

SAFETY DATA SHEET



Dpn I Restriction Enzyme, Part Number 500402

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

1.1 Product identifier

Product name : Dpn I Restriction Enzyme, Part Number 500402
Part no. (chemical kit) : 500402
Part no. : Dpn I 500402-51
 10X Universal Buffer 510000-50
 10X Optimal Buffer 7 510000-57

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

Identified uses : Analytical reagent.
 Dpn I 0.02 ml (200 U 10 U/μl)
 10X Universal Buffer 1 ml
 10X Optimal Buffer 7 1 ml
Uses advised against : None known.

1.3 Details of the supplier of the safety data sheet

Agilent Technologies Deutschland GmbH
 Hewlett-Packard-Str. 8
 76337 Waldbronn
 Germany
 0800 603 1000
e-mail address of person responsible for this SDS : pdl-msds_author@agilent.com

1.4 Emergency telephone number

Emergency telephone number (with hours of operation) : CHEMTREC®: +(44)-870-8200418

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Dpn I Mixture
 10X Universal Buffer Mixture
 10X Optimal Buffer 7 Mixture

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

Not classified.

Dpn I The product is not classified as hazardous according to Regulation (EC) 1272/2008 as amended.
 10X Universal Buffer The product is not classified as hazardous according to Regulation (EC) 1272/2008 as amended.
 10X Optimal Buffer 7 The product is not classified as hazardous according to Regulation (EC) 1272/2008 as amended.

Ingredients of unknown toxicity : Dpn I Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%
 10X Universal Buffer Percentage of the mixture consisting of ingredient(s) of unknown acute dermal toxicity: 10 - 30%
 Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 10 - 30%
 Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 1 - 10%
 10X Optimal Buffer 7 Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 10 - 30%

SECTION 2: Hazards identification

Ingredients of unknown ecotoxicity	: 10X Universal Buffer	Contains 4.5% of components with unknown hazards to the aquatic environment
	10X Optimal Buffer 7	Contains 2% of components with unknown hazards to the aquatic environment

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Signal word	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	No signal word. No signal word. No signal word.
Hazard statements	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<u>Precautionary statements</u>		
Prevention	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not applicable. Not applicable. Not applicable.
Response	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not applicable. Not applicable. Not applicable.
Storage	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not applicable. Not applicable. Not applicable.
Disposal	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not applicable. Not applicable. Not applicable.
Supplemental label elements	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not applicable. Contains 2-mercaptoethanol. May produce an allergic reaction. Safety data sheet available on request. Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not applicable. Not applicable. Not applicable.
<u>Special packaging requirements</u>		
Tactile warning of danger	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not applicable. Not applicable. Not applicable.

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
Other hazards which do not result in classification	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	None known. None known. None known.

SECTION 3: Composition/information on ingredients

3.1 Substances : Dpn I Mixture
 10X Universal Buffer Mixture
 10X Optimal Buffer 7 Mixture

Product/ingredient name	Identifiers	%	Classification	Specific Conc. Limits, M-factors and ATEs	Type
Dpn I glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	-	[1]
10X Universal Buffer [2-hydroxy-1,1-bis (hydroxymethyl)ethyl] ammonium acetate	EC: 229-939-6 CAS: 6850-28-8	≤5	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335	-	[1]
2-mercaptoethanol	EC: 200-464-6 CAS: 60-24-2	<0.1	Acute Tox. 3, H301 Acute Tox. 2, H310 Acute Tox. 3, H331 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1A, H317 Repr. 2, H361f STOT RE 2, H373 (heart, liver) Aquatic Acute 1, H400 Aquatic Chronic 2, H411 See Section 16 for the full text of the H statements declared above.	ATE [Oral] = 244 mg/kg ATE [Dermal] = 200 mg/kg ATE [Inhalation (vapours)] = 3 mg/l M [Acute] = 1	[1]

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type
 Dpn I [1] Substance with a workplace exposure limit
 10X Universal Buffer [1] Substance classified with a health or environmental hazard

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

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Dpn I Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
 10X Universal 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.
 10X Optimal Buffer 7 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 : Dpn I Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
 10X Universal 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

SECTION 4: First aid measures

		person may need to be kept under medical surveillance for 48 hours.
	10X Optimal Buffer 7	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	: Dpn I	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10X Universal Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10X Optimal Buffer 7	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: Dpn I	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.
	10X Universal 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.
	10X Optimal Buffer 7	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.
Protection of first-aiders	: Dpn I	No action shall be taken involving any personal risk or without suitable training.
	10X Universal Buffer	No action shall be taken involving any personal risk or without suitable training.
	10X Optimal Buffer 7	No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact	: Dpn I	No known significant effects or critical hazards.
	10X Universal Buffer	No known significant effects or critical hazards.
	10X Optimal Buffer 7	No known significant effects or critical hazards.
Inhalation	: Dpn I	No known significant effects or critical hazards.
	10X Universal Buffer	No known significant effects or critical hazards.
	10X Optimal Buffer 7	No known significant effects or critical hazards.
Skin contact	: Dpn I	No known significant effects or critical hazards.
	10X Universal Buffer	No known significant effects or critical hazards.
	10X Optimal Buffer 7	No known significant effects or critical hazards.
Ingestion	: Dpn I	No known significant effects or critical hazards.
	10X Universal Buffer	No known significant effects or critical hazards.
	10X Optimal Buffer 7	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: Dpn I	No specific data.
	10X Universal Buffer	No specific data.
	10X Optimal Buffer 7	No specific data.
Inhalation	: Dpn I	No specific data.
	10X Universal Buffer	No specific data.
	10X Optimal Buffer 7	No specific data.

SECTION 4: First aid measures

Skin contact	: Dpn I	No specific data.
	10X Universal Buffer	No specific data.
	10X Optimal Buffer 7	No specific data.
Ingestion	: Dpn I	No specific data.
	10X Universal Buffer	No specific data.
	10X Optimal Buffer 7	No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	: Dpn I	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	10X Universal 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.
	10X Optimal Buffer 7	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Specific treatments	: Dpn I	No specific treatment.
	10X Universal Buffer	No specific treatment.
	10X Optimal Buffer 7	No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	: Dpn I	Use an extinguishing agent suitable for the surrounding fire.
	10X Universal Buffer	Use an extinguishing agent suitable for the surrounding fire.
	10X Optimal Buffer 7	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: Dpn I	None known.
	10X Universal Buffer	None known.
	10X Optimal Buffer 7	None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	: Dpn I	In a fire or if heated, a pressure increase will occur and the container may burst.
	10X Universal Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
	10X Optimal Buffer 7	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous combustion products	: Dpn I	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
	10X Universal Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides metal oxide/oxides
	10X Optimal Buffer 7	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds metal oxide/oxides

5.3 Advice for firefighters

SECTION 5: Firefighting measures

Special precautions for fire-fighters	: Dpn I	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	10X Universal 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.
	10X Optimal Buffer 7	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	: Dpn I	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	10X Universal Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	10X Optimal Buffer 7	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: Dpn I	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	10X Universal Buffer	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	10X Optimal Buffer 7	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
For emergency responders	: Dpn I	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	10X Universal Buffer	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	10X Optimal Buffer 7	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".

SECTION 6: Accidental release measures

6.2 Environmental precautions	: Dpn I	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 Universal 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).
	10X Optimal Buffer 7	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	: Dpn I	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
	10X Universal 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.
	10X Optimal Buffer 7	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections	: See Section 1 for emergency contact information. See Section 8 for information on appropriate personal protective equipment. See Section 13 for additional waste treatment information.
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SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures	: Dpn I	Put on appropriate personal protective equipment (see Section 8).
	10X Universal Buffer	Put on appropriate personal protective equipment (see Section 8).
	10X Optimal Buffer 7	Put on appropriate personal protective equipment (see Section 8).
Advice on general occupational hygiene	: Dpn I	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 Universal 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.
	10X Optimal Buffer 7	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.

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SECTION 7: Handling and storage

7.2 Conditions for safe storage, including any incompatibilities

Storage	: Dpn I	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
	10X Universal 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.
	10X Optimal Buffer 7	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.

7.3 Specific end use(s)

Recommendations	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
Industrial sector specific solutions	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not available. Not available. Not available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
Dpn I Glycerol	NAOSH (Ireland, 5/2021). Notes: Advisory Occupational Exposure Limit Values (OELVs) OELV: 10 mg/m ³ 8 hours. Form: mist

Biological exposure indices

No exposure indices known.

Recommended monitoring procedures	: Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical
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SECTION 8: Exposure controls/personal protection

agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

Product/ingredient name	Type	Exposure	Value	Population	Effects
10X Universal Buffer 2-Mercaptoethanol	DNEL	Short term Oral	0.025 mg/kg bw/day	General population	Systemic
	DNEL	Long term Oral	0.025 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	0.05 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Dermal	0.05 mg/kg bw/day	Workers	Systemic
	DNEL	Short term Inhalation	0.17 mg/m ³	Workers	Systemic
	DNEL	Long term Inhalation	0.17 mg/m ³	Workers	Systemic

PNECs

No PNECs available

8.2 Exposure controls

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

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

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

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

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

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

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SECTION 9: Physical and chemical properties

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

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Liquid. Liquid. Liquid.																			
Colour	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not available. Not available. Not available.																			
Odour	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not available. Not available. Not available.																			
Odour threshold	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not available. Not available. Not available.																			
Melting point/freezing point	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not available. Not available. Not available.																			
Initial boiling point and boiling range	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not available. Not available. Not available.																			
Flammability	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not applicable. Not applicable. Not applicable.																			
Upper/lower flammability or explosive limits	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not available. Not available. Not available.																			
Flash point	:	<table border="1"> <thead> <tr> <th rowspan="2">Ingredient name</th> <th colspan="2">Closed cup</th> <th colspan="2">Open cup</th> </tr> <tr> <th>°C</th> <th>Method</th> <th>°C</th> <th>Method</th> </tr> </thead> <tbody> <tr> <td>Dpn I</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>glycerol</td> <td>-</td> <td>-</td> <td>177</td> <td>-</td> </tr> </tbody> </table>	Ingredient name	Closed cup		Open cup		°C	Method	°C	Method	Dpn I					glycerol	-	-	177	-
Ingredient name	Closed cup			Open cup																	
	°C	Method	°C	Method																	
Dpn I																					
glycerol	-	-	177	-																	
Auto-ignition temperature	:	<table border="1"> <thead> <tr> <th>Ingredient name</th> <th>°C</th> <th>Method</th> </tr> </thead> <tbody> <tr> <td>Dpn I</td> <td></td> <td></td> </tr> <tr> <td>glycerol</td> <td>370</td> <td>-</td> </tr> </tbody> </table>	Ingredient name	°C	Method	Dpn I			glycerol	370	-										
Ingredient name	°C	Method																			
Dpn I																					
glycerol	370	-																			
Decomposition temperature	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not available. Not available. Not available.																			
pH	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	7.5 7.6 7.7																			
Viscosity	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not available. Not available. Not available.																			
Solubility(ies)	:	<table border="1"> <thead> <tr> <th>Media</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Dpn I water</td> <td>Soluble</td> </tr> <tr> <td>10X Universal Buffer water</td> <td>Soluble</td> </tr> <tr> <td>10X Optimal Buffer 7 water</td> <td>Soluble</td> </tr> </tbody> </table>	Media	Result	Dpn I water	Soluble	10X Universal Buffer water	Soluble	10X Optimal Buffer 7 water	Soluble											
Media	Result																				
Dpn I water	Soluble																				
10X Universal Buffer water	Soluble																				
10X Optimal Buffer 7 water	Soluble																				
Partition coefficient: n-octanol/water	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Not applicable. Not applicable. Not applicable.																			

SECTION 9: Physical and chemical properties

Vapour pressure	Ingredient name	Vapour Pressure at 20°C			Vapour pressure at 50°C		
		mm Hg	kPa	Method	mm Hg	kPa	Method
	Dpn I						
	water	17.5	2.3	-	92.258	12.3	-
	glycerol	0.000075	0.00001	-	0.0025	0.00033	-
	10X Universal Buffer						
	water	17.5	2.3	-	92.258	12.3	-
	10X Optimal Buffer 7						
	water	17.5	2.3	-	92.258	12.3	-

Evaporation rate : Dpn I Not available.
 10X Universal Buffer Not available.
 10X Optimal Buffer 7 Not available.

Relative density : Dpn I Not available.
 10X Universal Buffer Not available.
 10X Optimal Buffer 7 Not available.

Vapour density : Dpn I Not available.
 10X Universal Buffer Not available.
 10X Optimal Buffer 7 Not available.

Explosive properties : Dpn I Not available.
 10X Universal Buffer Not available.
 10X Optimal Buffer 7 Not available.

Oxidising properties : Dpn I Not available.
 10X Universal Buffer Not available.
 10X Optimal Buffer 7 Not available.

Particle characteristics

Median particle size : Dpn I Not applicable.
 10X Universal Buffer Not applicable.
 10X Optimal Buffer 7 Not applicable.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity : Dpn I No specific test data related to reactivity available for this product or its ingredients.
 10X Universal Buffer No specific test data related to reactivity available for this product or its ingredients.
 10X Optimal Buffer 7 No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : Dpn I The product is stable.
 10X Universal Buffer The product is stable.
 10X Optimal Buffer 7 The product is stable.

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SECTION 10: Stability and reactivity

10.3 Possibility of hazardous reactions	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	No specific data. No specific data. No specific data.
10.5 Incompatible materials	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.
10.6 Hazardous decomposition products	: Dpn I 10X Universal Buffer 10X Optimal Buffer 7	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
10X Universal Buffer 2-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
10X Universal Buffer 2-Mercaptoethanol	244	200	N/A	3	N/A

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
10X Universal Buffer 2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 mg	-

Sensitiser

Conclusion/Summary : 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)

SECTION 11: Toxicological information

Product/ingredient name	Category	Route of exposure	Target organs
10X Universal Buffer [2-Hydroxy-1,1-bis(hydroxymethyl)ethyl]ammonium acetate	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
10X Universal Buffer 2-Mercaptoethanol	Category 2	-	heart, liver

Aspiration hazard

Not available.

Information on likely routes of exposure : Dpn I Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
 10X Universal Buffer Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
 10X Optimal Buffer 7 Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Inhalation : Dpn I No known significant effects or critical hazards.
 10X Universal Buffer No known significant effects or critical hazards.
 10X Optimal Buffer 7 No known significant effects or critical hazards.

Ingestion : Dpn I No known significant effects or critical hazards.
 10X Universal Buffer No known significant effects or critical hazards.
 10X Optimal Buffer 7 No known significant effects or critical hazards.

Skin contact : Dpn I No known significant effects or critical hazards.
 10X Universal Buffer No known significant effects or critical hazards.
 10X Optimal Buffer 7 No known significant effects or critical hazards.

Eye contact : Dpn I No known significant effects or critical hazards.
 10X Universal Buffer No known significant effects or critical hazards.
 10X Optimal Buffer 7 No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : Dpn I No specific data.
 10X Universal Buffer No specific data.
 10X Optimal Buffer 7 No specific data.

Ingestion : Dpn I No specific data.
 10X Universal Buffer No specific data.
 10X Optimal Buffer 7 No specific data.

Skin contact : Dpn I No specific data.
 10X Universal Buffer No specific data.
 10X Optimal Buffer 7 No specific data.

Eye contact : Dpn I No specific data.
 10X Universal Buffer No specific data.
 10X Optimal Buffer 7 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

Conclusion/Summary : Not available.

SECTION 12: Ecological information

12.6 Endocrine disrupting properties

Not available.

12.7 Other adverse effects

No known significant effects or critical hazards.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 2008/98/EC.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	IMDG	IATA
14.1 UN number or ID number	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-
14.3 Transport hazard class(es)	-	-	-
14.4 Packing group	-	-	-
14.5 Environmental hazards	No.	No.	No.

Additional information

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

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

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

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

No listed substance

Label	: Dpn I	Not applicable.
	10X Universal Buffer	Not applicable.
	10X Optimal Buffer 7	Not applicable.

Other EU regulations

Ozone depleting substances (1005/2009/EU)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Persistent Organic Pollutants

Not listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

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	: At least one component is not listed in DSL but all such components are listed in NDSL.
China	: Not determined.
Eurasian Economic Union	: Russian Federation inventory : All components are listed or exempted.
Japan	: Japan inventory (CSCL) : Not determined. Japan inventory (ISHL) : Not determined.
New Zealand	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
Republic of Korea	: Not determined.
Taiwan	: All components are listed or exempted.
Thailand	: Not determined.

Dpn I Restriction Enzyme, Part Number 500402

SECTION 15: Regulatory information

- Turkey** : Not determined.
United States : All components are active or exempted.
Viet Nam : All components are listed or exempted.

15.2 Chemical safety assessment : This product contains substances for which Chemical Safety Assessments might still be required.

SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

- Abbreviations and acronyms** : ATE = Acute Toxicity Estimate
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
 DMEL = Derived Minimal Effect Level
 DNEL = Derived No Effect Level
 EUH statement = CLP-specific Hazard statement
 N/A = Not available
 PBT = Persistent, Bioaccumulative and Toxic
 PNEC = Predicted No Effect Concentration
 RRN = REACH Registration Number
 vPvB = Very Persistent and Very Bioaccumulative

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Not classified.	

Full text of abbreviated H statements

10X Universal Buffer H301 H310 H315 H317 H318 H319 H331 H335 H361f H373 H400 H411	Toxic if swallowed. Fatal in contact with skin. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Causes serious eye irritation. Toxic if inhaled. May cause respiratory irritation. Suspected of damaging fertility. May cause damage to organs through prolonged or repeated exposure. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.
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Full text of classifications [CLP/GHS]

10X Universal Buffer Acute Tox. 2 Acute Tox. 3 Aquatic Acute 1 Aquatic Chronic 2 Eye Dam. 1 Eye Irrit. 2 Repr. 2 Skin Irrit. 2 Skin Sens. 1A STOT RE 2 STOT SE 3	ACUTE TOXICITY - Category 2 ACUTE TOXICITY - Category 3 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 REPRODUCTIVE TOXICITY - Category 2 SKIN CORROSION/IRRITATION - Category 2 SKIN SENSITISATION - Category 1A SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE - Category 3
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Date of issue/ Date of revision : 21/03/2024

Date of previous issue : No previous validation

Version : 1

SECTION 16: Other information

Notice to reader

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