SAFETY DATA SHEET
PfuTurbo DNA Polymerase AD, Part Number 600255

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

1.1 Product identifier
Product name: PfuTurbo DNA Polymerase AD, Part Number 600255
Part No. (Kit): 600255
Part No.: 600255-52
10X Cloned Pfu Reaction Buffer AD
100157-82

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

<table>
<thead>
<tr>
<th>Identified uses</th>
<th>Part No. (Kit)</th>
<th>Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical reagent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PfuTurbo DNA Polymerase AD</td>
<td></td>
<td>0.04 ml (100 U)</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td></td>
<td>1 ml</td>
</tr>
</tbody>
</table>

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

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Product definition: PfuTurbo DNA Polymerase AD Mixture
10X Cloned Pfu Reaction Buffer AD Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]
Not classified.

Ingredients of unknown toxicity: 10X Cloned Pfu Reaction Buffer AD Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 3.2%

Ingredients of unknown ecotoxicity: 10X Cloned Pfu Reaction Buffer AD Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 5.2%

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: 28/04/2017
SECTION 2: Hazards identification

Signal word
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
No signal word.

Hazard statements
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
No known significant effects or critical hazards.

Precautionary statements

Prevention
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
Not applicable.

Response
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
Not applicable.

Storage
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
Not applicable.

Disposal
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
Not applicable.

Hazardous ingredients
: 10X Cloned Pfu Reaction Buffer AD
Not applicable.

Supplemental label elements
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
Safety data sheet available on request.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
Not applicable.

Special packaging requirements

Tactile warning of danger
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
Not applicable.

2.3 Other hazards

Other hazards which do not result in classification
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
None known.

SECTION 3: Composition/information on ingredients

3.1 Substances
: PfuTurbo DNA Polymerase AD 10X Cloned Pfu Reaction Buffer AD
Mixture

Date of issue/Date of revision
: 28/04/2017
SECTION 3: Composition/information on ingredients

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Identifiers</th>
<th>%</th>
<th>Regulation (EC) No. 1272/2008 [CLP]</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuTurbo DNA Polymerase AD</td>
<td>EC: 200-289-5</td>
<td>≥50 - ≤75</td>
<td>Not classified.</td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>CAS: 56-81-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>EC: 214-684-5</td>
<td>≤5</td>
<td>Skin Irrit. 2, H315</td>
<td>[1]</td>
</tr>
<tr>
<td>2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride</td>
<td>CAS: 1185-53-1</td>
<td></td>
<td>Eye Irrit. 2, H319</td>
<td>[1]</td>
</tr>
<tr>
<td>Dodecyldimethyl(3-sulphonatopropyl)ammonium</td>
<td>EC: 239-002-3</td>
<td>≤3</td>
<td>Acute Tox. 4, H302</td>
<td>[1]</td>
</tr>
<tr>
<td></td>
<td>CAS: 14933-08-5</td>
<td></td>
<td>STOT SE 3, H335</td>
<td>[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 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
[5] Substance of equivalent concern

SECTION 4: First aid measures

4.1 Description of first aid measures

**Eye contact**: PfuTurbo DNA Polymerase AD

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 Cloned Pfu Reaction Buffer AD**: PfuTurbo DNA Polymerase AD

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

**Inhalation**: PfuTurbo DNA Polymerase AD

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

**10X Cloned Pfu Reaction Buffer AD**: PfuTurbo DNA Polymerase AD

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. 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**: PfuTurbo DNA Polymerase AD

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

**10X Cloned Pfu Reaction Buffer AD**: PfuTurbo DNA Polymerase AD

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
**SECTION 4: First aid measures**

### Ingestion

<table>
<thead>
<tr>
<th>Substance</th>
<th>First aid procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuTurbo DNA</td>
<td>Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.</td>
</tr>
<tr>
<td>10X Cloned Pfu 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. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.</td>
</tr>
</tbody>
</table>

### Protection of first-aiders

<table>
<thead>
<tr>
<th>Substance</th>
<th>First aid procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuTurbo DNA</td>
<td>No action shall be taken involving any personal risk or without suitable training.</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>No action shall be taken involving any personal risk or without suitable training.</td>
</tr>
</tbody>
</table>

### 4.2 Most important symptoms and effects, both acute and delayed

#### Potential acute health effects

<table>
<thead>
<tr>
<th>Contact Type</th>
<th>Substance</th>
<th>Symptoms/Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin contact</td>
<td>PfuTurbo DNA</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>PfuTurbo DNA</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>PfuTurbo DNA</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td></td>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

#### Over-exposure signs/symptoms

<table>
<thead>
<tr>
<th>Contact Type</th>
<th>Substance</th>
<th>Symptoms/Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin contact</td>
<td>PfuTurbo DNA</td>
<td>No specific data.</td>
</tr>
<tr>
<td></td>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>PfuTurbo DNA</td>
<td>No specific data.</td>
</tr>
<tr>
<td></td>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>PfuTurbo DNA</td>
<td>No specific data.</td>
</tr>
<tr>
<td></td>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>No specific data.</td>
</tr>
</tbody>
</table>

### 4.3 Indication of any immediate medical attention and special treatment needed

#### Notes to physician

<table>
<thead>
<tr>
<th>Substance</th>
<th>Treatment recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuTurbo DNA</td>
<td>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.</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Date of issue/Date of revision**: 28/04/2017
SECTION 4: First aid measures

Specific treatments

<table>
<thead>
<tr>
<th>Product</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuTurbo DNA Polymerase AD</td>
<td>No specific treatment.</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>No specific treatment.</td>
</tr>
</tbody>
</table>

SECTION 5: Firefighting measures

5.1 Extinguishing media

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

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

5.2 Special hazards arising from the substance or mixture

<table>
<thead>
<tr>
<th>Product</th>
<th>Hazards from the substance or mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuTurbo DNA Polymerase AD</td>
<td>In a fire or if heated, a pressure increase will occur and the container may burst.</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>In a fire or if heated, a pressure increase will occur and the container may burst.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product</th>
<th>Hazardous combustion products</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuTurbo DNA Polymerase AD</td>
<td>Decomposition products may include the following materials: carbon dioxide, carbon monoxide.</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>Decomposition products may include the following materials: carbon dioxide, carbon monoxide, nitrogen oxides, sulfur oxides, halogenated compounds.</td>
</tr>
</tbody>
</table>

5.3 Advice for firefighters

<table>
<thead>
<tr>
<th>Product</th>
<th>Special precautions for fire-fighters</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuTurbo DNA Polymerase AD</td>
<td>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.</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product</th>
<th>Special protective equipment for fire-fighters</th>
</tr>
</thead>
<tbody>
<tr>
<td>PfuTurbo DNA Polymerase AD</td>
<td>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.</td>
</tr>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>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.</td>
</tr>
</tbody>
</table>
SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

PfuTurbo 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 Cloned Pfu 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

PfuTurbo 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 Cloned Pfu 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".

6.2 Environmental precautions

PfuTurbo 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 Cloned Pfu 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).

6.3 Methods and material for containment and cleaning up

Methods for cleaning up

PfuTurbo 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 Cloned Pfu 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.

6.4 Reference to other sections

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.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures

PfuTurbo DNA Polymerase AD
Put on appropriate personal protective equipment (see Section 8).

10X Cloned Pfu Reaction Buffer AD
Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene

PfuTurbo 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 Cloned Pfu 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,
SECTION 7: Handling and storage

7.2 Conditions for safe storage, including any incompatibilities

<table>
<thead>
<tr>
<th>Storage</th>
<th>PfuTurbo DNA Polymerase AD</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<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.</td>
</tr>
</tbody>
</table>

7.3 Specific end use(s)

**Recommendations**

| PfuTurbo DNA Polymerase AD | Industrial applications, Professional applications. |
| 10X Cloned Pfu Reaction Buffer AD | Industrial applications, Professional applications. |

**Industrial sector specific solutions**

| PfuTurbo DNA Polymerase AD | Not applicable. |
| 10X Cloned Pfu Reaction Buffer AD | 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>PfuTurbo DNA Polymerase AD</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.
SECTION 8: Exposure controls/personal protection

8.2 Exposure controls

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

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.

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

Skin protection

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

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

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

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

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

Appearance

Physical state: PfuTurbo DNA Polymerase AD
10X Cloned Pfu Reaction Buffer AD

PfuTurbo DNA Polymerase AD
10X Cloned Pfu Reaction Buffer AD

Not available.

Colour: PfuTurbo DNA Polymerase AD
10X Cloned Pfu Reaction Buffer AD

PfuTurbo DNA Polymerase AD
10X Cloned Pfu Reaction Buffer AD

Not available.

Odour: PfuTurbo DNA Polymerase AD
10X Cloned Pfu Reaction Buffer AD

PfuTurbo DNA Polymerase AD
10X Cloned Pfu Reaction Buffer AD

Not available.

Odour threshold: PfuTurbo DNA Polymerase AD
10X Cloned Pfu Reaction Buffer AD

PfuTurbo DNA Polymerase AD
10X Cloned Pfu Reaction Buffer AD

Not available.

pH: PfuTurbo DNA Polymerase AD
10X Cloned Pfu Reaction Buffer AD

PfuTurbo DNA Polymerase AD
8.2
10X Cloned Pfu Reaction Buffer AD
8.8

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## SECTION 9: Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>PfuTurbo DNA Polymerase AD</th>
<th>10X Cloned Pfu Reaction Buffer AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/freezing point</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<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>
</tbody>
</table>

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SECTION 9: Physical and chemical properties

Oxidising properties:
- PfuTurbo DNA Polymerase AD: Not available.
- 10X Cloned Pfu Reaction Buffer AD: Not available.

9.2 Other information
No additional information.

SECTION 10: Stability and reactivity

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

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

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

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

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

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

Acute toxicity estimates

<table>
<thead>
<tr>
<th>Route</th>
<th>ATE value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td></td>
</tr>
<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>

Irritation/Corrosion

Conclusion/Summary: Not available.

Sensitiser

Conclusion/Summary: Not available.

Reproductive toxicity

Conclusion/Summary: Not available.

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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 Cloned Pfu Reaction Buffer AD</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>Category 3</td>
<td>Not applicable.</td>
<td>Respiratory tract irritation</td>
</tr>
<tr>
<td>Dodecyldimethyl(3-sulphonatopropyl)ammonium</td>
<td>Category 3</td>
<td>Not applicable.</td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure

PfuTurbo DNA Polymerase AD

Routes of entry anticipated: Oral, Dermal, Inhalation.

10X Cloned Pfu Reaction Buffer AD

Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Inhalation

PfuTurbo DNA Polymerase AD

No known significant effects or critical hazards.

10X Cloned Pfu Reaction Buffer AD

No known significant effects or critical hazards.

Ingestion

PfuTurbo DNA Polymerase AD

No known significant effects or critical hazards.

10X Cloned Pfu Reaction Buffer AD

No known significant effects or critical hazards.

Skin contact

PfuTurbo DNA Polymerase AD

No known significant effects or critical hazards.

10X Cloned Pfu Reaction Buffer AD

No known significant effects or critical hazards.

Eye contact

PfuTurbo DNA Polymerase AD

No known significant effects or critical hazards.

10X Cloned Pfu Reaction Buffer AD

No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation

PfuTurbo DNA Polymerase AD

No specific data.

10X Cloned Pfu Reaction Buffer AD

No specific data.

Ingestion

PfuTurbo DNA Polymerase AD

No specific data.

10X Cloned Pfu Reaction Buffer AD

No specific data.

Skin contact

PfuTurbo DNA Polymerase AD

No specific data.

10X Cloned Pfu Reaction Buffer AD

No specific data.

Eye contact

PfuTurbo DNA Polymerase AD

No specific data.

10X Cloned Pfu Reaction Buffer AD

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.

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Potential delayed effects: Not available.

Long term exposure: Not available.

Potential immediate effects: Not available.

Potential delayed effects: Not available.

Potential chronic health effects:

General: PfuTurbo DNA Polymerase AD No known significant effects or critical hazards.
10X Cloned Pfu Reaction Buffer AD No known significant effects or critical hazards.

Carcinogenicity: PfuTurbo DNA Polymerase AD No known significant effects or critical hazards.
10X Cloned Pfu Reaction Buffer AD No known significant effects or critical hazards.

Mutagenicity: PfuTurbo DNA Polymerase AD No known significant effects or critical hazards.
10X Cloned Pfu Reaction Buffer AD No known significant effects or critical hazards.

Teratogenicity: PfuTurbo DNA Polymerase AD No known significant effects or critical hazards.
10X Cloned Pfu Reaction Buffer AD No known significant effects or critical hazards.

Developmental effects: PfuTurbo DNA Polymerase AD No known significant effects or critical hazards.
10X Cloned Pfu Reaction Buffer AD No known significant effects or critical hazards.

Fertility effects: PfuTurbo DNA Polymerase AD No known significant effects or critical hazards.
10X Cloned Pfu Reaction Buffer AD No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity
Conclusion/Summary: Not available.

12.2 Persistence and degradability
Not available.

12.3 Bioaccumulative potential

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP&lt;sub&gt;ow&lt;/sub&gt;</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>2.24</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>Dodecyldimethyl (3-sulphonatopropyl) ammonium</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12.4 Mobility in soil

| Soil/water partition coefficient (K<sub>OC</sub>) | Not available. |
| Mobility                                         | Not available. |

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

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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** : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 2008/98/EC.

**Packaging**

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

**Special precautions** : This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

**Regulatory 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**
  - **PfuTurbo DNA Polymerase AD** : Not applicable.
  - **10X Cloned Pfu Reaction Buffer AD** : Not applicable.

**Other EU regulations**

- **Europe inventory** : Not determined.
- **Ozone depleting substances (1005/2009/EU)**
  - Not listed.
- **Prior Informed Consent (PIC) (649/2012/EU)**

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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.

International lists

National inventory

Australia : Not determined.
Canada : Not determined.
China : 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.

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>Not classified.</td>
<td></td>
</tr>
</tbody>
</table>

Full text of abbreviated H statements

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SECTION 16: Other information

10X Cloned Pfu Reaction Buffer AD

- H302: Harmful if swallowed.
- H312: Harmful in contact with skin.
- H315: Causes skin irritation.
- H319: Causes serious eye irritation.
- H332: Harmful if inhaled.
- H335: May cause respiratory irritation.

Full text of classifications [CLP/GHS]

<table>
<thead>
<tr>
<th>Compound</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>10X Cloned Pfu Reaction Buffer AD</td>
<td>ACUTE TOXICITY (oral) - Category 4</td>
</tr>
<tr>
<td>Acute Tox. 4, H302</td>
<td>ACUTE TOXICITY (dermal) - Category 4</td>
</tr>
<tr>
<td>Acute Tox. 4, H312</td>
<td>ACUTE TOXICITY (inhalation) - Category 4</td>
</tr>
<tr>
<td>Acute Tox. 4, H332</td>
<td>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2</td>
</tr>
<tr>
<td>Eye Irrit. 2, H319</td>
<td>SKIN CORROSION/IRRITATION - Category 2</td>
</tr>
<tr>
<td>Skin Irrit. 2, H315</td>
<td>SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation)</td>
</tr>
<tr>
<td>STOT SE 3, H335</td>
<td>Category 3</td>
</tr>
</tbody>
</table>

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