

SAFETY DATA SHEET



Herculase Enhanced DNA Polymerase, Part Number 600266

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

1.1 Product identifier

Product name : Herculase Enhanced DNA Polymerase, Part Number 600266
Part No. (Kit) : 600266
Part No. : DMSO 600260-53
10X Herculase Reaction Buffer 600260-54
Herculase DNA Polymerase 600264-51

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

Identified uses

Analytical reagent.	
DMSO	5 x 1 ml
10X Herculase Reaction Buffer	20 x 1 ml
Herculase DNA Polymerase	200 µl (1000 U 5 U/µl)

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 : DMSO Mono-constituent substance
10X Herculase Reaction Buffer Mixture
Herculase DNA Polymerase Mixture

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

Not classified.

Ingredients of unknown toxicity : 10X Herculase Reaction Buffer Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 10 - 30%
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%
Herculase DNA Polymerase Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 30 - 60%

Date of issue/Date of revision : 25/05/2017

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 2: Hazards identification

Ingredients of unknown ecotoxicity : 10X Herculase Reaction Buffer Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 9%

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

Signal word : DMSO No signal word.
10X Herculase Reaction Buffer No signal word.
Herculase DNA Polymerase No signal word.

Hazard statements : DMSO No known significant effects or critical hazards.
10X Herculase Reaction Buffer No known significant effects or critical hazards.
Herculase DNA Polymerase No known significant effects or critical hazards.

Precautionary statements

Prevention : DMSO Not applicable.
10X Herculase Reaction Buffer Not applicable.
Herculase DNA Polymerase Not applicable.

Response : DMSO Not applicable.
10X Herculase Reaction Buffer Not applicable.
Herculase DNA Polymerase Not applicable.

Storage : DMSO Not applicable.
10X Herculase Reaction Buffer Not applicable.
Herculase DNA Polymerase Not applicable.

Disposal : DMSO Not applicable.
10X Herculase Reaction Buffer Not applicable.
Herculase DNA Polymerase Not applicable.

Hazardous ingredients : Herculase DNA Polymerase Not applicable.

Supplemental label elements : DMSO Not applicable.
10X Herculase Reaction Buffer Not applicable.
Herculase DNA Polymerase Not applicable.

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

Special packaging requirements

Tactile warning of danger : DMSO Not applicable.
10X Herculase Reaction Buffer Not applicable.
Herculase DNA Polymerase Not applicable.

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 2: Hazards identification

2.3 Other hazards

Other hazards which do not result in classification :

DMSO	None known.
10X Herculase Reaction Buffer	None known.
Herculase DNA Polymerase	None known.

SECTION 3: Composition/information on ingredients

3.1 Substances :

DMSO	Mono-constituent substance
10X Herculase Reaction Buffer	Mixture
Herculase DNA Polymerase	Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
DMSO Dimethyl sulfoxide	EC: 200-664-3 CAS: 67-68-5	100	Not classified.	[A]
Herculase DNA Polymerase Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	CAS: 9036-19-5	≤0.3	Skin Irrit. 2, H315 Eye Dam. 1, H318 Aquatic Chronic 2, H411 See Section 16 for the full text of the H statements declared above.	[1] [5]

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
- [6] Additional disclosure due to company policy
- [A] Constituent
- [B] Impurity
- [C] Stabilising additive

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact :	DMSO	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 Herculase Reaction Buffer	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.
	Herculase DNA Polymerase	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.

SECTION 4: First aid measures

Inhalation	: DMSO	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	10X Herculase Reaction Buffer	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.
	Herculase DNA Polymerase	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Skin contact	: DMSO	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10X Herculase Reaction Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Herculase DNA Polymerase	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: DMSO	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 Herculase Reaction Buffer	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.
	Herculase DNA Polymerase	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.
Protection of first-aiders	: DMSO	No action shall be taken involving any personal risk or without suitable training.
	10X Herculase Reaction Buffer	No action shall be taken involving any personal risk or without suitable training.
	Herculase DNA Polymerase	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	: DMSO	No known significant effects or critical hazards.
	10X Herculase Reaction Buffer	No known significant effects or critical hazards.
	Herculase DNA Polymerase	No known significant effects or critical hazards.
Inhalation	: DMSO	No known significant effects or critical hazards.
	10X Herculase Reaction Buffer	No known significant effects or critical hazards.
	Herculase DNA Polymerase	No known significant effects or critical hazards.

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 4: First aid measures

Skin contact : DMSO No known significant effects or critical hazards.
 10X Herculase Reaction No known significant effects or critical hazards.
 Buffer
 Herculase DNA No known significant effects or critical hazards.
 Polymerase

Ingestion : DMSO No known significant effects or critical hazards.
 10X Herculase Reaction No known significant effects or critical hazards.
 Buffer
 Herculase DNA No known significant effects or critical hazards.
 Polymerase

Over-exposure signs/symptoms

Eye contact : DMSO No specific data.
 10X Herculase Reaction No specific data.
 Buffer
 Herculase DNA No specific data.
 Polymerase

Inhalation : DMSO No specific data.
 10X Herculase Reaction No specific data.
 Buffer
 Herculase DNA No specific data.
 Polymerase

Skin contact : DMSO No specific data.
 10X Herculase Reaction No specific data.
 Buffer
 Herculase DNA No specific data.
 Polymerase

Ingestion : DMSO No specific data.
 10X Herculase Reaction No specific data.
 Buffer
 Herculase DNA No specific data.
 Polymerase

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : DMSO Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
 10X Herculase Reaction 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.
 Buffer
 Herculase DNA Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
 Polymerase

Specific treatments : DMSO No specific treatment.
 10X Herculase Reaction No specific treatment.
 Buffer
 Herculase DNA No specific treatment.
 Polymerase

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : DMSO Use an extinguishing agent suitable for the surrounding fire.
 10X Herculase Reaction Use an extinguishing agent suitable for the surrounding fire.
 Buffer
 Herculase DNA Use an extinguishing agent suitable for the surrounding fire.
 Polymerase

Unsuitable extinguishing media : DMSO None known.
 10X Herculase Reaction None known.
 Buffer
 Herculase DNA None known.
 Polymerase

SECTION 5: Firefighting measures

5.2 Special hazards arising from the substance or mixture

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

5.3 Advice for firefighters

Special precautions for fire-fighters	: DMSO	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 Herculase 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.
	Herculase DNA Polymerase	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	: DMSO	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 Herculase 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. 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.
	Herculase DNA Polymerase	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. 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	: DMSO	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 Herculase 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 spilt material. Put on appropriate personal protective equipment.
	Herculase DNA Polymerase	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	: DMSO	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 Herculase Reaction Buffer	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	Herculase DNA Polymerase	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

: DMSO	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 Herculase Reaction Buffer	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Herculase DNA Polymerase	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	: DMSO	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 Herculase 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.
	Herculase 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.

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 6: Accidental release measures


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	: DMSO	Put on appropriate personal protective equipment (see Section 8).
	10X Herculase Reaction Buffer	Put on appropriate personal protective equipment (see Section 8).
	Herculase DNA Polymerase	Put on appropriate personal protective equipment (see Section 8).
Advice on general occupational hygiene	: DMSO	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 Herculase 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.
	Herculase 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.

7.2 Conditions for safe storage, including any incompatibilities

Storage	:  DMSO	Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
	10X Herculase Reaction Buffer	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
	Herculase DNA Polymerase	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 7: Handling and storage

contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

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

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
Herculase DNA Polymerase 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.

DNELs/DMELs

No DNELs/DMELs available.

PNECs

No PNECs available

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.

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 8: Exposure controls/personal protection

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	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Liquid. [Clear.] Liquid. Liquid.
Colour	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Colourless. Not available. Not available.
Odour	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Odourless. [Slight] Not available. Not available.
Odour threshold	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Not available. Not available. Not available.
pH	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Not available. 9.1 8
Melting point/freezing point	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	18.5°C Not available. Not available.
Initial boiling point and boiling range	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	189°C Not available. Not available.

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 9: Physical and chemical properties

Flash point	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Closed cup: 87°C Open cup: 87°C Not available. Not available.
Evaporation rate	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	0.026 (butyl acetate = 1) Not available. Not available.
Flammability (solid, gas)	: Dimethyl Sulfoxide 10x Herculase reaction buffer Herculase Enhanced DNA Polymerase	Not available. Not available. Not available.
Upper/lower flammability or explosive limits	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Lower: 2.6% Upper: 28.5% Not available. Not available.
Vapour pressure	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	0.056 kPa [room temperature] Not available. Not available.
Vapour density	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	2.7 [Air = 1] Not available. Not available.
Relative density	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	1.1 Not available. Not available.
Solubility(ies)	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Easily soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	-1.35 Not available. Not available.
Auto-ignition temperature	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	300 to 302°C Not available. Not available.
Decomposition temperature	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	140 to 189°C Not available. Not available.

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 9: Physical and chemical properties

Viscosity	: DMSO	Dynamic (room temperature): 2.14 mPa·s
	10X Herculase	Not available.
	Reaction Buffer	
	Herculase DNA Polymerase	Not available.
Explosive properties	: DMSO	Not available.
	10X Herculase	Not available.
	Reaction Buffer	
	Herculase DNA Polymerase	Not available.
Oxidising properties	: DMSO	Not available.
	10X Herculase	Not available.
	Reaction Buffer	
	Herculase DNA Polymerase	Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

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

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 10: Stability and reactivity

10.6 Hazardous decomposition products	: DMSO	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10X Herculase Reaction Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Herculase DNA Polymerase	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
DMSO Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
Herculase DNA Polymerase Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3, 3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	LD50 Oral	Rat	2800 mg/kg	-

Acute toxicity estimates

Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
DMSO Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 milligrams	-
Herculase DNA Polymerase Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3, 3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	Eyes - Severe irritant	Rabbit	-	1%	-

Sensitiser

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure

: DMSO	Routes of entry anticipated: Oral, Dermal, Inhalation.
10X Herculase Reaction Buffer	Not available.
Herculase DNA Polymerase	Routes of entry anticipated: Oral, Dermal, Inhalation.

Date of issue/Date of revision : 25/05/2017

SECTION 11: Toxicological information

Potential acute health effects

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

Symptoms related to the physical, chemical and toxicological characteristics

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

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 11: Toxicological information

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

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
DMSO Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 100 µl/L Marine water	Algae - Ulva lactuca	72 hours
Herculase DNA Polymerase Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	Acute EC50 210 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute LC50 10800 µg/l Marine water	Crustaceans - Pandalus montagui - Adult	48 hours
	Acute LC50 8600 to 9800 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 7200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

12.2 Persistence and degradability

Not available.

12.3 Bioaccumulative potential

Date of issue/Date of revision : 25/05/2017

15/18

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 12: Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
DMSO Dimethyl sulfoxide	-1.35	3.16	low
Herculase DNA Polymerase Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3, 3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	3.77	78.67	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.

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

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.

Herculase Enhanced DNA Polymerase, Part Number 600266

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

Ingredient name	Intrinsic property	Status	Reference number	Date of revision
Herculase DNA Polymerase Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	Substance of equivalent concern for environment	Recommended	ED/169/2012	2/10/2014

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

DMSO	Not applicable.
10X Herculase Reaction Buffer	Not applicable.
Herculase DNA Polymerase	Not applicable.

Other EU regulations

Industrial emissions (integrated pollution prevention and control) - Air : Listed

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

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.

Inventory list

Australia	: All components are listed or exempted.
Canada	: All components are listed or exempted.
China	: All components are listed or exempted.
Europe	: All components are listed or exempted.
Japan	: Japan inventory (ENCS) : Not determined. Japan inventory (ISHL) : Not determined.

Herculase Enhanced DNA Polymerase, Part Number 600266

SECTION 15: Regulatory information

Malaysia	: Not determined.
New Zealand	: All components are listed or exempted.
Philippines	: Not determined.
Republic of Korea	: Not determined.
Taiwan	: All components are listed or exempted.
Thailand	: <input checked="" type="checkbox"/> Not determined.
Turkey	: Not determined.
United States	: All components are listed or exempted.
Viet Nam	: <input checked="" type="checkbox"/> 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

Herculase DNA Polymerase H315 H318 H411	Causes skin irritation. Causes serious eye damage. Toxic to aquatic life with long lasting effects.
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Full text of classifications [CLP/GHS]

Herculase DNA Polymerase Aquatic Chronic 2, H411 Eye Dam. 1, H318 Skin Irrit. 2, H315	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SKIN CORROSION/IRRITATION - Category 2
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Date of issue/ Date of revision : 25/05/2017

Date of previous issue : 30/09/2016.

Version : 2

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