Conforms to Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals

SAFETY DATA SHEET

PfuUltra High-Fidelity DNA Polymerase AD, Part Number 600385

Section 1. Identification

Product identifier : PfuUltra High-Fidelity DNA Polymerase AD, Part Number 600385
Part No. (Chemical Kit) : 600385
Part No. : PfuUltra DNA Polymerase AD 600385-51
10X PfuUltra Reaction Buffer AD 600385-52

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

Analytical reagent.

PfuUltra DNA Polymerase AD 0.04 ml (100 U 2.5 U/µl)
10X PfuUltra Reaction Buffer AD 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

Not classified.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage of the mixture consisting of ingredient(s) of unknown toxicity</th>
<th>Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>3.2%</td>
<td>5.2%</td>
</tr>
<tr>
<td>10X PfuUltra Reaction Buffer AD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GHS label elements

Signal word : PfuUltra DNA Polymerase AD, 10X PfuUltra Reaction Buffer AD No signal word.

Hazard statements : PfuUltra DNA Polymerase AD, 10X PfuUltra Reaction Buffer AD No known significant effects or critical hazards.

Precautionary statements

Prevention : PfuUltra DNA Polymerase AD, 10X PfuUltra Reaction Buffer AD Not applicable.

Response : PfuUltra DNA Polymerase AD, 10X PfuUltra Reaction Buffer AD Not applicable.

Storage : PfuUltra DNA Polymerase AD, 10X PfuUltra Reaction Buffer AD Not applicable.

Date of issue/Date of revision : 28/04/2017
Date of previous issue : 29/09/2016
Version : 5
Section 2. Hazard(s) identification

Disposal:
- PfuUltra DNA Polymerase AD: Not applicable.
- 10X PfuUltra Reaction Buffer AD: Not applicable.

Supplemental label elements:
- PfuUltra DNA Polymerase AD: Not applicable.
- 10X PfuUltra Reaction Buffer AD: Not applicable.

Other hazards which do not result in classification:
- PfuUltra DNA Polymerase AD: None known.
- 10X PfuUltra Reaction Buffer AD: None known.

Section 3. Composition and ingredient information

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>CAS number/other identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuUltra DNA Polymerase AD</td>
<td>Mixture</td>
</tr>
<tr>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>Mixture</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:
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD

Skin contact:
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD

Inhalation:
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD

Date of issue/Date of revision: 28/04/2017
Date of previous issue: 29/09/2016
Version: 5
## Section 4. First aid measures

### Ingestion

<table>
<thead>
<tr>
<th>Substance</th>
<th>First Aid Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuUltra DNA Polymerase AD</td>
<td>Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.</td>
</tr>
<tr>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.</td>
</tr>
</tbody>
</table>

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

#### Potential acute health effects

<table>
<thead>
<tr>
<th>Contact</th>
<th>PfuUltra DNA Polymerase AD</th>
<th>10X PfuUltra Reaction Buffer AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Ingestion</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>Contact</th>
<th>PfuUltra DNA Polymerase AD</th>
<th>10X PfuUltra Reaction Buffer AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Ingestion</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

<table>
<thead>
<tr>
<th>Notes to physician</th>
<th>PfuUltra DNA Polymerase AD</th>
<th>10X PfuUltra Reaction Buffer AD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.</td>
<td>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.</td>
</tr>
</tbody>
</table>
Section 4. First aid measures

<table>
<thead>
<tr>
<th>Protection of first-aiders</th>
<th>PfuUltra DNA Polymerase AD</th>
<th>No action shall be taken involving any personal risk or without suitable training.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>No action shall be taken involving any personal risk or without suitable training.</td>
</tr>
</tbody>
</table>

Specific treatments:
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD

No specific treatment.

See toxicological information (Section 11)

Section 5. Firefighting measures

**Extinguishing media**

**Suitable extinguishing media**
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD

Use an extinguishing agent suitable for the surrounding fire.

**Unsuitable extinguishing media**
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD

None known.

**Specific hazards arising from the chemical**
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD

In a fire or if heated, a pressure increase will occur and the container may burst.

**Hazardous thermal decomposition products**
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD

Decomposition products may include the following materials:
- carbon dioxide
- carbon monoxide
- nitrogen oxides
- sulfur oxides
- halogenated compounds

In a fire or if heated, a pressure increase will occur and the container may burst.

**Special protective actions for fire-fighters**
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD

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**
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD

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:
- PfuUltra DNA Polymerase AD
  - 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.

10X PfuUltra Reaction Buffer AD
  - 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:
- PfuUltra DNA Polymerase AD
  - 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".

10X PfuUltra Reaction Buffer AD
  - 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:
- PfuUltra DNA Polymerase AD
  - 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 PfuUltra Reaction Buffer AD
  - 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:
- PfuUltra DNA Polymerase AD
  - 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 PfuUltra Reaction Buffer AD
  - 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:
- PfuUltra DNA Polymerase AD
  - Put on appropriate personal protective equipment (see Section 8).

10X PfuUltra Reaction Buffer AD
  - Put on appropriate personal protective equipment (see Section 8).
Section 7. Handling and storage

Advice on general occupational hygiene:
- 
PfuUltra DNA Polymerase AD: 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 PfuUltra Reaction Buffer AD: 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:
- 
PfuUltra DNA Polymerase AD: 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.
- 
10X PfuUltra Reaction Buffer AD: 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.

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>PfuUltra DNA Polymerase AD</td>
<td>Safe Work Australia (Australia, 1/2014).</td>
</tr>
<tr>
<td>Glycerol</td>
<td>TWA: 10 mg/m³ 8 hours.</td>
</tr>
</tbody>
</table>

Appropriate engineering controls
- If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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

Individual protection measures

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

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

**Appearance**

**Physical state**
PfuUltra DNA Polymerase AD Liquid.
10X PfuUltra Reaction Buffer AD Liquid.

**Colour**
PfuUltra DNA Polymerase AD Not available.
10X PfuUltra Reaction Buffer AD Not available.

**Odour**
PfuUltra DNA Polymerase AD Not available.
10X PfuUltra Reaction Buffer AD Not available.

**Odour threshold**
PfuUltra DNA Polymerase AD Not available.
10X PfuUltra Reaction Buffer AD Not available.

**pH**
PfuUltra DNA Polymerase AD 8.2
10X PfuUltra Reaction Buffer AD 8.8

**Melting point**
PfuUltra DNA Polymerase AD Not available.
10X PfuUltra Reaction Buffer AD Not available.

**Boiling point**
PfuUltra DNA Polymerase AD Not available.
10X PfuUltra Reaction Buffer AD Not available.

**Flash point**
PfuUltra DNA Polymerase AD Not available.
10X PfuUltra Reaction Buffer AD Not available.
### Section 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Puultra DNA Polymerase AD</th>
<th>Not available.</th>
<th>10X Puultra Reaction Buffer AD</th>
<th>Not available.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evaporation rate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lower and upper explosive (flammable) limits</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vapour pressure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vapour density</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Solubility</strong></td>
<td></td>
<td>Soluble in the following materials: cold water and hot water.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Partition coefficient: n-octanol/water</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Auto-ignition temperature</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Section 10. Stability and reactivity

<table>
<thead>
<tr>
<th>Property</th>
<th>Puultra DNA Polymerase AD</th>
<th>No specific test data related to reactivity available for this product or its ingredients.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10X Puultra Reaction Buffer AD</td>
<td>No specific test data related to reactivity available for this product or its ingredients.</td>
</tr>
<tr>
<td><strong>Reactivity</strong></td>
<td></td>
<td>No specific test data related to reactivity available for this product or its ingredients.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>Puultra DNA Polymerase AD</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10X Puultra Reaction Buffer AD</td>
<td>The product is stable.</td>
</tr>
<tr>
<td><strong>Chemical stability</strong></td>
<td></td>
<td>The product is stable.</td>
</tr>
</tbody>
</table>
Section 10. Stability and reactivity

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

Conditions to avoid:
- PfuUltra DNA Polymerase AD
- 10X PfuUltra Reaction Buffer AD
No specific data.

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

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>PfuUltra DNA Polymerase AD</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>PfuUltra DNA Polymerase AD</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Sensitisation
Not available.

Mutagenicity
Not available.

Carcinogenicity
Not available.

Reproductive toxicity
Not available.

Teratogenicity
Not available.

Specific target organ toxicity (single exposure)
Not available.

Specific target organ toxicity (repeated exposure)
Not available.
**Section 11. Toxicological information**

**Aspiration hazard**
Not available.

**Information on likely routes of exposure**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Routes of entry anticipated: Oral, Dermal, Inhalation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuUltra DNA Polymerase AD</td>
<td>Streams of entry anticipated: Oral, Dermal, Inhalation.</td>
</tr>
<tr>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>Streams of entry anticipated: Oral, Dermal, Inhalation.</td>
</tr>
</tbody>
</table>

**Potential acute health effects**

<table>
<thead>
<tr>
<th>Route</th>
<th>Substance</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>PfuUltra DNA Polymerase AD</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>PfuUltra DNA Polymerase AD</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>PfuUltra DNA Polymerase AD</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Route</th>
<th>Substance</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td>PfuUltra DNA Polymerase AD</td>
<td>No specific data.</td>
</tr>
<tr>
<td></td>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>PfuUltra DNA Polymerase AD</td>
<td>No specific data.</td>
</tr>
<tr>
<td></td>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>PfuUltra DNA Polymerase AD</td>
<td>No specific data.</td>
</tr>
<tr>
<td></td>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>PfuUltra DNA Polymerase AD</td>
<td>No specific data.</td>
</tr>
<tr>
<td></td>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>No specific data.</td>
</tr>
</tbody>
</table>

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

**Short term exposure**

<table>
<thead>
<tr>
<th>Immediate effects</th>
<th>PfuUltra DNA Polymerase AD</th>
<th>No specific data.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>No specific data.</td>
</tr>
</tbody>
</table>

**Long term exposure**

<table>
<thead>
<tr>
<th>Immediate effects</th>
<th>PfuUltra DNA Polymerase AD</th>
<th>No specific data.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10X PfuUltra Reaction Buffer AD</td>
<td>No specific data.</td>
</tr>
</tbody>
</table>

**Potential chronic health effects**
Not available.
Section 11. Toxicological information

**General**: PfuUltra DNA Polymerase AD, No known significant effects or critical hazards.
10X PfuUltra Reaction Buffer AD, No known significant effects or critical hazards.

**Carcinogenicity**: PfuUltra DNA Polymerase AD, No known significant effects or critical hazards.
10X PfuUltra Reaction Buffer AD, No known significant effects or critical hazards.

**Mutagenicity**: PfuUltra DNA Polymerase AD, No known significant effects or critical hazards.
10X PfuUltra Reaction Buffer AD, No known significant effects or critical hazards.

**Teratogenicity**: PfuUltra DNA Polymerase AD, No known significant effects or critical hazards.
10X PfuUltra Reaction Buffer AD, No known significant effects or critical hazards.

**Developmental effects**: PfuUltra DNA Polymerase AD, No known significant effects or critical hazards.
10X PfuUltra Reaction Buffer AD, No known significant effects or critical hazards.

**Fertility effects**: PfuUltra DNA Polymerase AD, No known significant effects or critical hazards.
10X PfuUltra Reaction Buffer AD, No known significant effects or critical hazards.

**Numerical measures of toxicity**

**Acute toxicity estimates**

<table>
<thead>
<tr>
<th>Route</th>
<th>ATE value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>25000 mg/kg</td>
</tr>
<tr>
<td>Dermal</td>
<td>55000 mg/kg</td>
</tr>
<tr>
<td>Inhalation (vapours)</td>
<td>550 mg/l</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>PfuUltra DNA Polymerase AD</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>
</tbody>
</table>

**Persistence and degradability**

Not available.

**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>PfuUltra DNA Polymerase AD</td>
<td>-1.76</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Mobility in soil**

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

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Section 12. Ecological information

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

Regulatory 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

Australia inventory (AICS): Not determined.

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.

International lists
National inventory
Canada: Not determined.
China: Not determined.

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Europe: Not determined.

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

Malaysia: Not determined.

New Zealand: Not determined.

Philippines: Not determined.

Republic of Korea: Not determined.

Taiwan: All components are listed or exempted.

Turkey: Not determined.

United States: Not determined.

Section 16. Any other relevant information

History
Date of issue/Date of revision: 28/04/2017
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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
- 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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