

# SAFETY DATA SHEET

Herculase II Fusion Enzyme with dNTP Combo, Part Number 600677

## Section 1. Identification

### 1.1 Product identifier

<b>Product name</b>	: Herculase II Fusion Enzyme with dNTP Combo, Part Number 600677		
<b>Part no. (chemical kit)</b>	: 600677		
<b>Part no.</b>	: DMSO		600260-53
	Herculase II Fusion DNA Polymerase		600677-51
	5X Herculase II Reaction Buffer		600675-52
	100 mM dNTP Mix (25 mM each dNTP)		200418-51
<b>Validation date</b>	: 4/4/2023		

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

<b>Identified uses</b>	: <input checked="" type="checkbox"/> Analytical reagent.		
	<input checked="" type="checkbox"/> DMSO		1 ml
	Herculase II Fusion DNA Polymerase		0.2 ml (200 reactions)
	5X Herculase II Reaction Buffer		2 x 1.5 ml
	100 mM dNTP Mix (25 mM each dNTP)		0.1 ml

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

<b>Supplier/Manufacturer</b>	: Agilent Technologies, Inc. 5301 Stevens Creek Blvd Santa Clara, CA 95051, USA 800-227-9770
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### 1.4 Emergency telephone number

<b>In case of emergency</b>	: CHEMTREC®: 1-800-424-9300
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## Section 2. Hazards identification

### 2.1 Classification of the substance or mixture

<b>OSHA/HCS status</b>	: DMSO	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	Herculase II Fusion DNA Polymerase	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	5X Herculase II Reaction Buffer	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
	100 mM dNTP Mix (25 mM each dNTP)	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

### Classification of the substance or mixture

## Section 2. Hazards identification

### DMSO

H227 FLAMMABLE LIQUIDS - Category 4  
H320 EYE IRRITATION - Category 2B

### Herculase II Fusion DNA Polymerase

H320 EYE IRRITATION - Category 2B  
100 mM dNTP Mix (25 mM each dNTP) Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 5.4%

### 2.2 GHS label elements

#### Signal word

: DMSO Warning  
Herculase II Fusion DNA Warning  
Polymerase  
5X Herculase II Reaction Buffer No signal word.  
100 mM dNTP Mix (25 mM each dNTP) No signal word.

#### Hazard statements

: DMSO H227 - Combustible liquid.  
H320 - Causes eye irritation.  
H320 - Causes eye irritation.  
Herculase II Fusion DNA  
Polymerase  
5X Herculase II Reaction Buffer No known significant effects or critical hazards.  
100 mM dNTP Mix (25 mM each dNTP) No known significant effects or critical hazards.

### Precautionary statements

#### Prevention

: DMSO P210 - Keep away from flames and hot surfaces.  
No smoking.  
Not applicable.  
Herculase II Fusion DNA  
Polymerase  
5X Herculase II Reaction Buffer Not applicable.  
100 mM dNTP Mix (25 mM each dNTP) Not applicable.

#### Response

: DMSO P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337 + P313 - If eye irritation persists: Get medical advice or attention.  
Herculase II Fusion DNA  
Polymerase P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337 + P313 - If eye irritation persists: Get medical advice or attention.  
5X Herculase II Reaction Buffer Not applicable.  
100 mM dNTP Mix (25 mM each dNTP) Not applicable.

#### Storage

: DMSO P403 + P235 - Store in a well-ventilated place.  
Keep cool.  
Not applicable.  
Herculase II Fusion DNA  
Polymerase  
5X Herculase II Reaction Buffer Not applicable.  
100 mM dNTP Mix (25 mM each dNTP) Not applicable.

#### Disposal

:

## Section 2. Hazards identification

	DMSO	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	Herculase II Fusion DNA Polymerase	Not applicable.
	5X Herculase II Reaction Buffer	Not applicable.
	100 mM dNTP Mix (25 mM each dNTP)	Not applicable.
<b>Supplemental label elements</b>	: DMSO	None known.
	Herculase II Fusion DNA Polymerase	None known.
	5X Herculase II Reaction Buffer	None known.
	100 mM dNTP Mix (25 mM each dNTP)	None known.
<b>2.3 Other hazards</b>		
<b>Hazards not otherwise classified</b>	: DMSO	None known.
	Herculase II Fusion DNA Polymerase	None known.
	5X Herculase II Reaction Buffer	None known.
	100 mM dNTP Mix (25 mM each dNTP)	None known.

## Section 3. Composition/information on ingredients

<b>Substance/mixture</b>	: DMSO	Substance
	Herculase II Fusion DNA Polymerase	Mixture
	5X Herculase II Reaction Buffer	Mixture
	100 mM dNTP Mix (25 mM each dNTP)	Mixture

Ingredient name	%	CAS number
<b>DMSO</b>		
Dimethyl sulfoxide	100	67-68-5
<b>Herculase II Fusion DNA Polymerase</b>		
Glycerol	≥50 - ≤75	56-81-5
<b>5X Herculase II Reaction Buffer</b>		
Trometamol	≤3	77-86-1
Ammonium sulphate	≤3	7783-20-2
Hexadecan-1-ol, ethoxylated	<2.5	9004-95-9

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

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.**

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

## Section 4. First aid measures

### 4.1 Description of necessary first aid measures

<b>Eye contact</b>	: 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. If irritation persists, get medical attention.
	Herculase II Fusion DNA Polymerase	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
	5X Herculase II 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.
	100 mM dNTP Mix (25 mM each dNTP)	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.
<b>Inhalation</b>	: 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.
	Herculase II Fusion DNA Polymerase	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	5X Herculase II 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.
	100 mM dNTP Mix (25 mM each dNTP)	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.

## Section 4. First aid measures

<b>Skin contact</b>	: 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.
	Herculase II Fusion DNA Polymerase	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	5X Herculase II Reaction Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	100 mM dNTP Mix (25 mM each dNTP)	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
<b>Ingestion</b>	: DMSO	Wash out mouth with water. Remove dentures if any. 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.
	Herculase II Fusion DNA Polymerase	Wash out mouth with water. Remove dentures if any. 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.
	5X Herculase II Reaction Buffer	Wash out mouth with water. 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.
	100 mM dNTP Mix (25 mM each dNTP)	Wash out mouth with water. 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.

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

#### Potential acute health effects

## Section 4. First aid measures

<b>Eye contact</b>	: DMSO	Causes eye irritation.
	Herculase II Fusion DNA Polymerase	Causes eye irritation.
	5X Herculase II Reaction Buffer	No known significant effects or critical hazards.
	100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards.
<b>Inhalation</b>	: DMSO	No known significant effects or critical hazards.
	Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
	5X Herculase II Reaction Buffer	No known significant effects or critical hazards.
	100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards.
<b>Skin contact</b>	: DMSO	No known significant effects or critical hazards.
	Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
	5X Herculase II Reaction Buffer	No known significant effects or critical hazards.
	100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards.
<b>Ingestion</b>	: DMSO	No known significant effects or critical hazards.
	Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
	5X Herculase II Reaction Buffer	No known significant effects or critical hazards.
	100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards.

### Over-exposure signs/symptoms

<b>Eye contact</b>	: DMSO	Adverse symptoms may include the following: irritation watering redness
	Herculase II Fusion DNA Polymerase	Adverse symptoms may include the following:  irritation watering redness
	5X Herculase II Reaction Buffer	No specific data.
	100 mM dNTP Mix (25 mM each dNTP)	No specific data.
<b>Inhalation</b>	: DMSO	No specific data.
	Herculase II Fusion DNA Polymerase	No specific data.
	5X Herculase II Reaction Buffer	No specific data.
	100 mM dNTP Mix (25 mM each dNTP)	No specific data.
<b>Skin contact</b>	: DMSO	No specific data.
	Herculase II Fusion DNA Polymerase	No specific data.
	5X Herculase II Reaction Buffer	No specific data.
	100 mM dNTP Mix (25 mM each dNTP)	No specific data.
<b>Ingestion</b>	: DMSO	No specific data.
	Herculase II Fusion DNA Polymerase	No specific data.
	5X Herculase II Reaction Buffer	No specific data.
	100 mM dNTP Mix (25 mM each dNTP)	No specific data.

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

## Section 4. First aid measures

<b>Notes to physician</b>	: DMSO	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Herculase II Fusion DNA Polymerase	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	5X Herculase II Reaction Buffer	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.
	100 mM dNTP Mix (25 mM each dNTP)	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
<b>Specific treatments</b>	: DMSO	No specific treatment.
	Herculase II Fusion DNA Polymerase	No specific treatment.
	5X Herculase II Reaction Buffer	No specific treatment.
	100 mM dNTP Mix (25 mM each dNTP)	No specific treatment.
<b>Protection of first-aiders</b>	: DMSO	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.
	Herculase II Fusion 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.
	5X Herculase II Reaction Buffer	No action shall be taken involving any personal risk or without suitable training.
	100 mM dNTP Mix (25 mM each dNTP)	No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### 5.1 Extinguishing media

<b>Suitable extinguishing media</b>	: DMSO	Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.
	Herculase II Fusion DNA Polymerase	Use an extinguishing agent suitable for the surrounding fire.
	5X Herculase II Reaction Buffer	Use an extinguishing agent suitable for the surrounding fire.
	100 mM dNTP Mix (25 mM each dNTP)	Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media</b>	: DMSO	Do not use water jet.
	Herculase II Fusion DNA Polymerase	None known.
	5X Herculase II Reaction Buffer	None known.
	100 mM dNTP Mix (25 mM each dNTP)	None known.

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



## Section 5. Fire-fighting measures

<b>Specific hazards arising from the chemical</b>	: DMSO	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 vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.
	Herculase II Fusion DNA Polymerase	In a fire or if heated, a pressure increase will occur and the container may burst.
	5X Herculase II Reaction Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
	100 mM dNTP Mix (25 mM each dNTP)	In a fire or if heated, a pressure increase will occur and the container may burst.
<b>Hazardous thermal decomposition products</b>	: DMSO	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides
	Herculase II Fusion DNA Polymerase	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	5X Herculase II Reaction Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides metal oxide/oxides
	100 mM dNTP Mix (25 mM each dNTP)	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides

### 5.3 Advice for firefighters

<b>Special protective actions for fire-fighters</b>	: 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.
	Herculase II Fusion 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.
	5X Herculase II 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.
	100 mM dNTP Mix (25 mM each dNTP)	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.



## Section 5. Fire-fighting measures

<b>Special protective equipment for fire-fighters</b>	: DMSO	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Herculase II Fusion 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.
	5X Herculase II 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.
	100 mM dNTP Mix (25 mM each dNTP)	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

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

<b>For non-emergency personnel</b>	: 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 spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	Herculase II Fusion 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 spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	5X Herculase II Reaction Buffer	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
	100 mM dNTP Mix (25 mM each dNTP)	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
<b>For emergency responders</b>	: DMSO	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	Herculase II Fusion DNA Polymerase	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	5X Herculase II Reaction Buffer	If specialized clothing is required to deal with the

## Section 6. Accidental release measures

	100 mM dNTP Mix (25 mM each dNTP)	spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
<b>6.2 Environmental precautions</b>	: DMSO	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	Herculase II Fusion DNA Polymerase	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	5X Herculase II Reaction Buffer	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	100 mM dNTP Mix (25 mM each dNTP)	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### 6.3 Methods and materials for containment and cleaning up

<b>Methods for cleaning up</b>	: 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.
	Herculase II Fusion 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.
	5X Herculase II 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.
	100 mM dNTP Mix (25 mM each dNTP)	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

## Section 7. Handling and storage

### 7.1 Precautions for safe handling

**Protective measures** : DMSO

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor 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.

Herculase II Fusion DNA  
Polymerase

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

5X Herculase II Reaction Buffer

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

100 mM dNTP Mix (25 mM each  
dNTP)

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.

Herculase II Fusion 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.

5X Herculase II 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.

100 mM dNTP Mix (25 mM each  
dNTP)

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

## Section 7. Handling and storage

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

: DMSO

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

Herculase II Fusion DNA Polymerase

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

5X Herculase II Reaction Buffer

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

100 mM dNTP Mix (25 mM each dNTP)

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

### 7.3 Specific end use(s)

#### Recommendations

: DMSO

Industrial applications, Professional applications.  
Industrial applications, Professional applications.

Herculase II Fusion DNA Polymerase

Industrial applications, Professional applications.

5X Herculase II Reaction Buffer  
100 mM dNTP Mix (25 mM each dNTP)

Industrial applications, Professional applications.

## Section 7. Handling and storage

<b>Industrial sector specific solutions</b>	: <b>DMSO</b>	Not available.
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer	Not available.
	100 mM dNTP Mix (25 mM each dNTP)	Not available.

## Section 8. Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
<b>DMSO</b> Dimethyl sulfoxide	<b>OARS WEEL (United States, 1/2021).</b> TWA: 250 ppm 8 hours.
<b>Herculase II Fusion DNA Polymerase</b> Glycerol	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>OSHA PEL (United States, 5/2018).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> 8 hours. Form: Total dust
<b>5X Herculase II Reaction Buffer</b> Trometamol Ammonium sulphate Hexadecan-1-ol, ethoxylated	None. None. None.

#### Biological exposure indices

No exposure indices known.

### 8.2 Exposure controls

#### 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: chemical splash goggles.

##### Skin protection

## Section 8. Exposure controls/personal protection

- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.


## Section 9. Physical and chemical properties and safety characteristics


The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.


### Appearance

<b>Physical state</b>	: DMSO	Liquid. [Clear.]
	Herculase II Fusion DNA Polymerase	Liquid.
	5X Herculase II Reaction Buffer	Liquid.
	100 mM dNTP Mix (25 mM each dNTP)	Liquid.
<b>Color</b>	: DMSO	Colorless.
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer	Not available.
	100 mM dNTP Mix (25 mM each dNTP)	Not available.
<b>Odor</b>	: DMSO	Odorless. [Slight]
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer	Not available.
	100 mM dNTP Mix (25 mM each dNTP)	Not available.
<b>Odor threshold</b>	: DMSO	Not available.
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer	Not available.
	100 mM dNTP Mix (25 mM each dNTP)	Not available.
<b>pH</b>	: DMSO	Not available.
	Herculase II Fusion DNA Polymerase	8.2
	5X Herculase II Reaction Buffer	9.5 to 10.5
	100 mM dNTP Mix (25 mM each dNTP)	7.5

## Section 9. Physical and chemical properties and safety characteristics

<b>Melting point/freezing point</b>	: DMSO	18.5°C (65.3°F)
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer	Not available.
	100 mM dNTP Mix (25 mM each dNTP)	Not available.
<b>Boiling point, initial boiling point, and boiling range</b>	: DMSO	189°C (372.2°F)
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer	Not available.
	100 mM dNTP Mix (25 mM each dNTP)	Not available.
<b>Flash point</b>	:  DMSO	Closed cup: 87°C (188.6°F) [ASTM D 93] Open cup: 87°C (188.6°F)
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer	Not available.
	100 mM dNTP Mix (25 mM each dNTP)	Not available.

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
 Herculase II Fusion DNA Polymerase						
Glycerol				177	350.6	

<b>Evaporation rate</b>	: DMSO	0.026 (butyl acetate = 1)
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer	Not available.
	100 mM dNTP Mix (25 mM each dNTP)	Not available.
<b>Flammability</b>	: DMSO	Not applicable.
	Herculase II Fusion DNA Polymerase	Not applicable.
	5X Herculase II Reaction Buffer	Not applicable.
	100 mM dNTP Mix (25 mM each dNTP)	Not applicable.
<b>Lower and upper explosion limit/flammability limit</b>	: DMSO	Lower: 2.6% Upper: 28.5%
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer	Not available.
	100 mM dNTP Mix (25 mM each dNTP)	Not available.
<b>Vapor pressure</b>	:  DMSO	0.056 kPa (0.42 mm Hg) [EU A.4]
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer	Not available.
	100 mM dNTP Mix (25 mM each dNTP)	Not available.



## Section 9. Physical and chemical properties and safety characteristics

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
<b>Herculase II Fusion DNA Polymerase</b>						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
<b>5X Herculase II Reaction Buffer</b>						
water	23.8	3.2		92.258	12.3	
Trometamol	<0.00075006	<0.0001				
<b>100 mM dNTP Mix (25 mM each dNTP)</b>						
water	23.8	3.2		92.258	12.3	

**Relative vapor density** : DMSO 2.7 [Air = 1]  
Herculase II Fusion DNA Polymerase Not available.  
5X Herculase II Reaction Buffer Not available.  
100 mM dNTP Mix (25 mM each dNTP) Not available.

**Relative density** : DMSO 1.1  
Herculase II Fusion DNA Polymerase Not available.  
5X Herculase II Reaction Buffer Not available.  
100 mM dNTP Mix (25 mM each dNTP) Not available.

<b>Solubility(ies)</b>	<b>Media</b>	<b>Result</b>
	<b>DMSO</b>	
	water	Soluble
	<b>Herculase II Fusion DNA Polymerase</b>	
	water	Soluble
	<b>5X Herculase II Reaction Buffer</b>	
	water	Soluble
	<b>100 mM dNTP Mix (25 mM each dNTP)</b>	
	water	Soluble

**Partition coefficient: n-octanol/water** : **DMSO** -1.35  
Herculase II Fusion DNA Polymerase Not applicable.  
5X Herculase II Reaction Buffer Not applicable.  
100 mM dNTP Mix (25 mM each dNTP) Not applicable.

## Section 9. Physical and chemical properties and safety characteristics

**Auto-ignition temperature** : DMSO 300 to 302°C (572 to 575.6°F)  
 Herculase II Fusion DNA Polymerase Not available.  
 5X Herculase II Reaction Buffer Not available.  
 100 mM dNTP Mix (25 mM each dNTP) Not available.

Ingredient name	°C	°F	Method
Herculase II Fusion DNA Polymerase			
Glycerol	370	698	

**Decomposition temperature** : DMSO 140 to 189°C (284 to 372.2°F)  
 Herculase II Fusion DNA Polymerase Not available.  
 5X Herculase II Reaction Buffer Not available.  
 100 mM dNTP Mix (25 mM each dNTP) Not available.

**Viscosity** : DMSO Dynamic: 2.14 mPa·s (2.14 cP)  
 Herculase II Fusion DNA Polymerase Not available.  
 5X Herculase II Reaction Buffer Not available.  
 100 mM dNTP Mix (25 mM each dNTP) Not available.

### Particle characteristics

**Median particle size** : DMSO Not applicable.  
 Herculase II Fusion DNA Polymerase Not applicable.  
 5X Herculase II Reaction Buffer Not applicable.  
 100 mM dNTP Mix (25 mM each dNTP) Not applicable.

## Section 10. Stability and reactivity

**10.1 Reactivity** : DMSO No specific test data related to reactivity available for this product or its ingredients.  
 Herculase II Fusion DNA Polymerase No specific test data related to reactivity available for this product or its ingredients.  
 5X Herculase II Reaction Buffer No specific test data related to reactivity available for this product or its ingredients.  
 100 mM dNTP Mix (25 mM each dNTP) No specific test data related to reactivity available for this product or its ingredients.

**10.2 Chemical stability** : DMSO The product is stable.  
 Herculase II Fusion DNA Polymerase The product is stable.  
 5X Herculase II Reaction Buffer The product is stable.  
 100 mM dNTP Mix (25 mM each dNTP) The product is stable.

**10.3 Possibility of hazardous reactions** : DMSO Under normal conditions of storage and use, hazardous reactions will not occur.  
 Herculase II Fusion DNA Polymerase Under normal conditions of storage and use, hazardous reactions will not occur.  
 5X Herculase II Reaction Buffer Under normal conditions of storage and use, hazardous reactions will not occur.  
 100 mM dNTP Mix (25 mM each dNTP) Under normal conditions of storage and use, hazardous reactions will not occur.

## Section 10. Stability and reactivity

<b>10.4 Conditions to avoid</b>	: DMSO	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. No specific data.
	Herculase II Fusion DNA Polymerase	No specific data.
	5X Herculase II Reaction Buffer	No specific data.
	100 mM dNTP Mix (25 mM each dNTP)	No specific data.
<b>10.5 Incompatible materials</b>	: DMSO	Reactive or incompatible with the following materials: oxidizing materials
	Herculase II Fusion DNA Polymerase	May react or be incompatible with oxidizing materials.
	5X Herculase II Reaction Buffer	May react or be incompatible with oxidizing materials.
	100 mM dNTP Mix (25 mM each dNTP)	May react or be incompatible with oxidizing materials.
<b>10.6 Hazardous decomposition products</b>	: DMSO	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Herculase II Fusion DNA Polymerase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	5X Herculase II Reaction Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	100 mM dNTP Mix (25 mM each dNTP)	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
<b>DMSO</b> Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
<b>Herculase II Fusion DNA Polymerase</b> Glycerol	LD50 Oral	Rat	12600 mg/kg	-
<b>5X Herculase II Reaction Buffer</b> Trometamol	LD50 Dermal	Rat	>5000 mg/kg	-
Ammonium sulphate	LD50 Oral	Rat	2840 mg/kg	-
Hexadecan-1-ol, ethoxylated	LD50 Oral	Rat	2500 mg/kg	-

#### Irritation/Corrosion

## Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>DMSO</b> Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	100 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	100 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
<b>Herculase II Fusion DNA Polymerase</b> Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
<b>5X Herculase II Reaction Buffer</b> Trometamol	Skin - Moderate irritant	Rabbit	-	25 %	-
	Skin - Severe irritant	Rabbit	-	500 mg	-

### Sensitization

Not available.

### Mutagenicity

**Conclusion/Summary** : Not available.

### Carcinogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
<b>5X Herculase II Reaction Buffer</b> Trometamol	Category 3	-	Respiratory tract irritation

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

### Information on the likely routes of exposure

: **DMSO**

Herculase II Fusion DNA Polymerase  
5X Herculase II Reaction Buffer  
  
100 mM dNTP Mix (25 mM each dNTP)

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

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

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

Not available.

### Potential acute health effects

## Section 11. Toxicological information

<b>Eye contact</b>	: DMSO	Causes eye irritation.
	Herculase II Fusion DNA Polymerase	Causes eye irritation.
	5X Herculase II Reaction Buffer	No known significant effects or critical hazards.
	100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards.
<b>Inhalation</b>	: DMSO	No known significant effects or critical hazards.
	Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
	5X Herculase II Reaction Buffer	No known significant effects or critical hazards.
	100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards.
<b>Skin contact</b>	: DMSO	No known significant effects or critical hazards.
	Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
	5X Herculase II Reaction Buffer	No known significant effects or critical hazards.
	100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards.
<b>Ingestion</b>	: DMSO	No known significant effects or critical hazards.
	Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
	5X Herculase II Reaction Buffer	No known significant effects or critical hazards.
	100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards.

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

<b>Eye contact</b>	: DMSO	Adverse symptoms may include the following: irritation watering redness
	Herculase II Fusion DNA Polymerase	Adverse symptoms may include the following:  irritation watering redness
	5X Herculase II Reaction Buffer	No specific data.
	100 mM dNTP Mix (25 mM each dNTP)	No specific data.
<b>Inhalation</b>	: DMSO	No specific data.
	Herculase II Fusion DNA Polymerase	No specific data.
	5X Herculase II Reaction Buffer	No specific data.
	100 mM dNTP Mix (25 mM each dNTP)	No specific data.
<b>Skin contact</b>	: DMSO	No specific data.
	Herculase II Fusion DNA Polymerase	No specific data.
	5X Herculase II Reaction Buffer	No specific data.
	100 mM dNTP Mix (25 mM each dNTP)	No specific data.
<b>Ingestion</b>	: DMSO	No specific data.
	Herculase II Fusion DNA Polymerase	No specific data.
	5X Herculase II Reaction Buffer	No specific data.
	100 mM dNTP Mix (25 mM each dNTP)	No specific data.

## Section 11. Toxicological information

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Potential chronic health effects

<b>General</b>	: DMSO Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer 100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: DMSO Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer 100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Mutagenicity</b>	: DMSO Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer 100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Reproductive toxicity</b>	: <input checked="" type="checkbox"/> DMSO Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer 100 mM dNTP Mix (25 mM each dNTP)	No known significant effects or critical hazards. 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

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
<input checked="" type="checkbox"/> <b>DMSO</b> Dimethyl sulfoxide	14500	40000	N/A	N/A	N/A
<b>Herculase II Fusion DNA Polymerase</b> Glycerol	12600	N/A	N/A	N/A	N/A
<b>5X Herculase II Reaction Buffer</b> 5X Herculase II Reaction Buffer	107739.0	N/A	N/A	N/A	N/A
Ammonium sulphate	2840	N/A	N/A	N/A	N/A
Hexadecan-1-ol, ethoxylated	2500	N/A	N/A	N/A	N/A

## Section 12. Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<b>DMSO</b> 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 ul/L Marine water	Algae - Ulva lactuca	72 hours
	Chronic NOEC 100 ul/L Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	21 days
<b>Herculase II Fusion DNA Polymerase</b> Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
<b>5X Herculase II Reaction Buffer</b> Trometamol	Acute EC50 >980 mg/l Fresh water	Daphnia	48 hours
	Acute NOEC 520 mg/l Fresh water	Daphnia	48 hours
Ammonium sulphate	Chronic NOEC 7.5 mg/l Marine water	Algae - Phaeodactylum tricornutum - Exponential growth phase	96 hours
Hexadecan-1-ol, ethoxylated	Acute LC50 330000 to 1000000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours

### 12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
<b>DMSO</b> Dimethyl sulfoxide	OECD 301D Ready Biodegradability - Closed Bottle Test	31 % - Not readily - 28 days	-	-
<b>Herculase II Fusion DNA Polymerase</b> Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
<b>5X Herculase II Reaction Buffer</b> Trometamol	OECD 301F Ready Biodegradability - Manometric Respirometry Test	97.1 % - Readily - 28 days	30 mg/l	-



## Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
<b>DMSO</b> Dimethyl sulfoxide	-	-	Not readily
<b>5X Herculase II Reaction Buffer</b> Trometamol	-	-	Readily
Ammonium sulphate	-	-	Readily
Hexadecan-1-ol, ethoxylated	-	-	Readily

### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>DMSO</b> Dimethyl sulfoxide	-1.35	3.16	low
<b>Herculase II Fusion DNA Polymerase</b> Glycerol	-1.76	-	low
<b>5X Herculase II Reaction Buffer</b> Trometamol	-2.31	-	low
Ammonium sulphate	-5.1	-	low

### 12.4 Mobility in soil

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

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

## Section 13. Disposal considerations

### 13.1 Waste treatment methods

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

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

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

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

## Section 14. Transport information

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

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

**Transport in bulk according to IMO instruments** : Not available.

## Section 15. Regulatory information

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

**U.S. Federal regulations** : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined  
**Clean Water Act (CWA) 311:** Edetic acid

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

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

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

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

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

#### SARA 302/304

##### Composition/information on ingredients

No products were found.

**SARA 304 RQ** : Not applicable.

#### SARA 311/312

<b>Classification</b>	: DMSO	FLAMMABLE LIQUIDS - Category 4
		EYE IRRITATION - Category 2B
	Herculase II Fusion DNA Polymerase	EYE IRRITATION - Category 2B
	5X Herculase II Reaction Buffer	Not applicable.
	100 mM dNTP Mix (25 mM each dNTP)	Not applicable.

##### Composition/information on ingredients

Name	%	Classification
<b>DMSO</b> Dimethyl sulfoxide	100	FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B
<b>Herculase II Fusion DNA Polymerase</b> Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
<b>5X Herculase II Reaction Buffer</b> Trometamol	≤3	COMBUSTIBLE DUSTS SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

**Section 15. Regulatory information**

Ammonium sulphate	≤3	EYE IRRITATION - Category 2A
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**SARA 313**

	Product name	CAS number	%
<b>Form R - Reporting requirements</b>	<b>5X Herculase II Reaction Buffer</b> Ammonium sulphate	7783-20-2	≤3
<b>Supplier notification</b>	<b>5X Herculase II Reaction Buffer</b> Ammonium sulphate	7783-20-2	≤3

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

**State regulations**

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

**California Prop. 65**

This product does not require a Safe Harbor warning under California Prop. 65.

**International regulations****Chemical Weapon Convention List Schedules I, II & III Chemicals**

Not listed.

**Montreal Protocol**

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** : Not determined.
- Canada** : Not determined.
- China** : Not determined.
- Eurasian Economic Union** : **Russian Federation inventory**: Not determined.
- Japan** : **Japan inventory (CSCL)**: Not determined.  
**Japan inventory (ISHL)**: Not determined.
- New Zealand** : Not determined.
- Philippines** : Not determined.
- Republic of Korea** : Not determined.
- Taiwan** : All components are listed or exempted.
- Thailand** : Not determined.
- Turkey** : Not determined.
- United States** : Not determined.
- Viet Nam** : Not determined.

## Section 16. Other information

### [Procedure used to derive the classification](#)

Classification	Justification
<b>DMSO</b> FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B	On basis of test data On basis of test data
<b>Herculase II Fusion DNA Polymerase</b> EYE IRRITATION - Category 2B	Calculation method

### [History](#)

<b>Date of issue</b>	: 04/04/2023
<b>Date of previous issue</b>	: 07/02/2020
<b>Version</b>	: 8
<b>Key to abbreviations</b>	: 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) N/A = Not available UN = United Nations

📌 Indicates information that has changed from previously issued version.

### [Notice to reader](#)

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