

SAFETY DATA SHEET



Herculase Enhanced DNA Polymerase, Part Number 600264

Section 1. Identification

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

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

Analytical reagent.

DMSO	1 ml	
10X Herculase Reaction Buffer	4 x 1 ml	
Herculase DNA Polymerase	0.2 ml (1000 U	5 U/μl)

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	FLAMMABLE LIQUIDS - Category 4
H227	
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%
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 :
 DMSO WARNING
 10X Herculase Reaction Buffer No signal word.
 Herculase DNA Polymerase No signal word.

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

Precautionary statements

Section 2. Hazard(s) identification

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

Section 3. Composition and ingredient information

Substance/mixture	:	<input checked="" type="checkbox"/> DMSO	Substance
		10X Herculase Reaction Buffer	Mixture
		Herculase DNA Polymerase	Mixture

CAS number/other identifiers

Ingredient name	% (w/w)	CAS number
<input checked="" type="checkbox"/> DMSO Dimethyl sulfoxide	100	67-68-5
Herculase DNA Polymerase Glycerol	≥30 - ≤60	56-81-5

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

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

Section 4. First aid measures

Herculase DNA Polymerase	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.
	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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

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

Over-exposure signs/symptoms

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

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

Notes to physician	: DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	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
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Section 4. First aid measures

Specific treatments	: <input checked="" type="checkbox"/> DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	ingested or inhaled. No specific treatment. No specific treatment. No specific treatment.
Protection of first-aiders	: <input checked="" type="checkbox"/> DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training.



See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media



Suitable extinguishing media	: <input checked="" type="checkbox"/> DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Use dry chemical, CO ₂ , water spray (fog) or foam. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: <input checked="" type="checkbox"/> DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Do not use water jet. None known. None known.
Specific hazards arising from the chemical	: <input checked="" type="checkbox"/> DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	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. 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.
Hazardous thermal decomposition products	: <input checked="" type="checkbox"/> DMSO 10X Herculase Reaction Buffer Herculase DNA Polymerase	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides Decomposition products may include the following materials: carbon dioxide carbon monoxide

Section 5. Firefighting measures

<p>Special protective actions for fire-fighters</p>	<p>:  DMSO</p>	<p>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.</p>
<p>10X Herculase Reaction Buffer</p>	<p></p>	<p>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.</p>
<p>Herculase DNA Polymerase</p>	<p></p>	<p>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.</p>
<p>Special protective equipment for fire-fighters</p>	<p>:  DMSO</p>	<p>Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.</p>
<p>10X Herculase Reaction Buffer</p>	<p></p>	<p>Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.</p>
<p>Herculase DNA Polymerase</p>	<p></p>	<p>Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.</p>

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

<p>For non-emergency personnel</p>	<p>:  DMSO</p>	<p>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.</p>
<p>10X Herculase Reaction Buffer</p>	<p></p>	<p>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.</p>
<p>Herculase DNA Polymerase</p>	<p></p>	<p>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.</p>
<p>For emergency responders</p>	<p>:  DMSO</p>	<p>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".</p>
<p>10X Herculase Reaction Buffer</p>	<p></p>	<p>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".</p>
<p>Herculase DNA Polymerase</p>	<p></p>	<p>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</p>

Section 6. Accidental release measures

information in "For non-emergency personnel".

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).

Methods and material for containment and cleaning up

Methods for cleaning up :  DMSO

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.

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.

Section 7. Handling and storage

Precautions for safe handling

Protective measures :  DMSO

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. 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

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

Herculase DNA Polymerase

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

Section 7. Handling and storage

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.

Conditions for safe storage, including any incompatibilities

: 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 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 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
<p><input checked="" type="checkbox"/> DMSO Dimethyl sulfoxide</p> <p>Herculase DNA Polymerase Glycerol</p>	<p>DFG MAC-values list (Germany, 7/2015). Absorbed through skin. PEAK: 320 mg/m³, 4 times per shift, 15 minutes. TWA: 160 mg/m³ 8 hours. PEAK: 100 ppm, 4 times per shift, 15 minutes. TWA: 50 ppm 8 hours.</p> <p>Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m³ 8 hours.</p>

- 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

Physical state	: DMSO	Liquid. [Clear.]
	10X Herculase Reaction Buffer	Liquid.
	Herculase DNA Polymerase	Liquid.
Colour	: DMSO	Colourless.
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Odour	: DMSO	Odourless. [Slight]
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Odour threshold	: DMSO	Not available.
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
pH	: DMSO	Not available.
	10X Herculase Reaction Buffer	9.1
	Herculase DNA Polymerase	8
Melting point	: DMSO	18.5°C (65.3°F)
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Boiling point	: DMSO	189°C (372.2°F)
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Flash point	: DMSO	Closed cup: 87°C (188.6°F) Open cup: 87°C (188.6°F)
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Evaporation rate	: DMSO	0.026 (butyl acetate = 1)
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Flammability (solid, gas)	: DMSO	Not applicable.
	10X Herculase Reaction Buffer	Not applicable.
	Herculase DNA Polymerase	Not applicable.
Lower and upper explosive (flammable) limits	: DMSO	Lower: 2.6% Upper: 28.5%
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Vapour pressure	: DMSO	0.056 kPa (0.42 mm Hg) [room temperature]
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Vapour density	: DMSO	2.7 [Air = 1]
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Relative density	: DMSO	1.1
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.

Section 9. Physical and chemical properties

Solubility	: DMSO	Easily 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.
	Herculase DNA Polymerase	Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: DMSO	-1.35
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Auto-ignition temperature	: DMSO	300 to 302°C (572 to 575.6°F)
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Decomposition temperature	: DMSO	140 to 189°C (284 to 372.2°F)
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.
Viscosity	: DMSO	Dynamic (room temperature): 2.14 mPa·s (2.14 cP)
	10X Herculase Reaction Buffer	Not available.
	Herculase DNA Polymerase	Not available.

Section 10. Stability and reactivity

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.
Chemical stability	: DMSO	The product is stable.
	10X Herculase Reaction Buffer	The product is stable.
	Herculase DNA Polymerase	The product is stable.
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.
Conditions to avoid	: DMSO	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.
	10X Herculase Reaction Buffer	No specific data.
	Herculase DNA Polymerase	No specific data.
Incompatible materials	: DMSO	Reactive or incompatible with the following materials: oxidizing materials
	10X Herculase Reaction Buffer	May react or be incompatible with oxidising materials.
	Herculase DNA Polymerase	May react or be incompatible with oxidising materials.

Section 10. Stability and reactivity

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

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 Glycerol	LD50 Oral	Rat	12600 mg/kg	-

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 Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 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)

Section 11. Toxicological information

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure : MSO Routes of entry anticipated: Oral, Dermal, Inhalation.
 10X Herculase Reaction Not available.
 Buffer
 Herculase DNA Polymerase Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

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

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

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

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

Symptoms related to the physical, chemical and toxicological characteristics

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

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

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

Ingestion : MSO No specific data.
 10X Herculase Reaction No specific data.
 Buffer
 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

Not available.

Section 11. Toxicological information

General	: <input checked="" type="checkbox"/> 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	: <input checked="" type="checkbox"/> 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	: <input checked="" type="checkbox"/> 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	: <input checked="" type="checkbox"/> 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	: <input checked="" type="checkbox"/> 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	: <input checked="" type="checkbox"/> 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.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
<input checked="" type="checkbox"/> 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 Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
<input checked="" type="checkbox"/> DMSO Dimethyl sulfoxide	-1.35	3.16	low
Herculase DNA Polymerase Glycerol	-1.76	-	low

Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{oc}) : 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 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

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.

Section 15. Regulatory information

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

Section 16. Any other relevant information

History

Date of issue/Date of revision	: 31/05/2017
Date of previous issue	: 02/10/2014.
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
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Procedure used to derive the classification

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

References	: Not available.
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Indicates information that has changed from previously issued version.

Notice to reader

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