

# SAFETY DATA SHEET



PfuTurbo Hotstart DNA Polymerase, Part Number 600324

## Section 1. Identification

### 1.1 Product identifier

**Product name** : PfuTurbo Hotstart DNA Polymerase, Part Number 600324  
**Part No. (Chemical Kit)** : 600324  
**Part No.** : PfuTurbo Hotstart DNA polymerase 600324-51  
 10X Cloned Pfu Reaction Buffer 600153-82  
**Validation date** : 5/31/2017

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

**Material uses** : Analytical reagent.  
 PfuTurbo Hotstart DNA polymerase 0.4 ml (1000 U 2.5 U/μl)  
 10X Cloned Pfu Reaction Buffer 4 x 1 ml

### 1.3 Details of the supplier of the safety data sheet

**Supplier/Manufacturer** : Agilent Technologies, Inc.  
 5301 Stevens Creek Blvd  
 Santa Clara, CA 95051, USA  
 800-227-9770

### 1.4 Emergency telephone number

**In case of emergency** : CHEMTREC®: 1-800-424-9300

## Section 2. Hazards identification

### 2.1 Classification of the substance or mixture

**OSHA/HCS status** : PfuTurbo Hotstart DNA polymerase This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
 10X Cloned Pfu Reaction Buffer This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
 Buffer

### Classification of the substance or mixture

**PfuTurbo Hotstart DNA polymerase**  
 H320 EYE IRRITATION - Category 2B

**10X Cloned Pfu Reaction Buffer**  
 H319 EYE IRRITATION - Category 2A


**Ingredients of unknown toxicity** : PfuTurbo Hotstart DNA polymerase Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 30 - 60%  
 10X Cloned Pfu Reaction Buffer Percentage of the mixture consisting of ingredient (s) of unknown dermal toxicity: 1 - 10%  
 Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 1 - 10%  
 Percentage of the mixture consisting of ingredient (s) of unknown oral toxicity: 1 - 10%

### 2.2 GHS label elements


## Section 2. Hazards identification

**Hazard pictograms** :  10X Cloned Pfu Reaction Buffer 



**Signal word** :  PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

Warning


**Hazard statements** :  PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

Warning

H320 - Causes eye irritation.

H319 - Causes serious eye irritation.


### Precautionary statements

**Prevention** :  PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

P264 - Wash hands thoroughly after handling.

P280 - Wear eye or face protection.

P264 - Wash hands thoroughly after handling.

**Response** :  PfuTurbo Hotstart 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 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 attention.

**Storage** :  PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer


Not applicable.

Not applicable.

**Disposal** :  PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

Not applicable.


Not applicable.

**Supplemental label elements** :  PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

None known.

None known.


### 2.3 Other hazards


**Hazards not otherwise classified** :  PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

None known.

None known.

## Section 3. Composition/information on ingredients

**Substance/mixture** :  PfuTurbo Hotstart DNA polymerase Mixture  
10X Cloned Pfu Reaction Buffer Mixture

Ingredient name	%	CAS number
 PfuTurbo Hotstart DNA polymerase		
Glycerol	≥50 - ≤75	56-81-5
<b>10X Cloned Pfu Reaction Buffer</b>		
2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	≤5	1185-53-1
Ammonium sulphate	≤3	7783-20-2
Polyoxyethylene octyl phenyl ether	≤2.3	9002-93-1

## Section 3. Composition/information on ingredients

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

**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

### 4.1 Description of necessary first aid measures

<b>Eye contact</b>	: PfuTurbo Hotstart 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 to rinse for at least 10 minutes. Get medical attention.
<b>Inhalation</b>	: PfuTurbo Hotstart 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.
<b>Skin contact</b>	: PfuTurbo Hotstart 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.

## Section 4. First aid measures

<b>Ingestion</b>	: PfuTurbo Hotstart DNA polymerase	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	10X Cloned Pfu Reaction Buffer	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

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

#### Potential acute health effects

<b>Eye contact</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	Causes eye irritation. Causes serious eye irritation.
<b>Inhalation</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Skin contact</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Ingestion</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	No known significant effects or critical hazards. No known significant effects or critical hazards.

#### Over-exposure signs/symptoms

<b>Eye contact</b>	: PfuTurbo Hotstart DNA polymerase	Adverse symptoms may include the following: irritation watering redness
	10X Cloned Pfu Reaction Buffer	Adverse symptoms may include the following: pain or irritation watering redness

## Section 4. First aid measures

<b>Inhalation</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	No specific data.
<b>Skin contact</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	No specific data.
<b>Ingestion</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	No specific data.

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

<b>Notes to physician</b>	: PfuTurbo Hotstart DNA polymerase  10X Cloned Pfu Reaction Buffer	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.
<b>Specific treatments</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	No specific treatment.  No specific treatment.
<b>Protection of first-aiders</b>	: PfuTurbo Hotstart DNA polymerase  10X Cloned Pfu Reaction Buffer	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.  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. Fire-fighting measures

### 5.1 Extinguishing media

<b>Suitable extinguishing media</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	None known. None known.

### 5.2 Special hazards arising from the substance or mixture

<b>Specific hazards arising from the chemical</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst.
<b>Hazardous thermal decomposition products</b>	: PfuTurbo Hotstart DNA polymerase  10X Cloned Pfu Reaction Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide Decomposition products may include the following materials: carbon dioxide

## Section 5. Fire-fighting measures

carbon monoxide  
nitrogen oxides  
sulfur oxides  
halogenated compounds

### 5.3 Advice for firefighters

#### Special protective actions for fire-fighters

: PfuTurbo Hotstart DNA polymerase  
  
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.

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

: PfuTurbo Hotstart DNA polymerase  
  
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.

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

### 6.1 Personal precautions, protective equipment and emergency procedures

#### For non-emergency personnel

: PfuTurbo Hotstart DNA polymerase  
  
10X Cloned Pfu Reaction Buffer

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

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 spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

#### For emergency responders

: PfuTurbo Hotstart DNA polymerase  
  
10X Cloned Pfu Reaction Buffer

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

## Section 6. Accidental release measures

<b>6.2 Environmental precautions</b>	: PfuTurbo Hotstart DNA polymerase	Avoid dispersal of spilled 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 spilled 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 materials for containment and cleaning up

<b>Methods for cleaning up</b>	: PfuTurbo Hotstart 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

### 7.1 Precautions for safe handling

<b>Protective measures</b>	: PfuTurbo Hotstart DNA polymerase	Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor 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 vapor 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.
<b>Advice on general occupational hygiene</b>	: PfuTurbo Hotstart 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.

## Section 7. Handling and storage

### 7.2 Conditions for safe storage, including any incompatibilities

: PfuTurbo Hotstart 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 unlabeled 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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

### 7.3 Specific end use(s)

#### Recommendations

: PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

Industrial applications, Professional applications.

Industrial applications, Professional applications.

#### Industrial sector specific solutions

: PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

Not applicable.

Not applicable.

## Section 8. Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
PfuTurbo Hotstart DNA polymerase Glycerol	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>OSHA PEL (United States, 6/2016).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> 8 hours. Form: Total dust
<b>10X Cloned Pfu Reaction Buffer</b> 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride Ammonium sulphate Polyoxyethylene octyl phenyl ether	None. None. None.

### 8.2 Exposure controls

#### Appropriate engineering controls

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



## Section 8. Exposure controls/personal protection

**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.

**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

### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state</b>	: PfuTurbo Hotstart DNA polymerase	Liquid.
	10X Cloned Pfu Reaction Buffer	Liquid.
<b>Color</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Odor</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Odor threshold</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>pH</b>	: PfuTurbo Hotstart DNA polymerase	8.2
	10X Cloned Pfu Reaction Buffer	8.8

## Section 9. Physical and chemical properties

<b>Melting point</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Boiling point</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Flash point</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Evaporation rate</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Flammability (solid, gas)</b>	: PfuTurbo Hotstart DNA polymerase	Not applicable.
	10X Cloned Pfu Reaction Buffer	Not applicable.
<b>Lower and upper explosive (flammable) limits</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Vapor pressure</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Vapor density</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Relative density</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Solubility</b>	: PfuTurbo Hotstart DNA polymerase	Soluble in the following materials: cold water and hot water.
	10X Cloned Pfu Reaction Buffer	Easily soluble in the following materials: cold water and hot water.
<b>Partition coefficient: n-octanol/water</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Auto-ignition temperature</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Decomposition temperature</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.
<b>Viscosity</b>	: PfuTurbo Hotstart DNA polymerase	Not available.
	10X Cloned Pfu Reaction Buffer	Not available.

## Section 10. Stability and reactivity

<b>10.1 Reactivity</b>	: PfuTurbo Hotstart 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.
<b>10.2 Chemical stability</b>	: PfuTurbo Hotstart DNA polymerase	The product is stable.
	10X Cloned Pfu Reaction Buffer	The product is stable.

## Section 10. Stability and reactivity

<b>10.3 Possibility of hazardous reactions</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
<b>10.4 Conditions to avoid</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	No specific data. No specific data.
<b>10.5 Incompatible materials</b>	: PfuTurbo Hotstart DNA polymerase 10X Cloned Pfu Reaction Buffer	May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials.
<b>10.6 Hazardous decomposition products</b>	: PfuTurbo Hotstart DNA polymerase  10X Cloned Pfu Reaction Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced. 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

Product/ingredient name	Result	Species	Dose	Exposure
PfuTurbo Hotstart DNA polymerase Glycerol	LD50 Oral	Rat	12600 mg/kg	-
10X Cloned Pfu Reaction Buffer Ammonium sulphate	LD50 Oral	Rat	2840 mg/kg	-
Polyoxyethylene octyl phenyl ether	LD50 Oral	Rat	1800 mg/kg	-

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
PfuTurbo Hotstart DNA polymerase Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-		24 hours 500 milligrams
10X Cloned Pfu Reaction Buffer Polyoxyethylene octyl phenyl ether	Eyes - Moderate irritant	Rabbit	-	24 hours 10 microliters	-
	Skin - Mild irritant	Rabbit	-		24 hours 500 microliters

#### Sensitization

Not available.

#### Mutagenicity

## Section 11. Toxicological information

Not available.

### Carcinogenicity

Not available.

### Reproductive toxicity

Not available.

### Teratogenicity

Not available.

### Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
<b>10X Cloned Pfu Reaction Buffer</b> 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	Category 3	Not applicable.	Respiratory tract irritation

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

### Information on the likely routes of exposure

: PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

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

### Potential acute health effects

#### Eye contact

: PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

Causes eye irritation.

#### Inhalation

: PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

Causes serious eye irritation.

No known significant effects or critical hazards.

#### Skin contact

: PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

No known significant effects or critical hazards.

No known significant effects or critical hazards.

#### Ingestion

: PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

No known significant effects or critical hazards.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

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

#### Eye contact

: PfuTurbo Hotstart DNA polymerase

Adverse symptoms may include the following:

irritation  
watering  
redness

10X Cloned Pfu Reaction Buffer

Adverse symptoms may include the following:

pain or irritation  
watering  
redness

#### Inhalation

: PfuTurbo Hotstart DNA polymerase  
10X Cloned Pfu Reaction Buffer

No specific data.

No specific data.

## Section 11. Toxicological information

<b>Skin contact</b>	: PfuTurbo Hotstart DNA polymerase	No specific data.
	10X Cloned Pfu Reaction Buffer	No specific data.
<b>Ingestion</b>	: PfuTurbo Hotstart DNA polymerase	No specific data.
	10X Cloned Pfu Reaction Buffer	No specific data.

### Delayed and immediate effects and also 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

<b>General</b>	: PfuTurbo Hotstart DNA polymerase	No known significant effects or critical hazards.
	10X Cloned Pfu Reaction Buffer	No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: PfuTurbo Hotstart DNA polymerase	No known significant effects or critical hazards.
	10X Cloned Pfu Reaction Buffer	No known significant effects or critical hazards.
<b>Mutagenicity</b>	: PfuTurbo Hotstart DNA polymerase	No known significant effects or critical hazards.
	10X Cloned Pfu Reaction Buffer	No known significant effects or critical hazards.
<b>Teratogenicity</b>	: PfuTurbo Hotstart DNA polymerase	No known significant effects or critical hazards.
	10X Cloned Pfu Reaction Buffer	No known significant effects or critical hazards.
<b>Developmental effects</b>	: PfuTurbo Hotstart DNA polymerase	No known significant effects or critical hazards.
	10X Cloned Pfu Reaction Buffer	No known significant effects or critical hazards.
<b>Fertility effects</b>	: PfuTurbo Hotstart DNA polymerase	No known significant effects or critical hazards.
	10X Cloned Pfu Reaction Buffer	No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

Route	ATE value
PfuTurbo Hotstart DNA 10X Cloned Pfu Reaction Buffer Oral	98687.3 mg/kg

## Section 12. Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<b>PfuTurbo Hotstart DNA polymerase</b> Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
<b>10X Cloned Pfu Reaction Buffer</b> Ammonium sulphate	Acute LC50 2.6 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Young	48 hours
	Acute LC50 14000 to 15000 µg/l Fresh water	Daphnia - Daphnia magna - Young	48 hours
	Acute LC50 68 µg/l Fresh water	Fish - Oncorhynchus gorbuscha - Alevin	96 hours
	Chronic NOEC 7.5 mg/l Marine water	Algae - Phaeodactylum tricornutum - Exponential growth phase	96 hours
	Chronic NOEC 143 µg/l Marine water	Fish - Salmo salar - Post-smolt	5 weeks
Polyoxyethylene octyl phenyl ether	Acute LC50 5.85 mg/l Fresh water	Crustaceans - Ceriodaphnia rigaudi - Neonate	48 hours
	Acute LC50 11.2 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 4500 µg/l Fresh water	Fish - Pimephales promelas	96 hours

### 12.2 Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
<b>10X Cloned Pfu Reaction Buffer</b> Ammonium sulphate	-	-	Readily
Polyoxyethylene octyl phenyl ether	-	-	Readily

### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>PfuTurbo Hotstart DNA polymerase</b> Glycerol	-1.76	-	low
<b>10X Cloned Pfu Reaction Buffer</b> Ammonium sulphate	-5.1	-	low
Polyoxyethylene octyl phenyl ether	4.86	-	high

### 12.4 Mobility in soil

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

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

## Section 13. Disposal considerations

### 13.1 Waste treatment methods

**Disposal methods** : The generation of waste should be avoided or minimized 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 spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

## Section 14. Transport information

**DOT / TDG / Mexico / IMDG / IATA** : Not regulated.

**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

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

**U.S. Federal regulations** : **TSCA 8(a) PAIR:** Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-; Polyoxyethylene octyl phenyl ether  
**TSCA 8(a) CDR Exempt/Partial exemption:** Not determined  
**Clean Water Act (CWA) 311:** Edetic acid

**Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Not listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

## Section 15. Regulatory information

**DEA List II Chemicals (Essential Chemicals)** : Not listed

### SARA 302/304

#### Composition/information on ingredients

No products were found.

**SARA 304 RQ** : Not applicable.

### SARA 311/312

**Classification** : PfuTurbo Hotstart DNA polymerase Immediate (acute) health hazard  
10X Cloned Pfu Reaction Buffer Immediate (acute) health hazard

#### Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
PfuTurbo Hotstart DNA polymerase						
Glycerol	≥50 - ≤75	No.	No.	No.	Yes.	No.
<b>10X Cloned Pfu Reaction Buffer</b>						
2-Amino-2-(hydroxymethyl)propane-1, 3-diol hydrochloride	≤5	No.	No.	No.	Yes.	No.
Ammonium sulphate	≤3	No.	No.	No.	Yes.	No.
Polyoxyethylene octyl phenyl ether	≤2.3	No.	No.	No.	Yes.	No.

### SARA 313

	Product name	CAS number	%
<b>Form R - Reporting requirements</b>	10X Cloned Pfu Reaction Buffer Ammonium sulphate	7783-20-2	≤3
<b>Supplier notification</b>	10X Cloned Pfu Reaction Buffer Ammonium sulphate	7783-20-2	≤3

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

### State regulations

**Massachusetts** : The following components are listed: GLYCERINE MIST  
**New York** : None of the components are listed.  
**New Jersey** : The following components are listed: GLYCERIN; 1,2,3-PROPANETRIOL  
**Pennsylvania** : The following components are listed: 1,2,3-PROPANETRIOL

### California Prop. 65

Not available.

### 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)



## Section 15. Regulatory information

Not listed.

### [UNECE Aarhus Protocol on POPs and Heavy Metals](#)

Not listed.

### [Inventory list](#)

<a href="#">Australia</a>	: All components are listed or exempted.
<a href="#">Canada</a>	: All components are listed or exempted.
<a href="#">China</a>	: Not determined.
<a href="#">Europe</a>	: <input checked="" type="checkbox"/> All components are listed or exempted.
<a href="#">Japan</a>	: <input checked="" type="checkbox"/> <b>Japan inventory (ENCS)</b> : Not determined. <b>Japan inventory (ISHL)</b> : Not determined.
<a href="#">Malaysia</a>	: Not determined.
<a href="#">New Zealand</a>	: All components are listed or exempted.
<a href="#">Philippines</a>	: Not determined.
<a href="#">Republic of Korea</a>	: Not determined.
<a href="#">Taiwan</a>	: <input checked="" type="checkbox"/> All components are listed or exempted.
<a href="#">Thailand</a>	: <input checked="" type="checkbox"/> Not determined.
<a href="#">Turkey</a>	: <input checked="" type="checkbox"/> Not determined.
<a href="#">United States</a>	: Not determined.
<a href="#">Viet Nam</a>	: <input checked="" type="checkbox"/> Not determined.

## Section 16. Other information

### [History](#)

<a href="#">Date of issue</a>	: 05/31/2017
<a href="#">Date of previous issue</a>	: 01/30/2015.
<a href="#">Version</a>	: 4

Indicates information that has changed from previously issued version.

### [Notice to reader](#)

**Disclaimer:** The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.