

# SAFETY DATA SHEET



Herculase Hotstart DNA Polymerase, Part Number 600314

## Section 1. Identification

**Product identifier** : Herculase Hotstart DNA Polymerase, Part Number 600314  
**Part No. (Chemical Kit)** : 600314  
**Part No.** : Herculase Hotstart DNA Polymerase 600314-51  
 10X Herculase Reaction Buffer 600260-54  
 DMSO 600260-53

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

Analytical reagent.

Herculase Hotstart DNA Polymerase 200 µl (1000 U 5 U/µl)  
 10X Herculase Reaction Buffer 4 ml (4 x 1 ml)  
 DMSO 1 ml

**Supplier/Manufacturer** : Agilent Technologies Australia Pty Ltd  
 679 Springvale Road  
 Mulgrave  
 Victoria 3170, Australia  
 1800 802 402

**Emergency telephone number (with hours of operation)** : CHEMTREC®: +(61)-290372994

## Section 2. Hazard(s) identification

### Classification of the substance or mixture

**DMSO**  
 H227 FLAMMABLE LIQUIDS - Category 4

Herculase Hotstart DNA Polymerase	Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 30 - 60%
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%
10X Herculase Reaction Buffer	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 9%

### GHS label elements

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

**Hazard statements** : Herculase Hotstart DNA Polymerase No known significant effects or critical hazards.  
 10X Herculase Reaction Buffer No known significant effects or critical hazards.  
 DMSO H227 - Combustible liquid.

### Precautionary statements

## Section 2. Hazard(s) identification

<b>Prevention</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	Not applicable. Not applicable. P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from flames and hot surfaces. - No smoking.
<b>Response</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	Not applicable. Not applicable. Not applicable.
<b>Storage</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	Not applicable. Not applicable. P403 - Store in a well-ventilated place. P235 - Keep cool.
<b>Disposal</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	Not applicable. Not applicable. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
<b>Supplemental label elements</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	Not applicable. Not applicable. Not applicable.
<b>Other hazards which do not result in classification</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	None known. None known. None known.

## Section 3. Composition and ingredient information

<b>Substance/mixture</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	Mixture Mixture Substance
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### CAS number/other identifiers

Ingredient name	% (w/w)	CAS number
Herculase Hotstart DNA Polymerase Glycerol	≥30 - ≤60	56-81-5
<b>DMSO</b> Dimethyl sulfoxide	100	67-68-5

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.

Occupational exposure limits, if available, are listed in Section 8.

## Section 4. First aid measures

### Description of necessary first aid measures

<b>Eye contact</b>	:	Herculase Hotstart 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.
		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.
		DMSO	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 if irritation occurs.
<b>Inhalation</b>	:	Herculase Hotstart DNA Polymerase	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.
		DMSO	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.
<b>Skin contact</b>	:	Herculase Hotstart DNA Polymerase	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.
		DMSO	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.
<b>Ingestion</b>	:	Herculase Hotstart 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.
		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.
		DMSO	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

## Section 4. First aid measures

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.

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

#### Potential acute health effects

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

#### Over-exposure signs/symptoms

<b>Eye contact</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No specific data.  No specific data.  No specific data.
<b>Inhalation</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No specific data.  No specific data.  No specific data.
<b>Skin contact</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No specific data.  No specific data.  No specific data.
<b>Ingestion</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No specific data.  No specific data.  No specific data.

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

## Section 4. First aid measures

<b>Notes to physician</b>	: Herculase Hotstart DNA Polymerase  10X Herculase Reaction Buffer  DMSO	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. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
<b>Specific treatments</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No specific treatment.  No specific treatment.  No specific treatment.
<b>Protection of first-aiders</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	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. 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. Firefighting measures

### Extinguishing media

<b>Suitable extinguishing media</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.
<b>Unsuitable extinguishing media</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	None known.  None known.  Do not use water jet.
<b>Specific hazards arising from the chemical</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	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. Combustible liquid. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.
<b>Hazardous thermal decomposition products</b>	: Herculase Hotstart DNA Polymerase  10X Herculase Reaction Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides

## Section 5. Firefighting measures

	DMSO	sulfur oxides Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides
<b>Special protective actions for fire-fighters</b>	: Herculase Hotstart 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.
	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.
	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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
<b>Special protective equipment for fire-fighters</b>	: Herculase Hotstart 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.
	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.
	DMSO	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

<b>For non-emergency personnel</b>	: Herculase Hotstart 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.
	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.
	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. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.



## Section 6. Accidental release measures

**For emergency responders** : Herculase Hotstart DNA Polymerase

10X Herculase Reaction Buffer

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".

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

**Environmental precautions** : Herculase Hotstart DNA Polymerase

10X Herculase Reaction Buffer

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).

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).

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

### Methods and material for containment and cleaning up

**Methods for cleaning up** : Herculase Hotstart DNA Polymerase

10X Herculase Reaction Buffer

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.

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.

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

## Section 7. Handling and storage

### Precautions for safe handling

**Protective measures** : Herculase Hotstart DNA Polymerase

10X Herculase Reaction Buffer

DMSO

Put on appropriate personal protective equipment (see Section 8).

Put on appropriate personal protective equipment (see Section 8).

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate.

## Section 7. Handling and storage

### Advice on general occupational hygiene

: Herculase Hotstart DNA Polymerase

Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.

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.

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.

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

### Conditions for safe storage, including any incompatibilities

: Herculase 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 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.

DMSO

Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been



## Section 7. Handling and storage

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.

## Section 8. Exposure controls and personal protection

### Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
<b>Herculase Hotstart DNA Polymerase</b> Glycerol	<b>Safe Work Australia (Australia, 1/2014).</b> TWA: 10 mg/m <sup>3</sup> 8 hours.
<b>DMSO</b> Dimethyl sulfoxide	<b>DFG MAC-values list (Germany, 7/2015).</b> <b>Absorbed through skin.</b> PEAK: 320 mg/m <sup>3</sup> , 4 times per shift, 15 minutes. TWA: 160 mg/m <sup>3</sup> 8 hours. PEAK: 100 ppm, 4 times per shift, 15 minutes. TWA: 50 ppm 8 hours.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- 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: safety glasses with side-shields.

### Skin protection

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

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

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

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

## Section 9. Physical and chemical properties

### Appearance

<b>Physical state</b>	: Herculase Hotstart DNA Polymerase	Liquid.
	10X Herculase Reaction Buffer	Liquid.
	DMSO	Liquid. [Clear.]
<b>Colour</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	Colourless.
<b>Odour</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	Odourless. [Slight]
<b>Odour threshold</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	Not available.
<b>pH</b>	: Herculase Hotstart DNA Polymerase	8
	10X Herculase Reaction Buffer	9.1
	DMSO	Not available.
<b>Melting point</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	18.5°C (65.3°F)
<b>Boiling point</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	189°C (372.2°F)
<b>Flash point</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	Closed cup: 87°C (188.6°F) Open cup: 87°C (188.6°F)
<b>Evaporation rate</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	0.026 (butyl acetate = 1)
<b>Flammability (solid, gas)</b>	: Herculase Hotstart DNA Polymerase	Not applicable.
	10X Herculase Reaction Buffer	Not applicable.
	DMSO	Not applicable.
<b>Lower and upper explosive (flammable) limits</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	Lower: 2.6% Upper: 28.5%

## Section 9. Physical and chemical properties

<b>Vapour pressure</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	0.056 kPa (0.42 mm Hg) [room temperature]
<b>Vapour density</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	2.7 [Air = 1]
<b>Relative density</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	1.1
<b>Solubility</b>	: Herculase Hotstart DNA Polymerase	Soluble in the following materials: cold water and hot water.
	10X Herculase Reaction Buffer	Easily soluble in the following materials: cold water and hot water.
	DMSO	Easily soluble in the following materials: cold water and hot water.
<b>Partition coefficient: n-octanol/water</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	-1.35
<b>Auto-ignition temperature</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	300 to 302°C (572 to 575.6°F)
<b>Decomposition temperature</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	140 to 189°C (284 to 372.2°F)
<b>Viscosity</b>	: Herculase Hotstart DNA Polymerase	Not available.
	10X Herculase Reaction Buffer	Not available.
	DMSO	Dynamic (room temperature): 2.14 mPa·s (2.14 cP)

## Section 10. Stability and reactivity

<b>Reactivity</b>	: Herculase Hotstart DNA Polymerase	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.
	DMSO	No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	: Herculase Hotstart DNA Polymerase	The product is stable.
	10X Herculase Reaction Buffer	The product is stable.
	DMSO	The product is stable.

## Section 10. Stability and reactivity

<b>Possibility of hazardous reactions</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	Under normal conditions of storage and use, hazardous reactions will not occur. 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>Conditions to avoid</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No specific data. No specific data.  Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas.
<b>Incompatible materials</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.  Reactive or incompatible with the following materials: oxidizing materials
<b>Hazardous decomposition products</b>	: Herculase Hotstart DNA Polymerase  10X Herculase Reaction Buffer  DMSO	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. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Herculase Hotstart DNA Polymerase Glycerol	LD50 Oral	Rat	12600 mg/kg	-
DMSO Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Herculase Hotstart DNA Polymerase Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
DMSO Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	100	-

## Section 11. Toxicological information

	Skin - Mild irritant	Rabbit	-	milligrams 24 hours 500	-
	Skin - Mild irritant	Rabbit	-	milligrams 100 milligrams	-

### Sensitisation

Not available.

### Mutagenicity

Not available.

### Carcinogenicity

Not available.

### Reproductive toxicity

Not available.

### Teratogenicity

Not available.

### Specific target organ toxicity (single exposure)

Not available.

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

<b>Information on likely routes of exposure</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	Routes of entry anticipated: Oral, Dermal, Inhalation.
		Not available.
		Routes of entry anticipated: Oral, Dermal, Inhalation.

### Potential acute health effects

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

## Section 11. Toxicological information

<b>Eye contact</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No specific data. No specific data. No specific data.
<b>Inhalation</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No specific data. No specific data. No specific data.
<b>Skin contact</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No specific data. No specific data. No specific data.
<b>Ingestion</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No specific data. No specific data. 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

Not available.

<b>General</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Mutagenicity</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Teratogenicity</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Developmental effects</b>	: Herculase Hotstart DNA Polymerase 10X Herculase Reaction Buffer DMSO	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.



## Section 11. Toxicological information

<b>Fertility effects</b>	:	Herculase Hotstart DNA Polymerase	No known significant effects or critical hazards.
		10X Herculase Reaction Buffer	No known significant effects or critical hazards.
		DMSO	No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

Not available.

## Section 12. Ecological information

### Toxicity

Product/ingredient name	Result	Species	Exposure
Herculase Hotstart DNA Polymerase Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
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

### Persistence and degradability

Not available.

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
Herculase Hotstart DNA Polymerase Glycerol	-1.76	-	low
DMSO Dimethyl sulfoxide	-1.35	3.16	low

### Mobility in soil

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

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

## Section 13. Disposal considerations

**Disposal methods** : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and

## Section 13. Disposal considerations

contact with soil, waterways, drains and sewers.

## Section 14. Transport information

**ADG / IMDG / IATA** : Not regulated as Dangerous Goods according to the ADG Code .

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of Marpol and the IBC Code** : Not available.

## Section 15. Regulatory information

### Standard Uniform Schedule of Medicine and Poisons

6

### Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

### 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

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

## Section 16. Any other relevant information

### History

**Date of issue/Date of revision** : 29/06/2017  
**Date of previous issue** : 30/01/2015.  
**Version** : 4

### Key to abbreviations

: ADG = Australian Dangerous Goods  
 ATE = Acute Toxicity Estimate  
 BCF = Bioconcentration Factor  
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
 IATA = International Air Transport Association  
 IBC = Intermediate Bulk Container  
 IMDG = International Maritime Dangerous Goods  
 LogPow = logarithm of the octanol/water partition coefficient  
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
 NOHSC = National Occupational Health and Safety Commission  
 SUSMP = Standard Uniform Schedule of Medicine and Poisons  
 UN = United Nations

### Procedure used to derive the classification

Classification	Justification
<input checked="" type="checkbox"/> <b>DMSO</b> Flam. Liq. 4, H227	On basis of test data

**References** : Not available.

Indicates information that has changed from previously issued version.

### Notice to reader

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