SAFETY DATA SHEET

Agilent Technologies

SureSelect XT HS2 RNA Library Preparation Kit for ILM (Pre PCR), 16 Reactions, Part Number 5500-0150

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

1.1 Product identifier

Product name : SureSelect XT HS2 RNA Library Preparation Kit for ILM (Pre PCR), 16 Reactions, Part Number 5500-0150

Part no. (chemical kit) : 5500-0150

Part no. :

End Repair-A Tailing Enzyme Mix	5190-6412
End Repair-A Tailing Buffer	5190-6413
T4 DNA Ligase	5190-6414
Ligation Buffer	5190-6415
XT HS2 RNA Adaptor Oligo Mix	5191-6841
Herculase II Fusion DNA Polymerase	5190-7742
5X Herculase II Reaction Buffer with dNTPs	5191-6680

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	0.064 ml (16 reactions)
End Repair-A Tailing Buffer	0.256 ml (16 reactions)
T4 DNA Ligase	0.032 ml (16 reactions)
Ligation Buffer	0.368 ml (16 reactions)
XT HS2 RNA Adaptor Oligo Mix	0.08 ml (16 reactions)
Herculase II Fusion DNA Polymerase	0.016 ml (32 reactions)
5X Herculase II Reaction Buffer with dNTPs	0.16 ml (16 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

SECTION 2: Hazards identification

Product definition : End Repair-A Tailing Enzyme Mix — Mixture
End Repair-A Tailing Buffer — Mixture
T4 DNA Ligase — Mixture
Ligation Buffer — Mixture
XT HS2 RNA Adaptor Oligo Mix — Mixture
Herculase II Fusion DNA Polymerase — Mixture
5X Herculase II Reaction Buffer with dNTPs — Mixture

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

Not classified.

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.
XT HS2 RNA Adaptor Oligo Mix	The product is not classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.
Herculase II Fusion DNA Polymerase	The product is not classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.
5X Herculase II Reaction Buffer with dNTPs	The product is not 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% Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 1 - 10%
T4 DNA Ligase	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%
Ligation Buffer	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%
Herculase II Fusion DNA Polymerase	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%
5X Herculase II Reaction Buffer with dNTPs	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%

Ingredients of unknown ecotoxicity : 5X Herculase II Reaction Buffer with dNTPs — Contains 5.3% 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 : 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.
XT HS2 RNA Adaptor Oligo Mix — No signal word.

SECTION 2: Hazards identification

		Herculase II Fusion DNA Polymerase	No signal word.
		5X Herculase II Reaction Buffer with dNTPs	No signal word.
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.
		XT HS2 RNA Adaptor Oligo Mix	No known significant effects or critical hazards.
		Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
		5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards.
Precautionary statements			
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.
		XT HS2 RNA Adaptor Oligo Mix	Not applicable.
		Herculase II Fusion DNA Polymerase	Not applicable.
		5X Herculase II Reaction Buffer with dNTPs	Not applicable.
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.
		XT HS2 RNA Adaptor Oligo Mix	Not applicable.
		Herculase II Fusion DNA Polymerase	Not applicable.
		5X Herculase II Reaction Buffer with dNTPs	Not applicable.
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.
		XT HS2 RNA Adaptor Oligo Mix	Not applicable.
		Herculase II Fusion DNA Polymerase	Not applicable.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	Not applicable.
		Herculase II Fusion DNA	Not applicable.

SECTION 2: Hazards identification

		Polymerase	
		5X Herculase II Reaction Buffer with dNTPs	Not applicable.
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.
		XT HS2 RNA Adaptor Oligo Mix	Not applicable.
		Herculase II Fusion DNA Polymerase	Safety data sheet available on request.
		5X Herculase II Reaction Buffer with dNTPs	Safety data sheet available on request.
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.
		XT HS2 RNA Adaptor Oligo Mix	Not applicable.
		Herculase II Fusion DNA Polymerase	Not applicable.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	Not applicable.
		Herculase II Fusion DNA Polymerase	Not applicable.
		5X Herculase II Reaction Buffer with dNTPs	Not applicable.
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.
		XT HS2 RNA Adaptor Oligo Mix	Not applicable.
		Herculase II Fusion DNA Polymerase	Not applicable.
		5X Herculase II Reaction Buffer with dNTPs	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.

SECTION 2: Hazards identification

	XT HS2 RNA Adaptor Oligo Mix	This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
	Herculase II Fusion DNA Polymerase	This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
	5X Herculase II Reaction Buffer with dNTPs	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.
	XT HS2 RNA Adaptor Oligo Mix	None known.
	Herculase II Fusion DNA Polymerase	None known.
	5X Herculase II Reaction Buffer with dNTPs	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
	XT HS2 RNA Adaptor Oligo Mix	Mixture
	Herculase II Fusion DNA Polymerase	Mixture
	5X Herculase II Reaction Buffer with dNTPs	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]
Herculase II Fusion DNA Polymerase				
Glycerol	UK (GB) REACH #: Annex V REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[1]
5X Herculase II Reaction Buffer with dNTPs				
Trometamol	EC: 201-064-4 CAS: 77-86-1	≤3	Skin Irrit. 2, H315 Eye Irrit. 2, H319	[1]
Ammonium sulphate	EC: 231-984-1 CAS: 7783-20-2	≤3	Eye Irrit. 2, H319	[1]

SECTION 3: Composition/information on ingredients

Hexadecan-1-ol, ethoxylated	EC: 500-014-1 CAS: 9004-95-9	<2.5	Aquatic Chronic 2, H411 **See Section 16 for the full text of the H statements declared above.**	[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

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
Herculase II Fusion DNA Polymerase	[1] Substance with a workplace exposure limit
5X Herculase II Reaction Buffer with dNTPs	[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 :

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.
XT HS2 RNA Adaptor Oligo 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.
Herculase II Fusion DNA Polymerase	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
5X Herculase II Reaction Buffer with dNTPs	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 :

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.
XT HS2 RNA Adaptor Oligo Mix	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Herculase II Fusion DNA Polymerase	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
5X Herculase II Reaction Buffer with dNTPs	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms

SECTION 4: First aid measures

		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	: End Repair-A Tailing Enzyme Mix	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	End Repair-A Tailing Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	T4 DNA Ligase	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Ligation Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	XT HS2 RNA Adaptor Oligo Mix	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Herculase II Fusion DNA Polymerase	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	5X Herculase II Reaction Buffer with dNTPs	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: End Repair-A Tailing Enzyme 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.
	End Repair-A Tailing 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.
	T4 DNA Ligase	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.
	Ligation 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.
	XT HS2 RNA Adaptor Oligo 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.
	Herculase II Fusion DNA Polymerase	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.
	5X Herculase II Reaction Buffer with dNTPs	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.

SECTION 4: First aid measures

Protection of first-aiders	:	End Repair-A Tailing Enzyme Mix	No action shall be taken involving any personal risk or without suitable training.
		End Repair-A Tailing Buffer	No action shall be taken involving any personal risk or without suitable training.
		T4 DNA Ligase	No action shall be taken involving any personal risk or without suitable training.
		Ligation Buffer	No action shall be taken involving any personal risk or without suitable training.
		XT HS2 RNA Adaptor Oligo Mix	No action shall be taken involving any personal risk or without suitable training.
		Herculase II Fusion DNA Polymerase	No action shall be taken involving any personal risk or without suitable training.
		5X Herculase II Reaction Buffer with dNTPs	No action shall be taken involving any personal risk or without suitable training.

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.
		XT HS2 RNA Adaptor Oligo Mix	No specific data.
		Herculase II Fusion DNA Polymerase	No specific data.
		5X Herculase II Reaction Buffer with dNTPs	No specific data.
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.
		XT HS2 RNA Adaptor Oligo Mix	No specific data.
		Herculase II Fusion DNA Polymerase	No specific data.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	No specific data.
		Herculase II Fusion DNA Polymerase	No specific data.
		5X Herculase II Reaction Buffer with dNTPs	No specific data.
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.
		XT HS2 RNA Adaptor Oligo Mix	No specific data.
		Herculase II Fusion DNA	No specific data.

SECTION 4: First aid measures

Polymerase	
5X Herculase II Reaction Buffer with dNTPs	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.
XT HS2 RNA Adaptor Oligo Mix	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Herculase II Fusion DNA Polymerase	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
5X Herculase II Reaction Buffer with dNTPs	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.
XT HS2 RNA Adaptor Oligo Mix	No specific treatment.
Herculase II Fusion DNA Polymerase	No specific treatment.
5X Herculase II Reaction Buffer with dNTPs	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.
XT HS2 RNA Adaptor Oligo Mix	Use an extinguishing agent suitable for the surrounding fire.
Herculase II Fusion DNA Polymerase	Use an extinguishing agent suitable for the surrounding fire.
5X Herculase II Reaction Buffer with dNTPs	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.
XT HS2 RNA Adaptor Oligo Mix	None known.
Herculase II Fusion DNA Polymerase	None known.
5X Herculase II Reaction Buffer with dNTPs	None known.

SECTION 5: Firefighting measures

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.
XT HS2 RNA Adaptor Oligo Mix	In a fire or if heated, a pressure increase will occur and the container may burst.
Herculase II Fusion DNA Polymerase	In a fire or if heated, a pressure increase will occur and the container may burst.
5X Herculase II Reaction Buffer with dNTPs	In a fire or if heated, a pressure increase will occur and the container may burst.

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
XT HS2 RNA Adaptor Oligo Mix	No specific data.
Herculase II Fusion DNA Polymerase	Decomposition products may include the following materials: carbon dioxide carbon monoxide
5X Herculase II Reaction Buffer with dNTPs	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides phosphorus oxides metal oxide/oxides

5.3 Advice for firefighters

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.
XT HS2 RNA Adaptor Oligo Mix	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be

SECTION 5: Firefighting measures

		taken involving any personal risk or without suitable training.
	Herculase II Fusion DNA Polymerase	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	5X Herculase II Reaction Buffer with dNTPs	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.
	XT HS2 RNA Adaptor Oligo Mix	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Herculase II Fusion DNA Polymerase	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	5X Herculase II Reaction Buffer with dNTPs	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.
	XT HS2 RNA Adaptor Oligo 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.
	Herculase II Fusion DNA Polymerase	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	5X Herculase II Reaction Buffer with dNTPs	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep

SECTION 6: Accidental release measures

			unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
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".
		XT HS2 RNA Adaptor Oligo 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".
		Herculase II Fusion DNA Polymerase	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".
		5X Herculase II Reaction Buffer with dNTPs	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).
		XT HS2 RNA Adaptor Oligo 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).
		Herculase II Fusion DNA Polymerase	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
		5X Herculase II Reaction Buffer with dNTPs	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

SECTION 6: Accidental release measures

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 place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
XT HS2 RNA Adaptor Oligo 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.
Herculase II Fusion DNA Polymerase	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
5X Herculase II Reaction Buffer with dNTPs	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).
XT HS2 RNA Adaptor Oligo Mix	Put on appropriate personal protective equipment (see Section 8).
Herculase II Fusion DNA Polymerase	Put on appropriate personal protective equipment (see Section 8).
5X Herculase II Reaction Buffer with dNTPs	Put on appropriate personal protective equipment (see Section 8).

SECTION 7: Handling and storage

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.
XT HS2 RNA Adaptor Oligo 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.
Herculase II Fusion DNA Polymerase	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
5X Herculase II Reaction Buffer with dNTPs	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.

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

SECTION 7: Handling and storage

	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.
XT HS2 RNA Adaptor Oligo 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.
Herculase II Fusion DNA Polymerase	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
5X Herculase II Reaction Buffer with dNTPs	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 :

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.
XT HS2 RNA Adaptor Oligo Mix	Industrial applications, Professional applications.
Herculase II Fusion DNA	Industrial applications, Professional applications.

SECTION 7: Handling and storage

	Polymerase	
	5X Herculase II Reaction Buffer with dNTPs	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.
	XT HS2 RNA Adaptor Oligo Mix	Not available.
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer with dNTPs	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/m³ 8 hours. Form: Mist
T4 DNA Ligase	
Glycerol	**EH40/2005 WELs (United Kingdom (UK), 1/2020).** TWA: 10 mg/m³ 8 hours. Form: Mist
Ligation Buffer	
Glycerol	**EH40/2005 WELs (United Kingdom (UK), 1/2020).** TWA: 10 mg/m³ 8 hours. Form: Mist
Herculase II Fusion DNA Polymerase	
Glycerol	**EH40/2005 WELs (United Kingdom (UK), 1/2020).** TWA: 10 mg/m³ 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
End Repair-A Tailing Enzyme Mix					
Glycerol	DNEL	Long term Inhalation	33 mg/m³	General population	Local
	DNEL	Long term Inhalation	56 mg/m³	Workers	Local
	DNEL	Long term Oral	229 mg/kg bw/day	General population	Systemic
T4 DNA Ligase					
Glycerol	DNEL	Long term Inhalation	33 mg/m³	General population	Local
	DNEL	Long term Inhalation	56 mg/m³	Workers	Local
	DNEL	Long term Oral	229 mg/kg bw/day	General population	Systemic

SECTION 8: Exposure controls/personal protection

Ligation Buffer					
Glycerol	DNEL	Long term Inhalation	33 mg/m³	General population	Local
	DNEL	Long term Inhalation	56 mg/m³	Workers	Local
	DNEL	Long term Oral	229 mg/kg bw/day	General population	Systemic
Herculase II Fusion DNA Polymerase					
Glycerol	DNEL	Long term Inhalation	33 mg/m³	General population	Local
	DNEL	Long term Inhalation	56 mg/m³	Workers	Local
	DNEL	Long term Oral	229 mg/kg bw/day	General population	Systemic
5X Herculase II Reaction Buffer with dNTPs					
Trometamol	DNEL	Long term Oral	8.3 mg/kg bw/day	General population	Systemic
	DNEL	Long term Inhalation	29 mg/m³	General population	Systemic
	DNEL	Long term Dermal	83.3 mg/kg bw/day	General population	Systemic
	DNEL	Long term Inhalation	117.5 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	166.7 mg/kg bw/day	Workers	Systemic
Ammonium sulphate	DNEL	Long term Inhalation	1.667 mg/m³	General population	Systemic
	DNEL	Long term Oral	6.4 mg/kg bw/day	General population	Systemic
	DNEL	Long term Inhalation	11.167 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	12.8 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	42.667 mg/kg bw/day	Workers	Systemic
Hexadecan-1-ol, ethoxylated	DNEL	Long term Oral	25 mg/kg bw/day	General population	Systemic
	DNEL	Long term Inhalation	87 mg/m³	General population	Systemic
	DNEL	Long term Inhalation	294 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	1250 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	2080 mg/kg bw/day	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.

SECTION 8: Exposure controls/personal protection

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.

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 :	End Repair-A Tailing Enzyme Mix	Liquid.
	End Repair-A Tailing Buffer	Liquid.
	T4 DNA Ligase	Liquid.
	Ligation Buffer	Liquid.
	XT HS2 RNA Adaptor Oligo Mix	Liquid.
	Herculase II Fusion DNA Polymerase	Liquid.
	5X Herculase II Reaction Buffer with dNTPs	Liquid.
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.
	XT HS2 RNA Adaptor Oligo Mix	Not available.
	Herculase II Fusion DNA Polymerase	Not available.
	5X Herculase II Reaction Buffer with dNTPs	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.
	XT HS2 RNA Adaptor	Not available.

SECTION 9: Physical and chemical properties

		Oligo Mix	
		Herculase II Fusion DNA Polymerase	Not available.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	Not available.
		Herculase II Fusion DNA Polymerase	Not available.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	0°C
		Herculase II Fusion DNA Polymerase	Not available.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	100°C
		Herculase II Fusion DNA Polymerase	Not available.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	Not applicable.
		Herculase II Fusion DNA Polymerase	Not applicable.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	Not available.
		Herculase II Fusion DNA	Not available.

SECTION 9: Physical and chemical properties

Polymerase	
5X Herculase II Reaction Buffer with dNTPs	Not available.

Flash point :

Ingredient name	Closed cup °C	Closed cup Method	Open cup °C	Open cup Method
End Repair-A Tailing Enzyme Mix				
glycerol	-	-	177	-
T4 DNA Ligase				
glycerol	-	-	177	-
Ligation Buffer				
glycerol	-	-	177	-
Herculase II Fusion DNA Polymerase				
glycerol	-	-	177	-

Auto-ignition temperature :

Ingredient name	°C	Method
End Repair-A Tailing Enzyme Mix		
glycerol	370	-
T4 DNA Ligase		
glycerol	370	-
Ligation Buffer		
glycerol	370	-
Herculase II Fusion DNA Polymerase		
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.
XT HS2 RNA Adaptor Oligo Mix	Not available.
Herculase II Fusion DNA Polymerase	Not available.
5X Herculase II Reaction Buffer with dNTPs	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
XT HS2 RNA Adaptor Oligo Mix	7.5

SECTION 9: Physical and chemical properties

Herculase II Fusion DNA Polymerase	8.2	
5X Herculase II Reaction Buffer with dNTPs	10	

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.
XT HS2 RNA Adaptor Oligo Mix	Not available.
Herculase II Fusion DNA Polymerase	Not available.
5X Herculase II Reaction Buffer with dNTPs	Not available.

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
XT HS2 RNA Adaptor Oligo Mix	
water	Soluble
Herculase II Fusion DNA Polymerase	
water	Soluble
5X Herculase II Reaction Buffer with dNTPs	
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.
XT HS2 RNA Adaptor Oligo Mix	Not applicable.
Herculase II Fusion DNA Polymerase	Not applicable.
5X Herculase II Reaction Buffer with dNTPs	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	-

SECTION 9: Physical and chemical properties

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	-
XT HS2 RNA Adaptor Oligo Mix						
water	17.5	2.3	-	92.258	12.3	-
Herculase II Fusion DNA Polymerase						
water	17.5	2.3	-	92.258	12.3	-
glycerol	0.000075	0.00001	-	0.0025	0.00033	-
5X Herculase II Reaction Buffer with dNTPs						
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.
XT HS2 RNA Adaptor Oligo Mix	Not available.
Herculase II Fusion DNA Polymerase	Not available.
5X Herculase II Reaction Buffer with dNTPs	Not available.

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.
XT HS2 RNA Adaptor Oligo Mix	Not available.
Herculase II Fusion DNA Polymerase	Not available.
5X Herculase II Reaction Buffer with dNTPs	Not available.

SECTION 9: Physical and chemical properties

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.
		XT HS2 RNA Adaptor Oligo Mix	Not available.
		Herculase II Fusion DNA Polymerase	Not available.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	Not available.
		Herculase II Fusion DNA Polymerase	Not available.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	Not available.
		Herculase II Fusion DNA Polymerase	Not available.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	Not applicable.
		Herculase II Fusion DNA Polymerase	Not applicable.
		5X Herculase II Reaction Buffer with dNTPs	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

SECTION 10: Stability and reactivity

		product or its ingredients.
	XT HS2 RNA Adaptor Oligo Mix	No specific test data related to reactivity available for this product or its ingredients.
	Herculase II Fusion DNA Polymerase	No specific test data related to reactivity available for this product or its ingredients.
	5X Herculase II Reaction Buffer with dNTPs	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.
XT HS2 RNA Adaptor Oligo Mix	The product is stable.
Herculase II Fusion DNA Polymerase	The product is stable.
5X Herculase II Reaction Buffer with dNTPs	The product is stable.

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.
XT HS2 RNA Adaptor Oligo Mix	Under normal conditions of storage and use, hazardous reactions will not occur.
Herculase II Fusion DNA Polymerase	Under normal conditions of storage and use, hazardous reactions will not occur.
5X Herculase II Reaction Buffer with dNTPs	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.
XT HS2 RNA Adaptor Oligo Mix	No specific data.
Herculase II Fusion DNA Polymerase	No specific data.
5X Herculase II Reaction Buffer with dNTPs	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.
XT HS2 RNA Adaptor Oligo Mix	May react or be incompatible with oxidising materials.
Herculase II Fusion DNA Polymerase	May react or be incompatible with oxidising materials.
5X Herculase II Reaction Buffer with dNTPs	May react or be incompatible with oxidising materials.

SECTION 10: Stability and reactivity

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.
XT HS2 RNA Adaptor Oligo Mix	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Herculase II Fusion DNA Polymerase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
5X Herculase II Reaction Buffer with dNTPs	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	-
Herculase II Fusion DNA Polymerase				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
5X Herculase II Reaction Buffer with dNTPs				
Trometamol	LD50 Dermal	Rat	>5000 mg/kg	-
Ammonium sulphate	LD50 Oral	Rat	2840 mg/kg	-
Hexadecan-1-ol, ethoxylated	LD50 Oral	Rat	2500 mg/kg	-

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)
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
Herculase II Fusion DNA Polymerase					
Glycerol	12600	N/A	N/A	N/A	N/A
5X Herculase II Reaction Buffer with dNTPs					
Ammonium sulphate	2840	N/A	N/A	N/A	N/A
Hexadecan-1-ol, ethoxylated	2500	N/A	N/A	N/A	N/A

Irritation/Corrosion

SECTION 11: Toxicological information

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	-
Herculase II Fusion DNA Polymerase					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
5X Herculase II Reaction Buffer with dNTPs					
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)

Not available.

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.
XT HS2 RNA Adaptor Oligo Mix	Not available.
Herculase II Fusion DNA	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

SECTION 11: Toxicological information

Polymerase	
5X Herculase II Reaction Buffer with dNTPs	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.
	XT HS2 RNA Adaptor Oligo Mix	No known significant effects or critical hazards.
	Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
	5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards.
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.
	XT HS2 RNA Adaptor Oligo Mix	No known significant effects or critical hazards.
	Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
	5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards.
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.
	XT HS2 RNA Adaptor Oligo Mix	No known significant effects or critical hazards.
	Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
	5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards.
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.
	XT HS2 RNA Adaptor Oligo Mix	No known significant effects or critical hazards.
	Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
	5X Herculase II Reaction Buffer with dNTPs	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.
	XT HS2 RNA Adaptor Oligo Mix	No specific data.
	Herculase II Fusion DNA	No specific data.

SECTION 11: Toxicological information

		Polymerase	
		5X Herculase II Reaction Buffer with dNTPs	No specific data.
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.
		XT HS2 RNA Adaptor Oligo Mix	No specific data.
		Herculase II Fusion DNA Polymerase	No specific data.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	No specific data.
		Herculase II Fusion DNA Polymerase	No specific data.
		5X Herculase II Reaction Buffer with dNTPs	No specific data.
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.
		XT HS2 RNA Adaptor Oligo Mix	No specific data.
		Herculase II Fusion DNA Polymerase	No specific data.
		5X Herculase II Reaction Buffer with dNTPs	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.

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.
		XT HS2 RNA Adaptor	No known significant effects or critical hazards.

SECTION 11: Toxicological information

		Oligo Mix	
		Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
		5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards.
Carcinogenicity	:	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.
		XT HS2 RNA Adaptor Oligo Mix	No known significant effects or critical hazards.
		Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
		5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards.
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.
		XT HS2 RNA Adaptor Oligo Mix	No known significant effects or critical hazards.
		Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
		5X Herculase II Reaction Buffer with dNTPs	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.
		XT HS2 RNA Adaptor Oligo Mix	No known significant effects or critical hazards.
		Herculase II Fusion DNA Polymerase	No known significant effects or critical hazards.
		5X Herculase II Reaction Buffer with dNTPs	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 - *Oncorhynchus mykiss*	96 hours
T4 DNA Ligase			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Trout - *Oncorhynchus mykiss*	96 hours
Ligation Buffer			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Trout - *Oncorhynchus mykiss*	96 hours
Herculase II Fusion DNA			

SECTION 12: Ecological information

Polymerase			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Trout - *Oncorhynchus mykiss*	96 hours
5X Herculase II Reaction Buffer with dNTPs			
Trometamol	Acute EC50 >980 mg/l Fresh water	Daphnia	48 hours
	Acute NOEC 520 mg/l Fresh water	Daphnia	48 hours
Ammonium sulphate	Chronic NOEC 7.5 mg/l Marine water	Algae - Diatom - *Phaeodactylum tricornutum* - Exponential growth phase	96 hours
Hexadecan-1-ol, ethoxylated	Acute LC50 330000 to 1000000 µg/l Marine water	Crustaceans - Common shrimp, sand shrimp - *Crangon crangon* - Adult	48 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 Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
Herculase II Fusion DNA Polymerase				
Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
5X Herculase II Reaction Buffer with dNTPs				
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
5X Herculase II Reaction Buffer with dNTPs			
Trometamol	-	-	Readily
Ammonium sulphate	-	-	Readily
Hexadecan-1-ol, ethoxylated	-	-	Readily

SECTION 12: Ecological information

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
Herculase II Fusion DNA Polymerase			
Glycerol	-1.76	-	Low
5X Herculase II Reaction Buffer with dNTPs			
Trometamol	-2.31	-	Low
Ammonium sulphate	-5.1	-	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 : 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	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

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

Product / Ingredient name	Identifiers	Status
5X Herculase II Reaction Buffer with dNTPs		
Ammonium sulphate	EC: 231-984-1 CAS: 7783-20-2	65

SECTION 15: Regulatory information

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.
	XT HS2 RNA Adaptor Oligo Mix	Not applicable.
	Herculase II Fusion DNA Polymerase	Not applicable.
	5X Herculase II Reaction Buffer with dNTPs	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
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

SECTION 16: Other information

Classification	Justification
Not classified.	

Full text of abbreviated H statements

5X Herculase II Reaction Buffer with dNTPs	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H411	Toxic to aquatic life with long lasting effects.

Full text of classifications

5X Herculase II Reaction Buffer with dNTPs	
Aquatic Chronic 2	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2
Eye Irrit. 2	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
Skin Irrit. 2	SKIN CORROSION/IRRITATION - Category 2

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