

SAFETY DATA SHEET

SureSelect XT HS2 RNA Library Preparation Kit for ILM (Pre PCR), 96 Reactions, Part Number 5500-0151

Section 1. Identification

Product identifier	: SureSelect XT HS2 RNA Library Preparation Kit for ILM (Pre PCR), 96 Reactions, Part Number 5500-0151														
Part no. (chemical kit)	: 5500-0151														
Part no.	: End Repair-A Tailing Enzyme Mix 5190-6435 End Repair-A Tailing Buffer 5190-6436 T4 DNA Ligase 5190-6437 Ligation Buffer 5190-6438 XT HS2 RNA Adaptor Oligo Mix 5191-6844 Herculase II Fusion DNA Polymerase 5600-3761 5X Herculase II Reaction Buffer with dNTPs 5191-6681														
Material uses	: Analytical reagent. For Research Use Only. Not for use in diagnostic procedures. <table> <tr> <td>End Repair-A Tailing Enzyme Mix</td> <td>0.512 ml (96 reactions)</td> </tr> <tr> <td>End Repair-A Tailing Buffer</td> <td>2.048 ml (96 reactions)</td> </tr> <tr> <td>T4 DNA Ligase</td> <td>0.256 ml (96 reactions)</td> </tr> <tr> <td>Ligation Buffer</td> <td>2.944 ml (96 reactions)</td> </tr> <tr> <td>XT HS2 RNA Adaptor Oligo Mix</td> <td>0.64 ml (96 reactions)</td> </tr> <tr> <td>Herculase II Fusion DNA Polymerase</td> <td>0.14 ml (96 reactions)</td> </tr> <tr> <td>5X Herculase II Reaction Buffer with dNTPs</td> <td>1.5 ml (96 reactions)</td> </tr> </table>	End Repair-A Tailing Enzyme Mix	0.512 ml (96 reactions)	End Repair-A Tailing Buffer	2.048 ml (96 reactions)	T4 DNA Ligase	0.256 ml (96 reactions)	Ligation Buffer	2.944 ml (96 reactions)	XT HS2 RNA Adaptor Oligo Mix	0.64 ml (96 reactions)	Herculase II Fusion DNA Polymerase	0.14 ml (96 reactions)	5X Herculase II Reaction Buffer with dNTPs	1.5 ml (96 reactions)
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Herculase II Fusion DNA Polymerase	0.14 ml (96 reactions)														
5X Herculase II Reaction Buffer with dNTPs	1.5 ml (96 reactions)														
Supplier/Manufacturer	: Agilent Technologies, Inc. 5301 Stevens Creek Blvd Santa Clara, CA 95051, USA 800-227-9770														
Emergency telephone number (with hours of operation)	: CHEMTREC®: 1-800-424-9300														

Section 2. Hazard identification

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

GHS label elements

Section 2. Hazard identification

Signal word	: 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	Warning No signal word. Warning Warning No signal word. Warning No signal word.
Hazard statements	: 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	H320 - Causes eye irritation. No known significant effects or critical hazards. H320 - Causes eye irritation. H320 - Causes eye irritation. No known significant effects or critical hazards. H320 - Causes eye irritation. No known significant effects or critical hazards.
<u>Precautionary statements</u>		
Prevention	: 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	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Response	: 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	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. Not applicable. 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. 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. Not applicable. 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. Not applicable.

Section 2. Hazard identification

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 Polymerase	Not applicable.
		5X Herculase II Reaction Buffer with dNTPs	Not applicable.
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 Polymerase	None known.
		5X Herculase II Reaction Buffer with dNTPs	None known.
		5X Herculase II Reaction Buffer with dNTPs	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 5.3%
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

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

Section 3. Composition/information on ingredients

Buffer with dNTPs

Ingredient name	% (w/w)	CAS number
End Repair-A Tailing Enzyme Mix Glycerol	30 - 60	56-81-5
End Repair-A Tailing Buffer Potassium chloride	1 - 5	7447-40-7
T4 DNA Ligase Glycerol	30 - 60	56-81-5
Ligation Buffer Polyethylene glycol Glycerol	10 - 30 10 - 30	25322-68-3 56-81-5
Herculase II Fusion DNA Polymerase Glycerol	30 - 60	56-81-5
5X Herculase II Reaction Buffer with dNTPs Trometamol Ammonium sulphate Hexadecan-1-ol, ethoxylated	1 - 5 0.5 - 1.5 0.1 - 1	77-86-1 7783-20-2 9004-95-9

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

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

Section 4. First-aid measures

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.

Section 4. First-aid measures

Inhalation	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.
	: 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 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	

Section 4. First-aid measures

Skin contact

: End Repair-A Tailing Enzyme Mix	decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. 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.
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.

Ingestion

: 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,

Section 4. First-aid measures

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

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

Section 4. First-aid measures

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.	
	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.	
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.	
	<u>Over-exposure signs/symptoms</u>		
	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.	

Section 4. First-aid measures

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.	

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.

Section 4. First-aid measures

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

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.

Section 5. Fire-fighting measures

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.
Specific hazards arising from the chemical	: 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 thermal decomposition 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

Section 5. Fire-fighting measures

Special protective actions for fire-fighters	: End Repair-A Tailing Enzyme Mix	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	End Repair-A Tailing Buffer	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	T4 DNA Ligase	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	Ligation Buffer	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	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 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

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 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.
For emergency responders	: 5X Herculase II Reaction Buffer with dNTPs	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.
	: End Repair-A Tailing Enzyme Mix	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".
	End Repair-A Tailing Buffer	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".

Section 6. Accidental release measures

T4 DNA Ligase	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".
Ligation Buffer	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".
XT HS2 RNA Adaptor Oligo Mix	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
Herculase II Fusion DNA Polymerase	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
5X Herculase II Reaction Buffer 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".
Environmental precautions : End Repair-A Tailing Enzyme 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).
End Repair-A Tailing 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).
T4 DNA Ligase	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).
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).
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).

Methods and materials 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.

Section 7. Handling and storage

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

Section 7. Handling and storage

Advice on general occupational hygiene

		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).
	: 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	Eating, drinking and smoking should be prohibited in

Section 7. Handling and storage

Polymerase	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.
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 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 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

Section 7. Handling and storage

Herculase II Fusion DNA
Polymerase

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.

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.

Section 8. Exposure controls/personal protection

[Control parameters](#)

[Occupational exposure limits](#)

Ingredient name	Exposure limits
<p>End Repair-A Tailing Enzyme Mix Glycerol</p>	<p>CA Alberta Provincial (Canada, 6/2018). 8 hrs OEL: 10 mg/m³ 8 hours. Form: Mist CA Quebec Provincial (Canada, 7/2019). TWAEV: 10 mg/m³ 8 hours. Form: mist CA Saskatchewan Provincial (Canada, 7/2013). STEL: 20 mg/m³ 15 minutes. Form: mist TWA: 10 mg/m³ 8 hours. Form: mist CA British Columbia Provincial (Canada, 1/2021). TWA: 3 mg/m³ 8 hours. Form: respirable mist TWA: 10 mg/m³ 8 hours. Form: total mist</p>
<p>T4 DNA Ligase Glycerol</p>	<p>CA Alberta Provincial (Canada, 6/2018). 8 hrs OEL: 10 mg/m³ 8 hours. Form: Mist CA Quebec Provincial (Canada, 7/2019). TWAEV: 10 mg/m³ 8 hours. Form: mist</p>

Section 8. Exposure controls/personal protection

<p>Ligation Buffer Polyethylene glycol</p> <p>Glycerol</p>	<p>CA Saskatchewan Provincial (Canada, 7/2013). STEL: 20 mg/m³ 15 minutes. Form: mist TWA: 10 mg/m³ 8 hours. Form: mist</p> <p>CA British Columbia Provincial (Canada, 1/2021). TWA: 3 mg/m³ 8 hours. Form: respirable mist TWA: 10 mg/m³ 8 hours. Form: total mist</p>
<p>Herculase II Fusion DNA Polymerase Glycerol</p>	<p>OARS WEEL (United States, 1/2021). TWA: 10 mg/m³ 8 hours.</p> <p>CA Alberta Provincial (Canada, 6/2018). 8 hrs OEL: 10 mg/m³ 8 hours. Form: Mist</p> <p>CA Quebec Provincial (Canada, 7/2019). TWAEV: 10 mg/m³ 8 hours. Form: mist</p> <p>CA Saskatchewan Provincial (Canada, 7/2013). STEL: 20 mg/m³ 15 minutes. Form: mist TWA: 10 mg/m³ 8 hours. Form: mist</p> <p>CA British Columbia Provincial (Canada, 1/2021). TWA: 3 mg/m³ 8 hours. Form: respirable mist TWA: 10 mg/m³ 8 hours. Form: total mist</p>
<p>Herculase II Fusion DNA Polymerase Glycerol</p>	<p>CA Alberta Provincial (Canada, 6/2018). 8 hrs OEL: 10 mg/m³ 8 hours. Form: Mist</p> <p>CA Quebec Provincial (Canada, 7/2019). TWAEV: 10 mg/m³ 8 hours. Form: mist</p> <p>CA Saskatchewan Provincial (Canada, 7/2013). STEL: 20 mg/m³ 15 minutes. Form: mist TWA: 10 mg/m³ 8 hours. Form: mist</p> <p>CA British Columbia Provincial (Canada, 1/2021). TWA: 3 mg/m³ 8 hours. Form: respirable mist TWA: 10 mg/m³ 8 hours. Form: total mist</p>

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.

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

Section 9. Physical and chemical properties and safety characteristics

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

Section 9. Physical and chemical properties and safety characteristics

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
End Repair-A Tailing Enzyme Mix						
(R*,R*) -1,4-Dimercaptobutane-2,3-diol	>110	>230				
Glycerol			Pensky-Martens	177	350.6	
End Repair-A Tailing Buffer						
(R*,R*) -1,4-Dimercaptobutane-2,3-diol	>110	>230				
T4 DNA Ligase						
(R*,R*) -1,4-Dimercaptobutane-2,3-diol	>110	>230				
Glycerol			Pensky-Martens	177	350.6	
Ligation Buffer						
(R*,R*) -1,4-Dimercaptobutane-2,3-diol	>110	>230				
Polyethylene glycol	171 to 235	339.8 to 455		199 to 238	390.2 to 460.4	
XT HS2 RNA Adaptor Oligo Mix						
Edetic acid	>100	>212	DIN 51758			
Herculase II Fusion DNA Polymerase						
Edetic acid	>100	>212	DIN 51758			
(R*,R*) -1,4-Dimercaptobutane-2,3-diol	>110	>230				

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.

Section 9. Physical and chemical properties and safety characteristics

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.	
	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	23.8	3.2		92.258	12.3	
		Adenosine 5'-(tetrahydrogen triphosphate), disodium salt	<0.00075006	<0.0001		<0.00075006	<0.0001	
		End Repair-A Tailing Buffer						
		Water	23.8	3.2		92.258	12.3	
		Adenosine 5'-(tetrahydrogen triphosphate), disodium salt	<0.00075006	<0.0001		<0.00075006	<0.0001	
		T4 DNA Ligase						
		Water	23.8	3.2		92.258	12.3	
		Glycerol	0.000075	0.00001		0.0025	0.00033	
		Ligation Buffer						
		Water	23.8	3.2		92.258	12.3	
		Glycerol	0.000075	0.00001		0.0025	0.00033	
		XT HS2 RNA Adaptor Oligo Mix						
		Water	23.8	3.2		92.258	12.3	

Section 9. Physical and chemical properties and safety characteristics

2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	0.000027	0.0000036		0.000007501	0.000001	
Herculase II Fusion DNA Polymerase						
Water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
5X Herculase II Reaction Buffer with dNTPs						
Water	23.8	3.2		92.258	12.3	
Sulfuric acid, magnesium salt, hydrate (1:1:7)	<0.1	<0.013				

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 :

- End Repair-A Tailing Enzyme Mix : Easily soluble in the following materials: cold water and hot water.
- End Repair-A Tailing Buffer : Easily soluble in the following materials: cold water and hot water.
- T4 DNA Ligase : Easily soluble in the following materials: cold water and hot water.
- Ligation Buffer : Easily soluble in the following materials: cold water and hot water.
- XT HS2 RNA Adaptor Oligo Mix : Easily soluble in the following materials: cold water and hot water.
- Herculase II Fusion DNA Polymerase : Easily soluble in the following materials: cold water and hot water.
- 5X Herculase II Reaction Buffer with dNTPs : Easily soluble in the following materials: cold water and hot water.

Section 9. Physical and chemical properties and safety characteristics

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	
Ligation Buffer			
Polyethylene glycol	360	680	
Glycerol	370	698	
XT HS2 RNA Adaptor Oligo Mix			
Edetic acid	>400	>752	VDI 2263
Herculase II Fusion DNA Polymerase			
Glycerol	370	698	
Edetic acid	>400	>752	VDI 2263

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

Section 9. Physical and chemical properties and safety 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

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.

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.

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.

Section 10. Stability and reactivity

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.
Incompatible materials	: End Repair-A Tailing Enzyme Mix	May react or be incompatible with oxidizing materials.
	End Repair-A Tailing Buffer	May react or be incompatible with oxidizing materials.
	T4 DNA Ligase	May react or be incompatible with oxidizing materials.
	Ligation Buffer	May react or be incompatible with oxidizing materials.
	XT HS2 RNA Adaptor Oligo Mix	May react or be incompatible with oxidizing materials.
	Herculase II Fusion DNA Polymerase	May react or be incompatible with oxidizing materials.
	5X Herculase II Reaction Buffer with dNTPs	May react or be incompatible with oxidizing materials.
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

[Information on toxicological effects](#)

[Acute toxicity](#)

Section 11. Toxicological information

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	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Ligation Buffer Polyethylene glycol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Eyes - Mild irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Glycerol	Skin - Mild irritant	Rabbit	-	500 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Herculase II Fusion DNA					

Section 11. Toxicological information

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	-

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.
End Repair-A Tailing Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation.
T4 DNA Ligase	Routes of entry anticipated: Oral, Dermal, Inhalation.
Ligation Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation.
XT HS2 RNA Adaptor Oligo Mix	Not available.
Herculase II Fusion DNA Polymerase	Routes of entry anticipated: Oral, Dermal, Inhalation.
5X Herculase II Reaction Buffer with dNTPs	Routes of entry anticipated: Oral, Dermal, Inhalation.

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 Polymerase	Causes eye irritation.

Section 11. Toxicological information

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

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	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	No specific data.

Section 11. Toxicological information

Inhalation	Buffer with dNTPs		
	: End Repair-A Tailing	No specific data.	
	Enzyme Mix		
	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	No specific data.
Enzyme Mix			
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	No specific data.
		Enzyme Mix	
	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 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	No known significant effects or critical hazards.
	Enzyme Mix	
	End Repair-A Tailing Buffer	No known significant effects or critical hazards.
	T4 DNA Ligase	No known significant effects or critical hazards.
	Ligation Buffer	No known significant effects or critical hazards.
	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.

Section 11. Toxicological information

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.	

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)
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 Polyethylene glycol Glycerol	28000 12600	N/A N/A	N/A N/A	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					

Section 11. Toxicological information

5X Herculase II Reaction Buffer with dNTPs	118512.9	N/A	N/A	N/A	N/A
Ammonium sulphate	2840	N/A	N/A	N/A	N/A
Hexadecan-1-ol, ethoxylated	2500	N/A	N/A	N/A	N/A

Other information

End Repair-A Tailing Enzyme Mix	Not available.
End Repair-A Tailing Buffer	Adverse symptoms may include the following: May cause skin sensitization.
T4 DNA Ligase 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 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
End Repair-A Tailing Enzyme Mix Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
End Repair-A Tailing Buffer Potassium chloride	Acute EC50 1337000 µg/l Fresh water Acute EC50 9.24 g/L Fresh water	Algae - Navicula seminulum Algae - Desmodesmus subspicatus	96 hours 72 hours
	Acute EC50 83000 µg/l Fresh water Acute LC50 9.68 mg/l Fresh water	Daphnia - Daphnia magna Crustaceans - Pseudosida ramosa - Neonate	48 hours 48 hours
	Acute LC50 509.65 mg/l Fresh water	Fish - Danio rerio	96 hours
T4 DNA Ligase Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Ligation Buffer Polyethylene glycol Glycerol	Acute LC50 >1000000 µg/l Fresh water Acute LC50 54000 mg/l Fresh water	Fish - Salmo salar - Parr Fish - Oncorhynchus mykiss	96 hours 96 hours
Herculase II Fusion DNA Polymerase Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
5X Herculase II Reaction Buffer with dNTPs Trometamol	Acute EC50 >980 mg/l Fresh water Acute NOEC 520 mg/l Fresh water	Daphnia Daphnia	48 hours 48 hours
Ammonium sulphate	Chronic NOEC 7.5 mg/l Marine water	Algae - Phaeodactylum tricornutum - Exponential growth phase	96 hours
Hexadecan-1-ol, ethoxylated	Acute LC50 330000 to 1000000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours

Persistence and degradability

Section 12. Ecological information

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 Polyethylene glycol	OECD 301D Ready Biodegradability - Closed Bottle Test	74.85 % - Readily - 28 days	4 mg/l	-
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	-

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

Bioaccumulative potential

Section 12. Ecological information

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 Polyethylene glycol	-	3.2	low
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

Mobility in soil

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

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

Section 13. Disposal considerations

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.

Section 14. Transport information

TDG / 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

Canadian lists

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : None of the components are listed.

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.
Europe	: 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

History

Date of issue/Date of revision : 04/29/2022

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
HPR = Hazardous Products Regulations
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

Section 16. Other information

UN = United Nations

[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

References : Not available.

 Indicates information that has changed from previously issued version.

[Notice to reader](#)

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