

SAFETY DATA SHEET



SureSelect Max Library Preparation Module, 16_96 Reactions

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

1.1 Product identifier

Product name	: SureSelect Max Library Preparation Module, 16_96 Reactions	
Part no. (chemical kit)	: 5280-0065, 5280-0066	
Part no.	End Repair-A Tailing Enzyme Mix	5190-6412 / 5190-6435
	End Repair-A Tailing Buffer	5190-6413 / 5190-6436
	T4 DNA Ligase	5190-6414 / 5190-6437
	Ligation Buffer	5190-6415 / 5190-6438
	Amplification Master Mix	5271-0079 / 5271-0083

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

Identified uses	: Analytical reagent. For research use only.	
	End Repair-A Tailing Enzyme Mix	0.072 ml (16 reactions) / 0.512 ml (96 reactions)
	End Repair-A Tailing Buffer	0.288 ml (16 reactions) / 2.048 ml (96 reactions)
	T4 DNA Ligase	0.036 ml (16 reactions) / 0.256 ml (96 reactions)
	Ligation Buffer	0.414 ml (16 reactions) / 2.944 ml (96 reactions)
	Amplification Master Mix	0.45 ml (16 reactions) / 2.84 ml (96 reactions)
Uses advised against	: Not for use in diagnostic procedures.	

1.3 Details of the supplier of the safety data sheet

Agilent Technologies LDA UK Ltd.
5500 Lakeside Cheadle Royal Business Park,
Cheadle, Cheshire, SK8 3GR
United Kingdom
Tel: +44 (0) 345 712 5292

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	End Repair-A Tailing Enzyme Mix	Mixture
	End Repair-A Tailing Buffer	Mixture
	T4 DNA Ligase	Mixture
	Ligation Buffer	Mixture
	Amplification Master Mix	Mixture

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

SECTION 2: Hazards identification

Amplification Master Mix

Mix		
H302	ACUTE TOXICITY (oral)	Category 4
H315	SKIN CORROSION/IRRITATION	Category 2
H371	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	Category 2
H412	LONG-TERM (CHRONIC) AQUATIC HAZARD	Category 3

End Repair-A Tailing Enzyme Mix	The product is not classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.
End Repair-A Tailing Buffer	The product is not classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.
T4 DNA Ligase	The product is not classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.
Ligation Buffer	The product is not classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.
Amplification Master Mix	The product is classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.

Ingredients of unknown toxicity	: End Repair-A Tailing Enzyme Mix	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%
	End Repair-A Tailing Buffer	Percentage of the mixture consisting of ingredient(s) of unknown acute dermal toxicity: 1 - 10%
	T4 DNA Ligase	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 1 - 10%
	Ligation Buffer	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%
	Amplification Master Mix	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%

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

Hazard pictograms : Amplification Master Mix



Signal word	: End Repair-A Tailing Enzyme Mix	No signal word.
	End Repair-A Tailing Buffer	No signal word.
	T4 DNA Ligase	No signal word.
	Ligation Buffer	No signal word.
	Amplification Master Mix	Warning

Hazard statements	: End Repair-A Tailing Enzyme Mix	No known significant effects or critical hazards.
	End Repair-A Tailing Buffer	No known significant effects or critical hazards.
	T4 DNA Ligase	No known significant effects or critical hazards.
	Ligation Buffer	No known significant effects or critical hazards.
	Amplification Master Mix	H302 - Harmful if swallowed. H315 - Causes skin irritation. H371 - May cause damage to organs. H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements

SECTION 2: Hazards identification

Prevention	:	End Repair-A Tailing Enzyme Mix	Not applicable.
		End Repair-A Tailing Buffer	Not applicable.
		T4 DNA Ligase	Not applicable.
		Ligation Buffer	Not applicable.
		Amplification Master Mix	P280 - Wear protective gloves. P273 - Avoid release to the environment. P260 - Do not breathe vapour. P270 - Do not eat, drink or smoke when using this product.
Response	:	End Repair-A Tailing Enzyme Mix	Not applicable.
		End Repair-A Tailing Buffer	Not applicable.
		T4 DNA Ligase	Not applicable.
		Ligation Buffer	Not applicable.
		Amplification Master Mix	P308 + P311 - IF exposed or concerned: Call a POISON CENTER or doctor.
Storage	:	End Repair-A Tailing Enzyme Mix	Not applicable.
		End Repair-A Tailing Buffer	Not applicable.
		T4 DNA Ligase	Not applicable.
		Ligation Buffer	Not applicable.
		Amplification Master Mix	Not applicable.
Disposal	:	End Repair-A Tailing Enzyme Mix	Not applicable.
		End Repair-A Tailing Buffer	Not applicable.
		T4 DNA Ligase	Not applicable.
		Ligation Buffer	Not applicable.
		Amplification Master Mix	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazardous ingredients	:	Amplification Master Mix	tetramethylammonium chloride
Supplemental label elements	:	End Repair-A Tailing Enzyme Mix	Safety data sheet available on request.
		End Repair-A Tailing Buffer	Not applicable.
		T4 DNA Ligase	Safety data sheet available on request.
		Ligation Buffer	Safety data sheet available on request.
		Amplification Master Mix	Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	:	End Repair-A Tailing Enzyme Mix	Not applicable.
		End Repair-A Tailing Buffer	Not applicable.
		T4 DNA Ligase	Not applicable.
		Ligation Buffer	Not applicable.
		Amplification Master Mix	Not applicable.
Special packaging requirements			
Containers to be fitted with child-resistant fastenings	:	End Repair-A Tailing Enzyme Mix	Not applicable.
		End Repair-A Tailing Buffer	Not applicable.
		T4 DNA Ligase	Not applicable.
		Ligation Buffer	Not applicable.
		Amplification Master Mix	Not applicable.

SECTION 2: Hazards identification

Tactile warning of danger	: End Repair-A Tailing Enzyme Mix	Not applicable.
	End Repair-A Tailing Buffer	Not applicable.
	T4 DNA Ligase	Not applicable.
	Ligation Buffer	Not applicable.
	Amplification Master Mix	Not applicable.

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII	: End Repair-A Tailing Enzyme Mix	This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
	End Repair-A Tailing Buffer	This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
	T4 DNA Ligase	This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
	Ligation Buffer	This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
	Amplification Master Mix	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	: End Repair-A Tailing Enzyme Mix	None known.
	End Repair-A Tailing Buffer	None known.
	T4 DNA Ligase	None known.
	Ligation Buffer	None known.
	Amplification Master Mix	None known.

SECTION 3: Composition/information on ingredients

3.1 Substances	: End Repair-A Tailing Enzyme Mix	Mixture
	End Repair-A Tailing Buffer	Mixture
	T4 DNA Ligase	Mixture
	Ligation Buffer	Mixture
	Amplification Master Mix	Mixture

Product/ingredient name	Identifiers	%	Classification	Type
End Repair-A Tailing Enzyme Mix Glycerol	UK (GB) REACH #: Annex V REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[1]
T4 DNA Ligase Glycerol	UK (GB) REACH #: Annex V REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[1]
Ligation Buffer Glycerol	UK (GB) REACH #: Annex V REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[1]
Amplification Master Mix Glycerol	UK (GB) REACH #: Annex V REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥25 - ≤50	Not classified.	[2]
Trometamol	EC: 201-064-4 CAS: 77-86-1	<10	Skin Irrit. 2, H315 Eye Irrit. 2, H319	[1]
tetramethylammonium chloride	EC: 200-880-8	<10	Acute Tox. 2, H300	[1]

SECTION 3: Composition/information on ingredients

	CAS: 75-57-0		Acute Tox. 3, H311 Skin Irrit. 2, H315 STOT SE 1, H370 (central nervous system (CNS)) (oral) Aquatic Chronic 2, H411 See Section 16 for the full text of the H statements declared above.
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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

End Repair-A Tailing Enzyme Mix	[1] Substance with a workplace exposure limit
T4 DNA Ligase	[1] Substance with a workplace exposure limit
Ligation Buffer	[1] Substance with a workplace exposure limit
Amplification Master Mix	[1] Substance classified with a health or environmental hazard [2] Substance with a workplace exposure limit

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

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact

End Repair-A Tailing Enzyme Mix	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.
End Repair-A Tailing 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.
T4 DNA Ligase	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.
Ligation 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.
Amplification Master Mix	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention. If necessary, call a poison center or physician.

Inhalation

End Repair-A Tailing Enzyme Mix	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
End Repair-A Tailing 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.
T4 DNA Ligase	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Ligation Buffer	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Amplification Master Mix	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 following exposure or if feeling unwell. If necessary, call a poison

SECTION 4: First aid measures

Skin contact

- : End Repair-A Tailing Enzyme Mix
- End Repair-A Tailing Buffer
- T4 DNA Ligase
- Ligation Buffer
- Amplification Master Mix

center or physician. 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. 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.

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. If necessary, call a poison center or physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion

- : End Repair-A Tailing Enzyme Mix
- End Repair-A Tailing Buffer
- T4 DNA Ligase
- Ligation Buffer
- Amplification Master Mix

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.

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.

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.

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.

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 necessary, call a poison center or physician. 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.

Protection of first-aiders

- : End Repair-A Tailing Enzyme Mix
- End Repair-A Tailing Buffer
- T4 DNA Ligase
- Ligation Buffer

No action shall be taken involving any personal risk or without suitable training.

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SECTION 4: First aid measures

Amplification Master Mix : suitable training.
No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

4.2 Most important symptoms and effects, both acute and delayed

Over-exposure signs/symptoms

Eye contact : End Repair-A Tailing Enzyme Mix No specific data.
End Repair-A Tailing Buffer No specific data.
T4 DNA Ligase No specific data.
Ligation Buffer No specific data.
Amplification Master Mix Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : End Repair-A Tailing Enzyme Mix No specific data.
End Repair-A Tailing Buffer No specific data.
T4 DNA Ligase No specific data.
Ligation Buffer No specific data.
Amplification Master Mix No specific data.

Skin contact : End Repair-A Tailing Enzyme Mix No specific data.
End Repair-A Tailing Buffer No specific data.
T4 DNA Ligase No specific data.
Ligation Buffer No specific data.
Amplification Master Mix Adverse symptoms may include the following:
irritation
redness

Ingestion : End Repair-A Tailing Enzyme Mix No specific data.
End Repair-A Tailing Buffer No specific data.
T4 DNA Ligase No specific data.
Ligation Buffer No specific data.
Amplification Master Mix No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : End Repair-A Tailing Enzyme Mix Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
End Repair-A Tailing 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.
T4 DNA Ligase Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Ligation Buffer Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Amplification Master Mix 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 : End Repair-A Tailing Enzyme Mix No specific treatment.
End Repair-A Tailing Buffer No specific treatment.
T4 DNA Ligase No specific treatment.
Ligation Buffer No specific treatment.
Amplification Master Mix No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	: End Repair-A Tailing Enzyme Mix	Use an extinguishing agent suitable for the surrounding fire.
	: End Repair-A Tailing Buffer	Use an extinguishing agent suitable for the surrounding fire.
	: T4 DNA Ligase	Use an extinguishing agent suitable for the surrounding fire.
	: Ligation Buffer	Use an extinguishing agent suitable for the surrounding fire.
	: Amplification Master Mix	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: End Repair-A Tailing Enzyme Mix	None known.
	: End Repair-A Tailing Buffer	None known.
	: T4 DNA Ligase	None known.
	: Ligation Buffer	None known.
	: Amplification Master Mix	None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	: End Repair-A Tailing Enzyme Mix	In a fire or if heated, a pressure increase will occur and the container may burst.
	: End Repair-A Tailing Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
	: T4 DNA Ligase	In a fire or if heated, a pressure increase will occur and the container may burst.
	: Ligation Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
	: Amplification Master Mix	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous combustion products	: End Repair-A Tailing Enzyme Mix	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	: End Repair-A Tailing Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds metal oxide/oxides
	: T4 DNA Ligase	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	: Ligation Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	: Amplification Master Mix	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds

5.3 Advice for firefighters

SECTION 5: Firefighting measures

Special protective actions for fire-fighters	: End Repair-A Tailing Enzyme Mix	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.
	End Repair-A Tailing 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.
	T4 DNA Ligase	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.
	Ligation 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.
	Amplification Master Mix	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	: End Repair-A Tailing Enzyme Mix	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	End Repair-A Tailing Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	T4 DNA Ligase	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Ligation Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Amplification Master Mix	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

For non-emergency personnel	: End Repair-A Tailing Enzyme Mix	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.
	End Repair-A Tailing 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.
	T4 DNA Ligase	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.
	Ligation 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.
	Amplification Master Mix	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. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

SECTION 6: Accidental release measures

For emergency responders	: End Repair-A Tailing Enzyme Mix	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".
	End Repair-A Tailing 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".
	T4 DNA Ligase	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".
	Ligation 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".
	Amplification Master Mix	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

: End Repair-A Tailing Enzyme Mix	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).
End Repair-A Tailing 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).
T4 DNA Ligase	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).
Ligation 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).
Amplification Master Mix	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). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	: End Repair-A Tailing Enzyme Mix	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.
	End Repair-A Tailing 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.
	T4 DNA Ligase	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.
	Ligation 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

SECTION 6: Accidental release measures

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

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures : End Repair-A Tailing Enzyme Mix Put on appropriate personal protective equipment (see Section 8).
 End Repair-A Tailing Buffer Put on appropriate personal protective equipment (see Section 8).
 T4 DNA Ligase Put on appropriate personal protective equipment (see Section 8).
 Ligation Buffer Put on appropriate personal protective equipment (see Section 8).
 Amplification Master Mix Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. 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.

Advice on general occupational hygiene : End Repair-A Tailing Enzyme Mix 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.
 End Repair-A Tailing 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.
 T4 DNA Ligase 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.
 Ligation 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.
 Amplification Master Mix Potentially biohazardous material. 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

SECTION 7: Handling and storage

information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Storage	: End Repair-A Tailing Enzyme Mix	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.
	End Repair-A Tailing 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.
	T4 DNA Ligase	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.
	Ligation 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.
	Amplification Master Mix	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. Store locked up. 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)

SECTION 7: Handling and storage

Recommendations	:	End Repair-A Tailing Enzyme Mix	Industrial applications, Professional applications.
	:	End Repair-A Tailing Buffer	Industrial applications, Professional applications.
	:	T4 DNA Ligase	Industrial applications, Professional applications.
	:	Ligation Buffer	Industrial applications, Professional applications.
	:	Amplification Master Mix	Industrial applications, Professional applications.
Industrial sector specific solutions	:	End Repair-A Tailing Enzyme Mix	Not available.
	:	End Repair-A Tailing Buffer	Not available.
	:	T4 DNA Ligase	Not available.
	:	Ligation Buffer	Not available.
	:	Amplification Master Mix	Not available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
End Repair-A Tailing Enzyme Mix Glycerol	EH40/2005 WELs (United Kingdom (UK), 1/2020). TWA: 10 mg/m ³ 8 hours. Form: Mist
T4 DNA Ligase Glycerol	EH40/2005 WELs (United Kingdom (UK), 1/2020). TWA: 10 mg/m ³ 8 hours. Form: Mist
Ligation Buffer Glycerol	EH40/2005 WELs (United Kingdom (UK), 1/2020). TWA: 10 mg/m ³ 8 hours. Form: Mist
Amplification Master Mix Glycerol	EH40/2005 WELs (United Kingdom (UK), 1/2020). TWA: 10 mg/m ³ 8 hours. Form: Mist

Biological exposure indices

No exposure indices known.

Recommended monitoring procedures : Reference should be made to appropriate monitoring standards. 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	
Amplification Master Mix Trometamol	DNEL	Long term Oral	8.3 mg/kg bw/day	General population	Systemic	
	DNEL	Long term Inhalation	29 mg/m ³	General population	Systemic	
	DNEL	Long term Dermal	83.3 mg/kg bw/day	General population	Systemic	
	DNEL	Long term Inhalation	117.5 mg/m ³	Workers	Systemic	
	DNEL	Long term Dermal	166.7 mg/kg bw/day	Workers	Systemic	
	tetramethylammonium chloride	DNEL	Long term Oral	0.25 mg/kg bw/day	General population	Systemic
		DNEL	Long term Dermal	0.25 mg/kg bw/day	General population	Systemic
		DNEL	Long term Dermal	0.4 mg/kg bw/day	Workers	Systemic

SECTION 9: Physical and chemical properties

Colour	:	End Repair-A Tailing Enzyme Mix	Not available.
		End Repair-A Tailing Buffer	Not available.
		T4 DNA Ligase	Not available.
		Ligation Buffer	Not available.
		Amplification Master Mix	Not available.
Odour	:	End Repair-A Tailing Enzyme Mix	Not available.
		End Repair-A Tailing Buffer	Not available.
		T4 DNA Ligase	Not available.
		Ligation Buffer	Not available.
		Amplification Master Mix	Not available.
Odour threshold	:	End Repair-A Tailing Enzyme Mix	Not available.
		End Repair-A Tailing Buffer	Not available.
		T4 DNA Ligase	Not available.
		Ligation Buffer	Not available.
		Amplification Master Mix	Not available.
Melting point/freezing point	:	End Repair-A Tailing Enzyme Mix	Not available.
		End Repair-A Tailing Buffer	0°C
		T4 DNA Ligase	Not available.
		Ligation Buffer	Not available.
		Amplification Master Mix	Not available.
Initial boiling point and boiling range	:	End Repair-A Tailing Enzyme Mix	Not available.
		End Repair-A Tailing Buffer	100°C
		T4 DNA Ligase	Not available.
		Ligation Buffer	Not available.
		Amplification Master Mix	Not available.
Flammability	:	End Repair-A Tailing Enzyme Mix	Not applicable.
		End Repair-A Tailing Buffer	Not applicable.
		T4 DNA Ligase	Not applicable.
		Ligation Buffer	Not applicable.
		Amplification Master Mix	Not applicable.
Upper/lower flammability or explosive limits	:	End Repair-A Tailing Enzyme Mix	Not available.
		End Repair-A Tailing Buffer	Not available.
		T4 DNA Ligase	Not available.
		Ligation Buffer	Not available.
		Amplification Master Mix	Not available.

Flash point	:	Closed cup		Open cup			
		Ingredient name		°C	Method	°C	Method
		End Repair-A Tailing Enzyme Mix					
		glycerol	-	-	177	-	
		T4 DNA Ligase					
		glycerol	-	-	177	-	

SECTION 9: Physical and chemical properties

	Ligation Buffer				
	Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- Ethane-1,2-diol, ethoxylated	171 to 235	-	199 to 238	-
	glycerol	-	-	177	-
	Amplification Master Mix				
	glycerol	-	-	177	-
Auto-ignition temperature	Ingredient name	°C		Method	
	End Repair-A Tailing Enzyme Mix				
	glycerol	370	-		
	T4 DNA Ligase				
	glycerol	370	-		
	Ligation Buffer				
	Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- Ethane-1,2-diol, ethoxylated	360	-		
	glycerol	370	-		
	Amplification Master Mix				
	glycerol	370	-		
Decomposition temperature	: End Repair-A Tailing Enzyme Mix	Not available.			
	End Repair-A Tailing Buffer	Not available.			
	T4 DNA Ligase	Not available.			
	Ligation Buffer	Not available.			
	Amplification Master Mix	Not available.			
pH	: End Repair-A Tailing Enzyme Mix	6.5			
	End Repair-A Tailing Buffer	8			
	T4 DNA Ligase	7.5			
	Ligation Buffer	8			
	Amplification Master Mix	8.5			
Viscosity	: End Repair-A Tailing Enzyme Mix	Not available.			
	End Repair-A Tailing Buffer	Not available.			
	T4 DNA Ligase	Not available.			
	Ligation Buffer	Not available.			
	Amplification Master Mix	Not available.			

SECTION 9: Physical and chemical properties

Solubility(ies)	Media	Result
	End Repair-A Tailing Enzyme Mix water	Soluble
	End Repair-A Tailing Buffer water	Soluble
	T4 DNA Ligase water	Soluble
	Ligation Buffer water	Soluble
	Amplification Master Mix water	Soluble

Partition coefficient: n-octanol/water		
	End Repair-A Tailing Enzyme Mix	Not applicable.
	End Repair-A Tailing Buffer	Not applicable.
	T4 DNA Ligase	Not applicable.
	Ligation Buffer	Not applicable.
	Amplification Master Mix	Not applicable.

Vapour pressure	Ingredient name	Vapour Pressure at 20° C			Vapour pressure at 50° C		
		mm Hg	kPa	Method	mm Hg	kPa	Method
	End Repair-A Tailing Enzyme Mix						
	water	17.5	2.3	-	92.258	12.3	-
	glycerol	0.000075	0.00001	-	0.0025	0.00033	-
	End Repair-A Tailing Buffer						
	water	17.5	2.3	-	92.258	12.3	-
	T4 DNA Ligase						
	water	17.5	2.3	-	92.258	12.3	-
	glycerol	0.000075	0.00001	-	0.0025	0.00033	-
	Ligation Buffer						
	water	17.5	2.3	-	92.258	12.3	-
	glycerol	0.000075	0.00001	-	0.0025	0.00033	-
	Amplification Master Mix						
	water	17.5	2.3	-	92.258	12.3	-
	trometamol	<0.00075006	<0.0001	-	-	-	-

Evaporation rate		
	End Repair-A Tailing Enzyme Mix	Not available.
	End Repair-A Tailing Buffer	Not available.
	T4 DNA Ligase	Not available.
	Ligation Buffer	Not available.
	Amplification Master Mix	Not available.

SECTION 9: Physical and chemical properties

Relative density	: End Repair-A Tailing Enzyme Mix	Not available.
	End Repair-A Tailing Buffer	Not available.
	T4 DNA Ligase	Not available.
	Ligation Buffer	Not available.
	Amplification Master Mix	Not available.
Vapour density	: End Repair-A Tailing Enzyme Mix	Not available.
	End Repair-A Tailing Buffer	Not available.
	T4 DNA Ligase	Not available.
	Ligation Buffer	Not available.
	Amplification Master Mix	Not available.
Explosive properties	: End Repair-A Tailing Enzyme Mix	Not available.
	End Repair-A Tailing Buffer	Not available.
	T4 DNA Ligase	Not available.
	Ligation Buffer	Not available.
	Amplification Master Mix	Not available.
Oxidising properties	: End Repair-A Tailing Enzyme Mix	Not available.
	End Repair-A Tailing Buffer	Not available.
	T4 DNA Ligase	Not available.
	Ligation Buffer	Not available.
	Amplification Master Mix	Not available.
Particle characteristics		
Median particle size	: End Repair-A Tailing Enzyme Mix	Not applicable.
	End Repair-A Tailing Buffer	Not applicable.
	T4 DNA Ligase	Not applicable.
	Ligation Buffer	Not applicable.
	Amplification Master Mix	Not applicable.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	: End Repair-A Tailing Enzyme Mix	No specific test data related to reactivity available for this product or its ingredients.
	End Repair-A Tailing Buffer	No specific test data related to reactivity available for this product or its ingredients.
	T4 DNA Ligase	No specific test data related to reactivity available for this product or its ingredients.
	Ligation Buffer	No specific test data related to reactivity available for this product or its ingredients.
	Amplification Master Mix	No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: End Repair-A Tailing Enzyme Mix	The product is stable.
	End Repair-A Tailing Buffer	The product is stable.
	T4 DNA Ligase	The product is stable.
	Ligation Buffer	The product is stable.
	Amplification Master Mix	The product is stable.

SECTION 10: Stability and reactivity

10.3 Possibility of hazardous reactions	: End Repair-A Tailing Enzyme Mix	Under normal conditions of storage and use, hazardous reactions will not occur.
	: End Repair-A Tailing Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
	: T4 DNA Ligase	Under normal conditions of storage and use, hazardous reactions will not occur.
	: Ligation Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
	: Amplification Master Mix	Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid	: End Repair-A Tailing Enzyme Mix	No specific data.
	: End Repair-A Tailing Buffer	No specific data.
	: T4 DNA Ligase	No specific data.
	: Ligation Buffer	No specific data.
	: Amplification Master Mix	No specific data.

10.5 Incompatible materials	: End Repair-A Tailing Enzyme Mix	May react or be incompatible with oxidising materials.
	: End Repair-A Tailing Buffer	May react or be incompatible with oxidising materials.
	: T4 DNA Ligase	May react or be incompatible with oxidising materials.
	: Ligation Buffer	May react or be incompatible with oxidising materials.
	: Amplification Master Mix	May react or be incompatible with oxidising materials.

10.6 Hazardous decomposition products	: End Repair-A Tailing Enzyme Mix	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	: End Repair-A Tailing Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	: T4 DNA Ligase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	: Ligation Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	: Amplification Master Mix	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
End Repair-A Tailing Enzyme Mix Glycerol	LD50 Oral	Rat	12600 mg/kg	-
T4 DNA Ligase Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Ligation Buffer Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Amplification Master Mix Glycerol Trometamol tetramethylammonium chloride	LD50 Oral	Rat	12600 mg/kg	-
	LD50 Dermal	Rat	>5000 mg/kg	-
	LD50 Dermal	Rabbit - Male, Female	200 to 500 mg/kg	-
	LD50 Oral	Rat	50 mg/kg	-

Acute toxicity estimates

SECTION 11: Toxicological information

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
End Repair-A Tailing Enzyme Mix Glycerol	12600	N/A	N/A	N/A	N/A
T4 DNA Ligase Glycerol	12600	N/A	N/A	N/A	N/A
Ligation Buffer Glycerol	12600	N/A	N/A	N/A	N/A
Amplification Master Mix Amplification Master Mix	1279.5	7677.0	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
tetramethylammonium chloride	50	300	N/A	N/A	N/A

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
End Repair-A Tailing Enzyme Mix Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
T4 DNA Ligase Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Ligation Buffer Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Amplification Master Mix Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Trometamol	Skin - Moderate irritant	Rabbit	-	25 %	-
	Skin - Severe irritant	Rabbit	-	500 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
Amplification Master Mix tetramethylammonium chloride	Category 1	oral	central nervous system (CNS)

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure

: End Repair-A Tailing Enzyme Mix	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
: End Repair-A Tailing Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
: T4 DNA Ligase	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
: Ligation Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
: Amplification Master Mix	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Inhalation	: End Repair-A Tailing Enzyme Mix	No known significant effects or critical hazards.
	: End Repair-A Tailing Buffer	No known significant effects or critical hazards.
	: T4 DNA Ligase	No known significant effects or critical hazards.
	: Ligation Buffer	No known significant effects or critical hazards.
	: Amplification Master Mix	May cause damage to organs following a single exposure if inhaled.
Ingestion	: End Repair-A Tailing Enzyme Mix	No known significant effects or critical hazards.
	: End Repair-A Tailing Buffer	No known significant effects or critical hazards.
	: T4 DNA Ligase	No known significant effects or critical hazards.
	: Ligation Buffer	No known significant effects or critical hazards.
	: Amplification Master Mix	Harmful if swallowed. May cause damage to organs following a single exposure if swallowed.
Skin contact	: End Repair-A Tailing Enzyme Mix	No known significant effects or critical hazards.
	: End Repair-A Tailing Buffer	No known significant effects or critical hazards.
	: T4 DNA Ligase	No known significant effects or critical hazards.
	: Ligation Buffer	No known significant effects or critical hazards.
	: Amplification Master Mix	May cause damage to organs following a single exposure in contact with skin. Causes skin irritation.
Eye contact	: End Repair-A Tailing Enzyme Mix	No known significant effects or critical hazards.
	: End Repair-A Tailing Buffer	No known significant effects or critical hazards.
	: T4 DNA Ligase	No known significant effects or critical hazards.
	: Ligation Buffer	No known significant effects or critical hazards.
	: Amplification Master Mix	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	: End Repair-A Tailing Enzyme Mix	No specific data.
	: End Repair-A Tailing Buffer	No specific data.
	: T4 DNA Ligase	No specific data.
	: Ligation Buffer	No specific data.
	: Amplification Master Mix	No specific data.

SECTION 11: Toxicological information

Ingestion	: End Repair-A Tailing Enzyme Mix	No specific data.
	: End Repair-A Tailing Buffer	No specific data.
	: T4 DNA Ligase	No specific data.
	: Ligation Buffer	No specific data.
	: Amplification Master Mix	No specific data.
	Skin contact	: End Repair-A Tailing Enzyme Mix
: End Repair-A Tailing Buffer		No specific data.
: T4 DNA Ligase		No specific data.
: Ligation Buffer		No specific data.
: Amplification Master Mix		Adverse symptoms may include the following: irritation redness
Eye contact		: End Repair-A Tailing Enzyme Mix
	: End Repair-A Tailing Buffer	No specific data.
	: T4 DNA Ligase	No specific data.
	: Ligation Buffer	No specific data.
	: Amplification Master Mix	Adverse symptoms may include the following: pain or irritation watering redness

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.

General	: End Repair-A Tailing Enzyme Mix	No known significant effects or critical hazards.
	: End Repair-A Tailing Buffer	No known significant effects or critical hazards.
	: T4 DNA Ligase	No known significant effects or critical hazards.
	: Ligation Buffer	No known significant effects or critical hazards.
	: Amplification Master Mix	No known significant effects or critical hazards.
	Carcinogenicity	: End Repair-A Tailing Enzyme Mix
: End Repair-A Tailing Buffer		No known significant effects or critical hazards.
: T4 DNA Ligase		No known significant effects or critical hazards.
: Ligation Buffer		No known significant effects or critical hazards.
: Amplification Master Mix		No known significant effects or critical hazards.

SECTION 11: Toxicological information

Mutagenicity	: End Repair-A Tailing Enzyme Mix	No known significant effects or critical hazards.
	End Repair-A Tailing Buffer	No known significant effects or critical hazards.
	T4 DNA Ligase	No known significant effects or critical hazards.
	Ligation Buffer	No known significant effects or critical hazards.
	Amplification Master Mix	No known significant effects or critical hazards.
Reproductive toxicity	: End Repair-A Tailing Enzyme Mix	No known significant effects or critical hazards.
	End Repair-A Tailing Buffer	No known significant effects or critical hazards.
	T4 DNA Ligase	No known significant effects or critical hazards.
	Ligation Buffer	No known significant effects or critical hazards.
	Amplification Master Mix	No known significant effects or critical hazards.
Other information	: End Repair-A Tailing Buffer	Adverse symptoms may include the following: May cause skin sensitisation.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
End Repair-A Tailing Enzyme Mix Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Trout - <i>Oncorhynchus mykiss</i>	96 hours
T4 DNA Ligase Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Trout - <i>Oncorhynchus mykiss</i>	96 hours
Ligation Buffer Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Trout - <i>Oncorhynchus mykiss</i>	96 hours
Amplification Master Mix Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Trout - <i>Oncorhynchus mykiss</i>	96 hours
Trometamol	Acute EC50 >980 mg/l Fresh water	Daphnia	48 hours
tetramethylammonium chloride	Acute NOEC 520 mg/l Fresh water Acute LC50 462 mg/l Fresh water	Daphnia Fish - Fathead minnow - <i>Pimephales promelas</i>	48 hours 96 hours

Conclusion/Summary : Not available.

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
End Repair-A Tailing Enzyme Mix Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
T4 DNA Ligase Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
Ligation Buffer Glycerol	301D Ready	93 % - 30 days	-	-

SECTION 12: Ecological information

Amplification Master Mix Glycerol	Biodegradability - Closed Bottle Test			
	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
Trometamol	OECD 301F Ready Biodegradability - Manometric Respirometry Test	97.1 % - Readily - 28 days	30 mg/l	-

Conclusion/Summary : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Amplification Master Mix Trometamol	-	-	Readily
tetramethylammonium chloride	-	-	Readily

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
End Repair-A Tailing Enzyme Mix Glycerol	-1.76	-	Low
T4 DNA Ligase Glycerol	-1.76	-	Low
Ligation Buffer Glycerol	-1.76	-	Low
Amplification Master Mix Glycerol	-1.76	-	Low
Trometamol	-2.31	-	Low
tetramethylammonium chloride	<-1.6	-	Low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

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

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

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. 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	IMDG	IATA
14.1 UN 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 UK (GB)/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.

Ozone depleting substances

SECTION 15: Regulatory information

Not listed.

Prior Informed Consent (PIC)

Not listed.

Persistent Organic Pollutants

Not listed.

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

No listed substance

Label	:	End Repair-A Tailing Enzyme Mix	Not applicable.
		End Repair-A Tailing Buffer	Not applicable.
		T4 DNA Ligase	Not applicable.
		Ligation Buffer	Not applicable.
		Amplification Master Mix	Not applicable.

Seveso Directive

This product is not controlled under the Seveso Directive.

EU regulations

Industrial emissions (integrated pollution prevention and control) - Air : Not listed

Industrial emissions (integrated pollution prevention and control) - Water : Not listed

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

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

United States : Not determined.

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

SECTION 16: Other information

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

Classification	Justification
Amplification Master Mix Acute Tox. 4, H302 Skin Irrit. 2, H315 STOT SE 2, H371 Aquatic Chronic 3, H412	Calculation method Calculation method Calculation method Calculation method

Full text of abbreviated H statements

Amplification Master Mix	
H300	Fatal if swallowed.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H370	Causes damage to organs.
H371	May cause damage to organs.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Full text of classifications

Amplification Master Mix	
Acute Tox. 2	ACUTE TOXICITY - Category 2
Acute Tox. 3	ACUTE TOXICITY - Category 3
Acute Tox. 4	ACUTE TOXICITY - Category 4
Aquatic Chronic 2	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2
Aquatic Chronic 3	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3
Eye Irrit. 2	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
Skin Irrit. 2	SKIN CORROSION/IRRITATION - Category 2
STOT SE 1	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE - Category 1
STOT SE 2	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE - Category 2

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