Adverse symptoms may include the following: irritation, watering, redness</td>
<td>Adverse symptoms may include the following: pain or irritation, watering, redness</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td><strong>Skin contact</strong></td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td><strong>Ingestion</strong></td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
</tbody>
</table>

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

**Notes to physician**: Cloned Pfu DNA Polymerase

- 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.

**Specific treatments**: Cloned Pfu DNA Polymerase

- No specific treatment.

**Protection of first-aiders**: Cloned Pfu DNA Polymerase

- No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)
Section 5. Firefighting measures

### Extinguishing media

<table>
<thead>
<tr>
<th>Suitable extinguishing media</th>
<th>Cloned Pfu DNA Polymerase</th>
<th>Use an extinguishing agent suitable for the surrounding fire.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10X Cloned Pfu Reaction Buffer</td>
<td>Use an extinguishing agent suitable for the surrounding fire.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unsuitable extinguishing media</th>
<th>Cloned Pfu DNA Polymerase</th>
<th>None known.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10X Cloned Pfu Reaction Buffer</td>
<td>None known.</td>
</tr>
</tbody>
</table>

### Specific hazards arising from the chemical

- **Cloned Pfu DNA Polymerase**
- In a fire or if heated, a pressure increase will occur and the container may burst.
- 10X Cloned Pfu Reaction Buffer
- In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

### Hazardous thermal decomposition products

- **Cloned Pfu DNA Polymerase**
- Decomposition products may include the following materials:
  - carbon dioxide
  - carbon monoxide
- 10X Cloned Pfu Reaction Buffer
- Decomposition products may include the following materials:
  - carbon dioxide
  - carbon monoxide
  - nitrogen oxides
  - sulfur oxides
  - halogenated compounds

### Special protective actions for fire-fighters

- **Cloned Pfu DNA Polymerase**
- 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.
- 10X Cloned Pfu 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

- **Cloned Pfu DNA Polymerase**
- Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- 10X Cloned Pfu 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.

Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

<table>
<thead>
<tr>
<th>For non-emergency personnel</th>
<th>Cloned Pfu DNA Polymerase</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10X Cloned Pfu Reaction Buffer</td>
<td>No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.</td>
</tr>
</tbody>
</table>
Section 6. Accidental release measures

For emergency responders: Cloned Pfu DNA Polymerase through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

10X Cloned Pfu Reaction Buffer If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions: Cloned Pfu DNA Polymerase 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).

10X Cloned Pfu Reaction Buffer Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and material for containment and cleaning up

Methods for cleaning up: Cloned Pfu DNA Polymerase 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.

10X Cloned Pfu Reaction Buffer Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures: Cloned Pfu DNA Polymerase 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.

10X Cloned Pfu Reaction Buffer Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Avoid release to the environment. 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.
Section 7. Handling and storage

Advice on general occupational hygiene

Cloned Pfu DNA Polymerase
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.

10X Cloned Pfu Reaction Buffer
Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Cloned Pfu DNA Polymerase
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.

10X Cloned Pfu 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.

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>Cloned Pfu DNA Polymerase</td>
<td>Safe Work Australia (Australia, 12/2019).  TWA: 10 mg/m³ 8 hours.</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
</tr>
</tbody>
</table>

Biological exposure indices
No exposure indices known.

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
Section 8. Exposure controls and personal protection

Hygiene measures: 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.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance
Physical state: Cloned Pfu DNA Polymerase 10X Cloned Pfu Reaction Buffer Liquid.

Colour: Cloned Pfu DNA Polymerase 10X Cloned Pfu Reaction Buffer Not available.

Odour: Cloned Pfu DNA Polymerase 10X Cloned Pfu Reaction Buffer Not available.

Odour threshold: Cloned Pfu DNA Polymerase 10X Cloned Pfu Reaction Buffer Not available.

pH: Cloned Pfu DNA Polymerase 10X Cloned Pfu Reaction Buffer 8.2

Melting point/freezing point: Cloned Pfu DNA Polymerase 10X Cloned Pfu Reaction Buffer Not available.

Boiling point, initial boiling point, and boiling range: Cloned Pfu DNA Polymerase 10X Cloned Pfu Reaction Buffer Not available.

Flash point: Not available.
### Section 9. Physical and chemical properties and safety characteristics

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Closed cup</th>
<th>Open cup</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>°C</td>
<td>°F</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloned Pfu DNA Polymerase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polyoxyethylene octyl phenyl ether</td>
<td>251</td>
<td>483.8</td>
</tr>
<tr>
<td><strong>Flammability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloned Pfu DNA Polymerase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
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<td></td>
</tr>
<tr>
<td><strong>Lower and upper explosion limit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloned Pfu DNA Polymerase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vapour pressure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ingredient name</strong></td>
<td>Vapour Pressure at 20°C</td>
<td>Vapour pressure at 50°C</td>
</tr>
<tr>
<td></td>
<td>mm Hg</td>
<td>kPa</td>
</tr>
<tr>
<td>Cloned Pfu DNA Polymerase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>water</td>
<td>23.8</td>
<td>3.2</td>
</tr>
<tr>
<td>Glycerol</td>
<td>0.000075</td>
<td>0.00001</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>water</td>
<td>23.8</td>
<td>3.2</td>
</tr>
<tr>
<td>Polyoxyethylene octyl phenyl ether</td>
<td>0.997581</td>
<td>0.13</td>
</tr>
<tr>
<td><strong>Relative vapour density</strong></td>
<td></td>
<td></td>
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<tr>
<td>Cloned Pfu DNA Polymerase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloned Pfu DNA Polymerase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Solubility(ies)</strong></td>
<td>Media</td>
<td>Result</td>
</tr>
<tr>
<td>Cloned Pfu DNA Polymerase</td>
<td></td>
<td>Soluble</td>
</tr>
<tr>
<td>water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td></td>
<td>Soluble</td>
</tr>
<tr>
<td>water</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Partition coefficient: n-octanol/water</strong></td>
<td>Cloned Pfu DNA Polymerase</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td></td>
<td>Not applicable.</td>
</tr>
<tr>
<td>water</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Auto-ignition temperature</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 9. Physical and chemical properties and safety characteristics

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>°C</th>
<th>°F</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloned Pfu DNA Polymerase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>370</td>
<td>698</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Decomposition temperature:
- Cloned Pfu DNA Polymerase: Not available.
- 10X Cloned Pfu Reaction Buffer: Not available.

Viscosity:
- Cloned Pfu DNA Polymerase: Not available.
- 10X Cloned Pfu Reaction Buffer: Not available.

Particle characteristics:
- Median particle size:
  - Cloned Pfu DNA Polymerase: Not applicable.
  - 10X Cloned Pfu Reaction Buffer: Not applicable.

Section 10. Stability and reactivity

Reactivity:
- Cloned Pfu DNA Polymerase: No specific test data related to reactivity available for this product or its ingredients.
- 10X Cloned Pfu Reaction Buffer: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability:
- Cloned Pfu DNA Polymerase: The product is stable.
- 10X Cloned Pfu Reaction Buffer: The product is stable.

Possibility of hazardous reactions:
- Cloned Pfu DNA Polymerase: Under normal conditions of storage and use, hazardous reactions will not occur.
- 10X Cloned Pfu Reaction Buffer: Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid:
- Cloned Pfu DNA Polymerase: No specific data.
- 10X Cloned Pfu Reaction Buffer: No specific data.

Incompatible materials:
- Cloned Pfu DNA Polymerase: May react or be incompatible with oxidising materials.
- 10X Cloned Pfu Reaction Buffer: May react or be incompatible with oxidising materials.

Hazardous decomposition products:
- Cloned Pfu DNA Polymerase: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- 10X Cloned Pfu Reaction Buffer: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity
Section 11. Toxicological information

<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>Cloned Pfu DNA Polymerase</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>12600 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>1800 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>Polyoxyethylene octyl phenyl ether</td>
<td></td>
<td></td>
<td></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>Cloned Pfu DNA Polymerase</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 mg</td>
<td>-</td>
</tr>
<tr>
<td>Glycerol</td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 mg</td>
<td>-</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 uL</td>
<td>-</td>
</tr>
<tr>
<td>Polyoxyethylene octyl phenyl ether</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sensitisation**

Not available.

**Mutagenicity**

Conclusion/Summary : Not available.

**Carcinogenicity**

Conclusion/Summary : Not available.

**Reproductive toxicity**

Conclusion/Summary : Not available.

**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**

Cloned Pfu DNA Polymerase

Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

10X Cloned Pfu Reaction Buffer

Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

**Potential acute health effects**

**Eye contact**

Cloned Pfu DNA Polymerase

Causes eye irritation.

10X Cloned Pfu Reaction Buffer

Causes serious eye irritation.

**Inhalation**

Cloned Pfu DNA Polymerase

No known significant effects or critical hazards.

10X Cloned Pfu Reaction Buffer

No known significant effects or critical hazards.
## Section 11. Toxicological information

### Skin contact
- **Cloned Pfu DNA Polymerase**
- **10X Cloned Pfu Reaction Buffer**
  - No known significant effects or critical hazards.

### Ingestion
- **Cloned Pfu DNA Polymerase**
- **10X Cloned Pfu Reaction Buffer**
  - No known significant effects or critical hazards.

### 10X Cloned Pfu Reaction Buffer
- No known significant effects or critical hazards.

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

### Eye contact
- **Cloned Pfu DNA Polymerase**
- **10X Cloned Pfu Reaction Buffer**
  - Adverse symptoms may include the following:
    - irritation
    - watering
    - redness

### Inhalation
- **Cloned Pfu DNA Polymerase**
- **10X Cloned Pfu Reaction Buffer**
  - No specific data.

### Skin contact
- **Cloned Pfu DNA Polymerase**
- **10X Cloned Pfu Reaction Buffer**
  - No specific data.

### Ingestion
- **Cloned Pfu DNA Polymerase**
- **10X Cloned Pfu Reaction Buffer**
  - No specific data.

## 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
- **Cloned Pfu DNA Polymerase**
- **10X Cloned Pfu Reaction Buffer**
  - No known significant effects or critical hazards.

#### Carcinogenicity
- **Cloned Pfu DNA Polymerase**
- **10X Cloned Pfu Reaction Buffer**
  - No known significant effects or critical hazards.

#### Mutagenicity
- **Cloned Pfu DNA Polymerase**
- **10X Cloned Pfu Reaction Buffer**
  - No known significant effects or critical hazards.

#### Reproductive toxicity
- **Cloned Pfu DNA Polymerase**
- **10X Cloned Pfu Reaction Buffer**
  - No known significant effects or critical hazards.

## Numerical measures of toxicity

### Acute toxicity estimates
### Section 11. Toxicological information

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Oral (mg/kg)</th>
<th>Dermal (mg/kg)</th>
<th>Inhalation (gases) (ppm)</th>
<th>Inhalation (vapours) (mg/l)</th>
<th>Inhalation (dusts and mists) (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloned Pfu DNA Polymerase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>12600</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td>180000.0</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Polyoxyethylene octyl phenyl ether</td>
<td>1800</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### 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>Cloned Pfu DNA Polymerase</td>
<td>Acute LC50 54000 mg/l Fresh water</td>
<td>Fish - Oncorhynchus mykiss</td>
<td>96 hours</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td>Acute LC50 5.85 mg/l Fresh water</td>
<td>Crustaceans - Ceriodaphnia rigaudi - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td>Polyoxyethylene octyl phenyl ether</td>
<td>Acute LC50 11.2 mg/l Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 4500 μg/l Fresh water</td>
<td>Fish - Pimephales promelas</td>
<td>96 hours</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>Cloned Pfu DNA Polymerase</td>
<td>301D Ready Biodegradability - Closed Bottle Test</td>
<td>93 % - 30 days</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 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>Cloned Pfu DNA Polymerase</td>
<td>-1.76</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td>4.86</td>
<td>-</td>
<td>high</td>
</tr>
<tr>
<td>Polyoxyethylene octyl phenyl ether</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Mobility in soil

<table>
<thead>
<tr>
<th>Date of issue/Date of revision</th>
<th>Date of previous issue</th>
<th>Version</th>
</tr>
</thead>
</table>
Section 12. Ecological information

Soil/water partition coefficient ($K_{oc}$) : 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. 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

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 IMO instruments : Not available.

Section 15. Regulatory information

Standard for the Uniform Scheduling of Medicines 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
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 : All components are listed or exempted.
China : All components are listed or exempted.
Eurasian Economic Union : Russian Federation inventory: All components are listed or exempted.

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Date of previous issue : 25/09/2019
Version : 7
Section 15. Regulatory information

Japan
- Japan inventory (CSCL): Not determined.
- Japan inventory (ISHL): Not determined.

New Zealand
- All components are listed or exempted.

Philippines
- All components are listed or exempted.

Republic of Korea
- Not determined.

Taiwan
- Not determined.

Thailand
- Not determined.

Turkey
- Not determined.

United States
- All components are active or exempted.

Viet Nam
- All components are listed or exempted.

Section 16. Any other relevant information

History
- Date of issue/Date of revision: 31/10/2022
- Date of previous issue: 25/09/2019
- Version: 7

Key to abbreviations
- ADG = Australian Dangerous Goods
- ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
- 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
- N/A = Not available
- 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>Cloned Pfu DNA Polymerase</td>
<td>Calculation method</td>
</tr>
<tr>
<td>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2B</td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer</td>
<td>Calculation method</td>
</tr>
<tr>
<td>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A</td>
<td></td>
</tr>
<tr>
<td>LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3</td>
<td>Calculation method</td>
</tr>
</tbody>
</table>

Indicates information that has changed from previously issued version.

Notice to reader

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