

SAFETY DATA SHEET



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

Section 1. Identification

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

Validation date : 10/30/2023

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

Supplier/Manufacturer : Agilent Technologies, Inc.
5301 Stevens Creek Blvd
Santa Clara, CA 95051, USA
800-227-9770

1.4 Emergency telephone number

In case of emergency : CHEMTREC®: 1-800-424-9300

Section 2. Hazards identification

2.1 Classification of the substance or mixture

OSHA/HCS status :	End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
	T4 DNA Ligase	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	Ligation Buffer	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	XT HS2 RNA Adaptor Oligo Mix	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR

Section 2. Hazards identification

1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

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

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture

End Repair-A Tailing Enzyme

Mix

H320 EYE IRRITATION - Category 2B

T4 DNA Ligase

H320 EYE IRRITATION - Category 2B

Ligation Buffer

H320 EYE IRRITATION - Category 2B

Herculase II Fusion DNA

Polymerase

H320 EYE IRRITATION - Category 2B

5X Herculase II Reaction Buffer with dNTPs

Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 5.3%

2.2 GHS label elements

Signal word

: End Repair-A Tailing Enzyme Mix	Warning
End Repair-A Tailing Buffer	No signal word.
T4 DNA Ligase	Warning
Ligation Buffer	Warning
XT HS2 RNA Adaptor Oligo Mix	No signal word.
Herculase II Fusion DNA Polymerase	Warning
5X Herculase II Reaction Buffer with dNTPs	No signal word.

Hazard statements

: End Repair-A Tailing Enzyme Mix	H320 - Causes eye irritation.
End Repair-A Tailing Buffer	No known significant effects or critical hazards.
T4 DNA Ligase	H320 - Causes eye irritation.
Ligation Buffer	H320 - Causes eye irritation.
XT HS2 RNA Adaptor Oligo Mix	No known significant effects or critical hazards.
Herculase II Fusion DNA Polymerase	H320 - Causes eye irritation.
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	Not applicable.

Section 2. Hazards identification

	with dNTPs	
Response	: End Repair-A Tailing Enzyme Mix	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.
	End Repair-A Tailing Buffer	Not applicable.
	T4 DNA Ligase	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.
	Ligation Buffer	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.
	XT HS2 RNA Adaptor Oligo Mix	Not applicable.
	Herculase II Fusion DNA	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	Polymerase	P337 + P313 - If eye irritation persists: Get medical advice or attention.
	5X Herculase II Reaction Buffer	Not applicable.
	with dNTPs	
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	Not applicable.
	Polymerase	
	5X Herculase II Reaction Buffer	Not applicable.
	with dNTPs	
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.
	Polymerase	
	5X Herculase II Reaction Buffer	Not applicable.
	with dNTPs	
Supplemental label elements	: 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	None known.
	Polymerase	
	5X Herculase II Reaction Buffer	None known.
	with dNTPs	

2.3 Other hazards

Section 2. Hazards identification

Hazards not otherwise classified	:	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

Substance/mixture	:	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

Ingredient name	%	CAS number
End Repair-A Tailing Enzyme Mix		
Glycerol	≥50 - ≤75	56-81-5
End Repair-A Tailing Buffer		
Potassium chloride	≤3	7447-40-7
T4 DNA Ligase		
Glycerol	≥50 - ≤75	56-81-5
Ligation Buffer		
Glycerol	≥10 - ≤25	56-81-5
Herculase II Fusion DNA Polymerase		
Glycerol	≥50 - ≤75	56-81-5
5X Herculase II Reaction Buffer with dNTPs		
Trometamol	≤3	77-86-1
Ammonium sulphate	≤3	7783-20-2
Hexadecan-1-ol, ethoxylated	<2.5	9004-95-9

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

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

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

Section 4. First aid measures

4.1 Description of necessary first aid measures

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. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
	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. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
	Ligation Buffer	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
	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. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
	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. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	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. 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

Section 4. First aid measures

attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ligation Buffer

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

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. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

5X Herculase II Reaction Buffer with dNTPs

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact

: End Repair-A Tailing Enzyme Mix

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

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. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ligation Buffer


Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

XT HS2 RNA Adaptor Oligo Mix

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

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Ingestion

Herculase II Fusion DNA Polymerase	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
5X Herculase II Reaction Buffer with dNTPs	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
:  End Repair-A Tailing Enzyme Mix	Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
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. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Ligation Buffer	Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
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

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Herculase II Fusion DNA
Polymerase

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 adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. 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

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact

- : End Repair-A Tailing Enzyme Mix Causes eye irritation.
- End Repair-A Tailing Buffer No known significant effects or critical hazards.
- T4 DNA Ligase Causes eye irritation.
- Ligation Buffer Causes eye irritation.
- XT HS2 RNA Adaptor Oligo Mix No known significant effects or critical hazards.
- Herculase II Fusion DNA Causes eye irritation.
- Polymerase
- 5X Herculase II Reaction Buffer No known significant effects or critical hazards.
- with dNTPs

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 No known significant effects or critical hazards.
- Polymerase
- 5X Herculase II Reaction Buffer No known significant effects or critical hazards.
- with dNTPs

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 No known significant effects or critical hazards.
- Polymerase
- 5X Herculase II Reaction Buffer No known significant effects or critical hazards.
- with dNTPs

Section 4. First aid measures

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.

Over-exposure signs/symptoms

Eye contact	: End Repair-A Tailing Enzyme Mix	Adverse symptoms may include the following: irritation watering redness
	End Repair-A Tailing Buffer	No specific data.
	T4 DNA Ligase	Adverse symptoms may include the following: irritation watering redness
	Ligation Buffer	Adverse symptoms may include the following: irritation watering redness
	XT HS2 RNA Adaptor Oligo Mix	No specific data.
	Herculase II Fusion DNA Polymerase	Adverse symptoms may include the following: irritation watering redness
	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 Polymerase	No specific data.
	5X Herculase II Reaction Buffer with dNTPs	No specific data.

Section 4. First aid measures

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

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.
Protection of first-aiders	: End Repair-A Tailing Enzyme Mix	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.
	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. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
	Ligation Buffer	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.
	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. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
	5X Herculase II Reaction Buffer with dNTPs	No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	None known. None known. None known. None known. None known. None known. None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds metal oxide/oxides Decomposition products may include the following materials: carbon dioxide carbon monoxide Decomposition products may include the following materials: carbon dioxide

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XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase	carbon monoxide No specific data. 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 End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 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. 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. 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. 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. 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. 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. 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.
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Special protective equipment for fire-fighters

: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase 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. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
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Section 5. Fire-fighting measures

XT HS2 RNA Adaptor Oligo Mix	pressure mode. 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 spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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 spilled 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 spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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 spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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 spilled 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

Section 6. Accidental release measures

	5X Herculase II Reaction Buffer with dNTPs	touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
For emergency responders :	End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
6.2 Environmental precautions :	End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Section 6. Accidental release measures

XT HS2 RNA Adaptor Oligo Mix	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Herculase II Fusion DNA Polymerase	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
5X Herculase II Reaction Buffer with dNTPs	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

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.

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). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	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). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	Ligation Buffer	Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	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). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	5X Herculase II Reaction Buffer with dNTPs	Put on appropriate personal protective equipment (see Section 8).
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

Section 7. Handling and storage

Ligation Buffer	for additional information on hygiene measures. 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

: 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 unlabeled 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 unlabeled 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 unlabeled

Section 7. Handling and storage

Ligation Buffer

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

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

Herculase II Fusion DNA Polymerase

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

5X Herculase II Reaction Buffer 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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

Recommendations

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 Polymerase	Industrial applications, Professional applications.
5X Herculase II Reaction Buffer with dNTPs	Industrial applications, Professional applications.

Section 7. Handling and storage

Industrial sector specific solutions	: <input checked="" type="checkbox"/> 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.
	Polymerase	
	5X Herculase II Reaction Buffer with dNTPs	Not available.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
<input checked="" type="checkbox"/> End Repair-A Tailing Enzyme Mix Glycerol	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>CAL OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: respirable fraction TWA: 10 mg/m³ 8 hours. Form: total dust</p>
End Repair-A Tailing Buffer Potassium chloride	None.
T4 DNA Ligase Glycerol	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>CAL OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: respirable fraction TWA: 10 mg/m³ 8 hours. Form: total dust</p>
Ligation Buffer Glycerol	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>CAL OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: respirable fraction</p>

Section 8. Exposure controls/personal protection

<p>Herculase II Fusion DNA Polymerase Glycerol</p> <p>5X Herculase II Reaction Buffer with dNTPs Trometamol Ammonium sulphate Hexadecan-1-ol, ethoxylated</p>	<p>TWA: 10 mg/m³ 8 hours. Form: total dust</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust CAL OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: respirable fraction TWA: 10 mg/m³ 8 hours. Form: total dust</p> <p>None. None. None.</p>
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Biological exposure indices

No exposure indices known.

8.2 Exposure controls

Appropriate engineering controls

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

Environmental exposure controls

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

Individual protection measures

Hygiene measures

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

Eye/face protection

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection

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

Other skin protection

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

Section 8. Exposure controls/personal protection

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

Section 9. Physical and chemical properties and safety characteristics

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

Appearance

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	Liquid.
		Polymerase	
		5X Herculase II Reaction Buffer with dNTPs	Liquid.
Color	:	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.
		Polymerase	
		5X Herculase II Reaction Buffer with dNTPs	Not available.
Odor	:	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.
		Polymerase	
		5X Herculase II Reaction Buffer with dNTPs	Not available.
Odor 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	Not available.
		Polymerase	
		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
		Herculase II Fusion DNA	8.2
		Polymerase	
		5X Herculase II Reaction Buffer with dNTPs	10

Section 9. Physical and chemical properties and safety characteristics

Melting point/freezing point :

- End Repair-A Tailing Enzyme Mix Not available.
- End Repair-A Tailing Buffer 0°C (32°F)
- T4 DNA Ligase Not available.
- Ligation Buffer Not available.
- XT HS2 RNA Adaptor Oligo Mix 0°C (32°F)
- Herculase II Fusion DNA Polymerase Not available.
- 5X Herculase II Reaction Buffer with dNTPs Not available.

Boiling point, initial boiling point, and boiling range :

- End Repair-A Tailing Enzyme Mix Not available.
- End Repair-A Tailing Buffer 100°C (212°F)
- T4 DNA Ligase Not available.
- Ligation Buffer Not available.
- XT HS2 RNA Adaptor Oligo Mix 100°C (212°F)
- Herculase II Fusion DNA Polymerase Not available.
- 5X Herculase II Reaction Buffer with dNTPs Not available.

Flash point :

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
End Repair-A Tailing Enzyme Mix						
Glycerol	-	-	-	177	350.6	-
T4 DNA Ligase						
Glycerol	-	-	-	177	350.6	-
Ligation Buffer						
Glycerol	-	-	-	177	350.6	-
Herculase II Fusion DNA Polymerase						
Glycerol	-	-	-	177	350.6	-

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.

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 Not applicable.

Section 9. Physical and chemical properties and safety characteristics

with dNTPs

Lower and upper explosion limit/flammability limit :

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.

Vapor pressure :

Ingredient name	Vapor Pressure at 20°C			Vapor 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	-
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						

Section 9. Physical and chemical properties and safety characteristics

water	17.5	2.3	-	92.258	12.3	-
Trometamol	<0.00075006	<0.0001	-	-	-	-

Relative vapor 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.

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.

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.

Auto-ignition temperature :

Ingredient name	°C	°F	Method
End Repair-A Tailing Enzyme Mix			
Glycerol	370	698	-
T4 DNA Ligase			
Glycerol	370	698	-

Section 9. Physical and chemical properties and safety characteristics

Ligation Buffer			
Glycerol	370	698	-
Herculase II Fusion DNA Polymerase			
Glycerol	370	698	-

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.

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.

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.

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.
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.

Section 10. Stability and reactivity

10.2 Chemical stability	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	The product is stable. The product is stable. The product is stable. The product is stable. The product is stable. The product is stable. The product is stable.
10.3 Possibility of hazardous reactions	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
10.5 Incompatible materials	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials.
10.6 Hazardous decomposition products	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 10. Stability and reactivity

Ligation Buffer	produced. 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	-
End Repair-A Tailing Buffer Potassium chloride	LD50 Oral	Rat	2600 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	-

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	-
End Repair-A Tailing Buffer Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
T4 DNA Ligase Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-

Section 11. Toxicological information

Ligation Buffer Glycerol	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
Herculase II Fusion DNA Polymerase Glycerol	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
5X Herculase II Reaction Buffer with dNTPs Trometamol	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rabbit	-	25 %	-
	Skin - Severe irritant	Rabbit	-	500 mg	-

Sensitization

Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
5X Herculase II Reaction Buffer with dNTPs Trometamol	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure

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

Section 11. Toxicological information

	5X Herculase II Reaction Buffer with dNTPs	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
Potential acute health effects		
Eye contact	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	Causes eye irritation. No known significant effects or critical hazards. Causes eye irritation. Causes eye irritation. No known significant effects or critical hazards. Causes eye irritation. No known significant effects or critical hazards.
Inhalation	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: End Repair-A Tailing Enzyme Mix	Adverse symptoms may include the following: irritation watering redness
	End Repair-A Tailing Buffer T4 DNA Ligase	No specific data. Adverse symptoms may include the following: irritation watering redness
	Ligation Buffer	Adverse symptoms may include the following: irritation watering redness
	XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase	No specific data. Adverse symptoms may include the following: irritation

Section 11. Toxicological information

		watering redness
	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	No specific data.
	Polymerase	
	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	No specific data.
	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	No specific data.
	Polymerase	
	5X Herculase II Reaction Buffer with dNTPs	No specific data.

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

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 Oligo Mix	No known significant effects or critical hazards.
	Herculase II Fusion DNA	No known significant effects or critical hazards.
	Polymerase	
	5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards.

Section 11. Toxicological information


Carcinogenicity	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Mutagenicity	: End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Reproductive toxicity	: <input checked="" type="checkbox"/> End Repair-A Tailing Enzyme Mix End Repair-A Tailing Buffer T4 DNA Ligase Ligation Buffer XT HS2 RNA Adaptor Oligo Mix Herculase II Fusion DNA Polymerase 5X Herculase II Reaction Buffer with dNTPs	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates


Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
<input checked="" type="checkbox"/> End Repair-A Tailing Enzyme Mix Glycerol	12600	N/A	N/A	N/A	N/A
End Repair-A Tailing Buffer End Repair-A Tailing Buffer Potassium chloride	159509.2 2600	N/A N/A	N/A N/A	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 5X Herculase II Reaction Buffer with dNTPs Ammonium sulphate Hexadecan-1-ol, ethoxylated	118512.9 2840 2500	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A

Section 11. Toxicological information


Other information :  End Repair-A Tailing Buffer Adverse symptoms may include the following: May cause skin sensitization.

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 - <i>Oncorhynchus mykiss</i>	96 hours
End Repair-A Tailing Buffer Potassium chloride	Acute EC50 9.24 g/L Fresh water	Algae - <i>Desmodesmus subspicatus</i>	72 hours
	Acute EC50 1337000 µg/l Fresh water	Algae - <i>Navicula seminulum</i>	96 hours
	Acute LC50 9.68 mg/l Fresh water	Crustaceans - <i>Pseudosida ramosa</i> - Neonate	48 hours
	Acute LC50 93000 µg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 509.65 mg/l Fresh water	Fish - <i>Danio rerio</i>	96 hours
T4 DNA Ligase Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - <i>Oncorhynchus mykiss</i>	96 hours
Ligation Buffer Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - <i>Oncorhynchus mykiss</i>	96 hours
Herculase II Fusion DNA Polymerase Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - <i>Oncorhynchus mykiss</i>	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 - <i>Phaeodactylum tricornutum</i> - Exponential growth phase	96 hours
Hexadecan-1-ol, ethoxylated	Acute LC50 330000 to 1000000 µg/l Marine water	Crustaceans - <i>Crangon crangon</i> - Adult	48 hours

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

Herculase II Fusion DNA Polymerase Glycerol	Biodegradability - Closed Bottle Test			
	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	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
End Repair-A Tailing Buffer Potassium chloride	-	-	Readily
5X Herculase II Reaction Buffer with dNTPs Trometamol	-	-	Readily
Ammonium sulphate	-	-	Readily
Hexadecan-1-ol, ethoxylated	-	-	Readily

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
End Repair-A Tailing Enzyme Mix Glycerol	-1.76	-	Low
End Repair-A Tailing Buffer Potassium chloride	-0.46	-	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

Section 12. Ecological information

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

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

Section 13. Disposal considerations

13.1 Waste treatment methods

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

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

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

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

Section 14. Transport information

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

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

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

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

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

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

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

Section 15. Regulatory information

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification :

End Repair-A Tailing Enzyme Mix	EYE IRRITATION - Category 2B
End Repair-A Tailing Buffer	Not applicable.
T4 DNA Ligase	EYE IRRITATION - Category 2B
Ligation Buffer	EYE IRRITATION - Category 2B
XT HS2 RNA Adaptor Oligo Mix	Not applicable.
Herculase II Fusion DNA Polymerase	EYE IRRITATION - Category 2B
5X Herculase II Reaction Buffer with dNTPs	Not applicable.

Composition/information on ingredients

Name	%	Classification
End Repair-A Tailing Enzyme Mix		
Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
End Repair-A Tailing Buffer		
Potassium chloride	≤3	EYE IRRITATION - Category 2B
T4 DNA Ligase		
Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
Ligation Buffer		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2B
Herculase II Fusion DNA Polymerase		
Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
5X Herculase II Reaction Buffer with dNTPs		
Trometamol	≤3	COMBUSTIBLE DUSTS SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
Ammonium sulphate	≤3	EYE IRRITATION - Category 2A

SARA 313

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

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

State regulations

Massachusetts : The following components are listed: GLYCERINE MIST

New York : None of the components are listed.

Section 15. Regulatory information

- New Jersey** : The following components are listed: GLYCERIN
- Pennsylvania** : The following components are listed: 1,2,3-PROPANETRIOL
- California Prop. 65**

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

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

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

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
End Repair-A Tailing Enzyme Mix EYE IRRITATION - Category 2B	Calculation method
T4 DNA Ligase EYE IRRITATION - Category 2B	Calculation method
Ligation Buffer EYE IRRITATION - Category 2B	Calculation method
Herculase II Fusion DNA Polymerase EYE IRRITATION - Category 2B	Calculation method

History

: 10/30/2023

Section 16. Other information

Date of issue/Date of revision

Date of previous issue : 07/27/2020

Version : 2

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
UN = United Nations

✔ Indicates information that has changed from previously issued version.

[Notice to reader](#)

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