

SAFETY DATA SHEET



PfuUltra High-Fidelity DNA Polymerase AD, Part Number 600385

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

1.1 Product identifier

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

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

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

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 : PfuUltra DNA Polymerase AD Mixture
10X PfuUltra Reaction Buffer AD Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Not classified.

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

2.2 Label elements

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

SECTION 2: Hazards identification

Signal word	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No signal word. No signal word.
Hazard statements	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. No known significant effects or critical hazards.
<u>Precautionary statements</u>		
Prevention	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not applicable. Not applicable.
Response	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not applicable. Not applicable.
Storage	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not applicable. Not applicable.
Disposal	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not applicable. Not applicable.
Hazardous ingredients	: 10X PfuUltra Reaction Buffer AD	Not applicable.
Supplemental label elements	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not applicable. 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	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not applicable. Not applicable.
<u>Special packaging requirements</u>		
Tactile warning of danger	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not applicable. Not applicable.
2.3 Other hazards		
Other hazards which do not result in classification	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	None known. None known.

SECTION 3: Composition/information on ingredients

3.1 Substances	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Mixture Mixture
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SECTION 3: Composition/information on ingredients

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
PfuUltra DNA Polymerase AD Glycerol	EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
10X PfuUltra Reaction Buffer AD 2-Amino-2-(hydroxymethyl) propane-1,3-diol hydrochloride	EC: 214-684-5 CAS: 1185-53-1	≤5	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335	[1]
Dodecyltrimethyl (3-sulphonatopropyl)ammonium	EC: 239-002-3 CAS: 14933-08-5	≤3	Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 See Section 16 for the full text of the H statements declared above.	[1]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

[5] Substance of equivalent concern

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact	: PfuUltra 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 PfuUltra Reaction Buffer 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	: PfuUltra 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 PfuUltra Reaction Buffer 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	: PfuUltra DNA Polymerase AD	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10X PfuUltra Reaction Buffer AD	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: PfuUltra DNA Polymerase AD	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.
	10X PfuUltra Reaction Buffer AD	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If

SECTION 4: First aid measures

		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.
Protection of first-aiders	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed**Potential acute health effects**

Eye contact	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. No known significant effects or critical hazards.
Inhalation	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No specific data. No specific data.
Inhalation	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No specific data. No specific data.
Skin contact	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No specific data. No specific data.
Ingestion	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No specific data. No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

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

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	: PfuUltra DNA Polymerase AD	Use an extinguishing agent suitable for the surrounding fire.
	10X PfuUltra Reaction Buffer AD	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: PfuUltra DNA Polymerase AD	None known.
	10X PfuUltra Reaction Buffer AD	None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	: PfuUltra DNA Polymerase AD	In a fire or if heated, a pressure increase will occur and the container may burst.
	10X PfuUltra Reaction Buffer AD	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous combustion products	: PfuUltra DNA Polymerase AD	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	10X PfuUltra Reaction Buffer AD	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides halogenated compounds

5.3 Advice for firefighters

Special precautions for fire-fighters	: PfuUltra DNA Polymerase 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.
	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	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.
	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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: 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.

SECTION 6: Accidental release measures

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".
6.2 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).
6.3 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.
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	: 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).
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.

7.2 Conditions for safe storage, including any incompatibilities

SECTION 7: Handling and storage

Storage	: 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.

7.3 Specific end use(s)

Recommendations	: PfuUltra DNA Polymerase AD	Industrial applications, Professional applications.
	10X PfuUltra Reaction Buffer AD	Industrial applications, Professional applications.
Industrial sector specific solutions	: PfuUltra DNA Polymerase AD	Not applicable.
	10X PfuUltra Reaction Buffer AD	Not applicable.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
PfuUltra DNA Polymerase AD Glycerol	EH40/2005 WELs (United Kingdom (UK), 12/2011). TWA: 10 mg/m ³ 8 hours. Form: Mist

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.
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DNELs/DMELs

No DNELs/DMELs available.

PNECs

No PNECs available

8.2 Exposure controls

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.
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SECTION 8: Exposure controls/personal protection

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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

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

SECTION 9: Physical and chemical properties

Melting point/freezing point	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Initial boiling point and boiling range	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Flash point	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Evaporation rate	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Flammability (solid, gas)	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not applicable. Not applicable.
Upper/lower flammability or explosive limits	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Vapour pressure	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Vapour density	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Relative density	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Solubility(ies)	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Auto-ignition temperature	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Decomposition temperature	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Viscosity	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.
Explosive properties	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	Not available. Not available.

SECTION 9: Physical and chemical properties

Oxidising properties	:	PfuUltra DNA	Not available.
		Polymerase AD	
		10X PfuUltra Reaction	Not available.
		Buffer AD	

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	:	PfuUltra DNA	No specific test data related to reactivity available for this product or its ingredients.
		Polymerase AD	
		10X PfuUltra Reaction	No specific test data related to reactivity available for this product or its ingredients.
		Buffer AD	
10.2 Chemical stability	:	PfuUltra DNA	The product is stable.
		Polymerase AD	
		10X PfuUltra Reaction	The product is stable.
		Buffer AD	
10.3 Possibility of hazardous reactions	:	PfuUltra DNA	Under normal conditions of storage and use, hazardous reactions will not occur.
		Polymerase AD	
		10X PfuUltra Reaction	Under normal conditions of storage and use, hazardous reactions will not occur.
		Buffer AD	
10.4 Conditions to avoid	:	PfuUltra DNA	No specific data.
		Polymerase AD	
		10X PfuUltra Reaction	No specific data.
		Buffer AD	
10.5 Incompatible materials	:	PfuUltra DNA	May react or be incompatible with oxidising materials.
		Polymerase AD	
		10X PfuUltra Reaction	May react or be incompatible with oxidising materials.
		Buffer AD	
10.6 Hazardous decomposition products	:	PfuUltra DNA	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		Polymerase AD	
		10X PfuUltra Reaction	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		Buffer AD	

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Not available.

Acute toxicity estimates

Route	ATE value
10X PfuUltra Reaction Buffer AD	
Oral	25000 mg/kg
Dermal	55000 mg/kg
Inhalation (vapours)	550 mg/l

Irritation/Corrosion

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

SECTION 11: Toxicological information

Product/ingredient name	Category	Route of exposure	Target organs
10X PfuUltra Reaction Buffer AD 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	Category 3	Not applicable.	Respiratory tract irritation
Dodecyldimethyl(3-sulphonatopropyl)ammonium	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure

: PfuUltra DNA Polymerase AD
10X PfuUltra Reaction Buffer AD

Routes of entry anticipated: Oral, Dermal, Inhalation.

Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Inhalation	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards.
Ingestion	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards.
Skin contact	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards.
Eye contact	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No specific data.
Ingestion	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No specific data.
Skin contact	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No specific data.
Eye contact	: PfuUltra DNA Polymerase AD 10X PfuUltra 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.

Potential delayed effects : Not available.

Long term exposure

SECTION 11: Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. No known significant effects or critical hazards.
Carcinogenicity	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. No known significant effects or critical hazards.
Mutagenicity	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. No known significant effects or critical hazards.
Teratogenicity	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. No known significant effects or critical hazards.
Developmental effects	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. No known significant effects or critical hazards.
Fertility effects	: PfuUltra DNA Polymerase AD 10X PfuUltra Reaction Buffer AD	No known significant effects or critical hazards. 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

Product/ingredient name	LogP _{ow}	BCF	Potential
10X PfuUltra Reaction Buffer AD Dodecyltrimethyl (3-sulphonatopropyl) ammonium	2.24	-	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.

vPvB : Not applicable.

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

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

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 : The classification of the product may meet the criteria for a hazardous waste.

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. 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.

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 : PfuUltra DNA Polymerase AD Not applicable.
10X PfuUltra 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)

Not listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

International regulations

SECTION 15: Regulatory information

[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 \[CLP/GHS\]](#)

Classification	Justification
Not classified.	

[Full text of abbreviated H statements](#)

10X PfuUltra Reaction Buffer AD H302 H312 H315 H319 H332 H335	Harmful if swallowed. Harmful in contact with skin. Causes skin irritation. Causes serious eye irritation. Harmful if inhaled. May cause respiratory irritation.
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[Full text of classifications \[CLP/GHS\]](#)

SECTION 16: Other information

10X PfuUltra Reaction Buffer AD

Acute Tox. 4, H302
 Acute Tox. 4, H312
 Acute Tox. 4, H332
 Eye Irrit. 2, H319
 Skin Irrit. 2, H315
 STOT SE 3, H335

ACUTE TOXICITY (oral) - Category 4
 ACUTE TOXICITY (dermal) - Category 4
 ACUTE TOXICITY (inhalation) - Category 4
 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
 SKIN CORROSION/IRRITATION - Category 2
 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE
 (Respiratory tract irritation) - Category 3

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

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Version : 2

Notice to reader

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