Conforms to Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals

# SAFETY DATA SHEET

Agilent Technologies

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

## Section 1. Identification

**Product identifier** : 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 |

**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.

**Supplier/Manufacturer** : Agilent Technologies Australia Pty Ltd
679 Springvale Road
Mulgrave
Victoria 3170, Australia
1800 802 402

**Emergency telephone number (with hours of operation)** : CHEMTREC®: +(61)-290372994

## Section 2. Hazard(s) identification

**Classification of the substance or mixture**

**End Repair-A Tailing Enzyme Mix**
H320 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2B

**T4 DNA Ligase**
H320 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2B

**Ligation Buffer**
H320 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2B

**Herculase II Fusion DNA Polymerase**
H320 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2B

**5X Herculase II Reaction Buffer with dNTPs**

# Section 2. Hazard(s) identification

| | | |
|---|---|---|
| H319 | SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A | |
| | 5X Herculase II Reaction Buffer with dNTPs | Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 5.3% |

## GHS label elements

**Hazard pictograms** : 5X Herculase II Reaction Buffer with dNTPs

**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 | WARNING |

**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 | H319 - Causes serious eye irritation. |

## Precautionary statements

**Prevention**

| | |
|---|---|
| End Repair-A Tailing Enzyme Mix | Not applicable. |
| End Repair-A Tailing Buffer | Not applicable. |
| T4 DNA Ligase | Not applicable. |
| Ligation Buffer | Not applicable. |
| XT HS2 RNA Adaptor Oligo Mix | Not applicable. |
| Herculase II Fusion DNA Polymerase | Not applicable. |
| 5X Herculase II Reaction Buffer with dNTPs | P280 - Wear eye or face protection. |

**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 | Not applicable. |

# Section 2. Hazard(s) identification

| | | | |
|---|---|---|---|
| | | Mix | |
| | | Herculase II Fusion DNA Polymerase | 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. |
| | | 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. |
| **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**

| | | | |
|---|---|---|---|
| **Additional warning phrases** | : | 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. |
| **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 and ingredient information

**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

**CAS number/other identifiers**

| Ingredient name | % (w/w) | CAS number |
|---|---|---|
| **End Repair-A Tailing Enzyme Mix** | | |
| Glycerol | ≥30 - ≤60 | 56-81-5 |
| **T4 DNA Ligase** | | |
| Glycerol | ≥30 - ≤60 | 56-81-5 |
| **Ligation Buffer** | | |
| Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy- Ethane-1,2-diol, ethoxylated | ≥10 - ≤30 | 25322-68-3 |
| Glycerol | ≥10 - ≤30 | 56-81-5 |
| **Herculase II Fusion DNA Polymerase** | | |
| Glycerol | ≥30 - ≤60 | 56-81-5 |
| **5X Herculase II Reaction Buffer with dNTPs** | | |
| Hexadecan-1-ol, ethoxylated | <3 | 9004-95-9 |

**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.**

**The total concentration of ingredients in this product, reported or not in this section, is 100%.**

**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,

# Section 4. First aid measures

| | | | |
|---|---|---|---|
| | | | 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. Continue to rinse for at least 10 minutes. Get medical attention. |
| **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 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 |

# Section 4. First aid measures

| | | |
|---|---|---|
| | | 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. 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. 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. |
| | 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. Wash clothing before reuse. Clean shoes thoroughly before reuse. |
| **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, |

# Section 4. First aid measures

| | |
|---|---|
| | 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 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. 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 |

# Section 4. First aid measures

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.

## 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 | Causes serious eye irritation. |
| **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. |

### Over-exposure signs/symptoms

| | | | |
|---|---|---|---|
| **Eye contact** | : | End Repair-A Tailing Enzyme Mix | Adverse symptoms may include the following:<br>irritation<br>watering<br>redness |
| | | End Repair-A Tailing Buffer | No specific data. |
| | | T4 DNA Ligase | Adverse symptoms may include the following:<br>irritation<br>watering |

# Section 4. First aid measures

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

# Section 4. First aid measures

| | | |
|---|---|---|
| | 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. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. |

**See toxicological information (Section 11)**

# Section 5. Firefighting 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. |

# Section 5. Firefighting measures

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| | | XT HS2 RNA Adaptor Oligo Mix | Use an extinguishing agent suitable for the surrounding fire. |
| | | Herculase II Fusion DNA Polymerase | Use an extinguishing agent suitable for the surrounding fire. |
| | | 5X Herculase II Reaction Buffer with dNTPs | Use an extinguishing agent suitable for the surrounding fire. |
| **Unsuitable extinguishing media** | : | End Repair-A Tailing Enzyme Mix | None known. |
| | | End Repair-A Tailing Buffer | None known. |
| | | T4 DNA Ligase | None known. |
| | | Ligation Buffer | None known. |
| | | XT HS2 RNA Adaptor Oligo Mix | None known. |
| | | Herculase II Fusion DNA Polymerase | None known. |
| | | 5X Herculase II Reaction Buffer with dNTPs | None known. |
| **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:<br>carbon dioxide<br>carbon monoxide |
| | | End Repair-A Tailing Buffer | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide<br>nitrogen oxides<br>halogenated compounds<br>metal oxide/oxides |
| | | T4 DNA Ligase | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide |
| | | Ligation Buffer | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide |
| | | XT HS2 RNA Adaptor Oligo Mix | No specific data. |
| | | Herculase II Fusion DNA Polymerase | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide |
| | | 5X Herculase II Reaction Buffer with dNTPs | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide<br>nitrogen oxides<br>sulfur oxides |

# Section 5. Firefighting measures

| | | | |
|---|---|---|---|
| | | | phosphorus oxides<br>metal oxide/oxides |
| **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 spilt material. Avoid breathing vapour 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 spilt material. Put on appropriate personal protective equipment. |
| | | T4 DNA Ligase | No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour 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 spilt material. Avoid breathing vapour 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 spilt material. Put on appropriate personal protective equipment. |
| | | Herculase II Fusion DNA Polymerase | No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. |
| | | 5X Herculase II Reaction Buffer with dNTPs | No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. |
| **For emergency responders** | : | End Repair-A Tailing Enzyme Mix | If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". |
| | | End Repair-A Tailing Buffer | If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". |
| | | T4 DNA Ligase | If specialised clothing is required to deal with the |

# Section 6. Accidental release measures

| | | |
|---|---|---|
| | | spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". |
| | Ligation Buffer | If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". |
| | XT HS2 RNA Adaptor Oligo Mix | If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". |
| | Herculase II Fusion DNA Polymerase | If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". |
| | 5X Herculase II Reaction Buffer with dNTPs | If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". |
| **Environmental precautions** : | End Repair-A Tailing Enzyme Mix | Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |
| | End Repair-A Tailing Buffer | Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |
| | T4 DNA Ligase | Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |
| | Ligation Buffer | Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |
| | XT HS2 RNA Adaptor Oligo Mix | Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |
| | Herculase II Fusion DNA Polymerase | Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |
| | 5X Herculase II Reaction Buffer with dNTPs | Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |

**Methods and material for containment and cleaning up**

# Section 6. Accidental release measures

| | | |
|---|---|---|
| **Methods for cleaning up** : | End Repair-A Tailing Enzyme Mix | Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. |
| | End Repair-A Tailing Buffer | Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. |
| | T4 DNA Ligase | Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. |
| | Ligation Buffer | Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. |
| | XT HS2 RNA Adaptor Oligo Mix | Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. |
| | Herculase II Fusion DNA Polymerase | Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. |
| | 5X Herculase II Reaction Buffer with dNTPs | Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. |

# 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 vapour 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 vapour 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 |

# Section 7. Handling and storage

| | | | |
|---|---|---|---|
| | | | 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 vapour 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 vapour 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). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour 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. |
| **Advice on general occupational hygiene** | : | End Repair-A Tailing Enzyme Mix | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |
| | | End Repair-A Tailing Buffer | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |
| | | T4 DNA Ligase | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |
| | | Ligation Buffer | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |
| | | XT HS2 RNA Adaptor Oligo Mix | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |
| | | Herculase II Fusion DNA | 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use. |
| | End Repair-A Tailing Buffer | Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use. |
| | T4 DNA Ligase | Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use. |
| | Ligation Buffer | Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use. |
| | 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 |

## Section 7. Handling and storage

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

## Section 8. Exposure controls and personal protection

### Control parameters

### Occupational exposure limits

| Ingredient name | Exposure limits |
|---|---|
| **End Repair-A Tailing Enzyme Mix** | |
| Glycerol | **Safe Work Australia (Australia, 10/2022).** TWA: 10 mg/m³ 8 hours. |
| **T4 DNA Ligase** | |
| Glycerol | **Safe Work Australia (Australia, 10/2022).** TWA: 10 mg/m³ 8 hours. |
| **Ligation Buffer** | |
| Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy- Ethane-1,2-diol, ethoxylated | **DFG MAC-values list (Germany, 7/2022).** PEAK: 400 mg/m³, 4 times per shift, 15 minutes. Form: inhalable fraction TWA: 200 mg/m³ 8 hours. Form: inhalable fraction |
| Glycerol | **Safe Work Australia (Australia, 10/2022).** TWA: 10 mg/m³ 8 hours. |
| **Herculase II Fusion DNA Polymerase** | |
| Glycerol | **Safe Work Australia (Australia, 10/2022).** TWA: 10 mg/m³ 8 hours. |

### Biological exposure indices

No exposure indices known.

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

# Section 8. Exposure controls and personal protection

**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.

**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. |

# Section 9. Physical and chemical properties and safety characteristics

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

# Section 9. Physical and chemical properties and safety characteristics

**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** :

| | Closed cup | | | Open cup | | |
|---|---|---|---|---|---|---|
| **Ingredient name** | **°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** | | | | | | |
| Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy-Ethane-1,2-diol, ethoxylated | 171 to 235 | 339.8 to 455 | - | 199 to 238 | 390.2 to 460.4 | - |
| 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. |

# Section 9. Physical and chemical properties and safety characteristics

| | | |
|---|---|---|
| | 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. |

**Vapour pressure** :

| Ingredient name | Vapour Pressure at 20˚C | | | Vapour pressure at 50˚C | | |
|---|---|---|---|---|---|---|
| | mm Hg | kPa | Method | mm Hg | kPa | Method |
| **End Repair-A Tailing Enzyme Mix** | | | | | | |
| water | 17.5 | 2.3 | - | 92.258 | 12.3 | - |
| Glycerol | 0.000075 | 0.00001 | - | 0.0025 | 0.00033 | - |
| **End Repair-A Tailing Buffer** | | | | | | |
| water | 17.5 | 2.3 | - | 92.258 | 12.3 | - |
| 2-Amino-2-(hydroxymethyl) propane-1,3-diol hydrochloride | 0.000027 | 0.0000036 | - | 0.000007501 | 0.000001 | - |
| **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 | - |

# Section 9. Physical and chemical properties and safety characteristics

| | | | | | | |
|---|---|---|---|---|---|---|
| Glycerol | 0.000075 | 0.00001 | - | 0.0025 | 0.00033 | - |
| **5X Herculase II Reaction Buffer with dNTPs** | | | | | | |
| water | 17.5 | 2.3 | - | 92.258 | 12.3 | - |
| Trometamol | <0.00075006 | <0.0001 | - | - | - | - |

**Relative vapour density** :

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

**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** :

# Section 9. Physical and chemical properties and safety characteristics

| Ingredient name | °C | °F | Method |
|---|---|---|---|
| **End Repair-A Tailing Enzyme Mix** | | | |
| Glycerol | 370 | 698 | - |
| **T4 DNA Ligase** | | | |
| Glycerol | 370 | 698 | - |
| **Ligation Buffer** | | | |
| Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy- Ethane-1,2-diol, ethoxylated | 360 | 680 | - |
| 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

| | | |
|---|---|---|
| **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. |
| **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. |

# Section 10. Stability and reactivity

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

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| **End Repair-A Tailing Enzyme Mix** | | | | |
| Glycerol | LD50 Oral | Rat | 12600 mg/kg | - |
| **T4 DNA Ligase** | | | | |
| Glycerol | LD50 Oral | Rat | 12600 mg/kg | - |
| **Ligation Buffer** | | | | |
| Glycerol | LD50 Oral | Rat | 12600 mg/kg | - |
| **Herculase II Fusion DNA Polymerase** | | | | |
| Glycerol | LD50 Oral | Rat | 12600 mg/kg | - |
| **5X Herculase II Reaction Buffer with dNTPs** | | | | |
| Hexadecan-1-ol, ethoxylated | LD50 Oral | Rat | 2500 mg/kg | - |

### Irritation/Corrosion

# Section 11. Toxicological information

| Product/ingredient name | Result | Species | Score | Exposure | Observation |
|---|---|---|---|---|---|
| **End Repair-A Tailing Enzyme Mix** | | | | | |
| Glycerol | Eyes - Mild irritant | Rabbit | - | 24 hours 500 mg | - |
| | Skin - Mild irritant | Rabbit | - | 24 hours 500 mg | - |
| **T4 DNA Ligase** | | | | | |
| Glycerol | Eyes - Mild irritant | Rabbit | - | 24 hours 500 mg | - |
| | Skin - Mild irritant | Rabbit | - | 24 hours 500 mg | - |
| **Ligation Buffer** | | | | | |
| Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy- Ethane-1,2-diol, ethoxylated | Eyes - Mild irritant | Rabbit | - | 24 hours 500 mg | - |
| | Eyes - Mild irritant | Rabbit | - | 500 mg | - |
| | Skin - Mild irritant | Rabbit | - | 24 hours 500 mg | - |
| | Skin - Mild irritant | Rabbit | - | 500 mg | - |
| Glycerol | Eyes - Mild irritant | Rabbit | - | 24 hours 500 mg | - |
| | Skin - Mild irritant | Rabbit | - | 24 hours 500 mg | - |
| **Herculase II Fusion DNA Polymerase** | | | | | |
| Glycerol | Eyes - Mild irritant | Rabbit | - | 24 hours 500 mg | - |
| | Skin - Mild irritant | Rabbit | - | 24 hours 500 mg | - |

## Sensitisation

Not available.

## Mutagenicity

**Conclusion/Summary** : Not available.

## Carcinogenicity

**Conclusion/Summary** : Not available.

## Reproductive toxicity

**Conclusion/Summary** : Not available.

## Teratogenicity

**Conclusion/Summary** : Not available.

## Specific target organ toxicity (single exposure)

Not available.

## Specific target organ toxicity (repeated exposure)

Not available.

## Aspiration hazard

Not available.

# Section 11. Toxicological information

**Information on likely routes of exposure** :

| | |
|---|---|
| End Repair-A Tailing Enzyme Mix | Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes. |
| End Repair-A Tailing Buffer | Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes. |
| T4 DNA Ligase | Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes. |
| Ligation Buffer | Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes. |
| XT HS2 RNA Adaptor Oligo Mix | Not available. |
| Herculase II Fusion DNA Polymerase | Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes. |
| 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 | 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 | Causes serious eye irritation. |

**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**

# Section 11. Toxicological information

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

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Short term exposure**

# Section 11. Toxicological information

**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 Polymerase | No known significant effects or critical hazards. |
| | 5X Herculase II Reaction Buffer with dNTPs | No known significant effects or critical hazards. |
| **Carcinogenicity** | : End Repair-A Tailing Enzyme Mix | No known significant effects or critical hazards. |
| | End Repair-A Tailing Buffer | No known significant effects or critical hazards. |
| | T4 DNA Ligase | No known significant effects or critical hazards. |
| | Ligation Buffer | No known significant effects or critical hazards. |
| | XT HS2 RNA Adaptor Oligo Mix | No known significant effects or critical hazards. |
| | Herculase II Fusion DNA Polymerase | No known significant effects or critical hazards. |
| | 5X Herculase II Reaction Buffer with dNTPs | No known significant effects or critical hazards. |
| **Mutagenicity** | : End Repair-A Tailing Enzyme Mix | No known significant effects or critical hazards. |
| | End Repair-A Tailing Buffer | No known significant effects or critical hazards. |
| | T4 DNA Ligase | No known significant effects or critical hazards. |
| | Ligation Buffer | No known significant effects or critical hazards. |
| | XT HS2 RNA Adaptor Oligo Mix | No known significant effects or critical hazards. |
| | Herculase II Fusion DNA Polymerase | No known significant effects or critical hazards. |
| | 5X Herculase II Reaction Buffer with dNTPs | No known significant effects or critical hazards. |
| **Reproductive toxicity** | : End Repair-A Tailing Enzyme Mix | No known significant effects or critical hazards. |
| | End Repair-A Tailing Buffer | No known significant effects or critical hazards. |
| | T4 DNA Ligase | No known significant effects or critical hazards. |
| | Ligation Buffer | No known significant effects or critical hazards. |
| | XT HS2 RNA Adaptor Oligo Mix | No known significant effects or critical hazards. |
| | Herculase II Fusion DNA Polymerase | No known significant effects or critical hazards. |
| | 5X Herculase II Reaction Buffer with dNTPs | No known significant effects or critical hazards. |

## Numerical measures of toxicity

### Acute toxicity estimates

# Section 11. Toxicological information

| Product/ingredient name | Oral (mg/kg) | Dermal (mg/kg) | Inhalation (gases) (ppm) | Inhalation (vapours) (mg/l) | Inhalation (dusts and mists) (mg/l) |
|---|---|---|---|---|---|
| **End Repair-A Tailing Enzyme Mix** | | | | | |
| Glycerol | 12600 | N/A | N/A | N/A | N/A |
| **T4 DNA Ligase** | | | | | |
| Glycerol | 12600 | N/A | N/A | N/A | N/A |
| **Ligation Buffer** | | | | | |
| Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy-Ethane-1,2-diol, ethoxylated | 28000 | N/A | N/A | N/A | N/A |
| 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 | 55000 | N/A | N/A | N/A | N/A |
| Hexadecan-1-ol, ethoxylated | 500 | N/A | N/A | N/A | N/A |

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

# 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 |
| **T4 DNA Ligase** | | | |
| Glycerol | Acute LC50 54000 mg/l Fresh water | Fish - *Oncorhynchus mykiss* | 96 hours |
| **Ligation Buffer** | | | |
| Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy- Ethane-1,2-diol, ethoxylated | Acute EC50 >100 mg/l Fresh water | Daphnia - *Daphnia magna* | 48 hours |
| | Acute LC50 >1000000 µg/l Fresh water | Fish - *Salmo salar* - Parr | 96 hours |
| Glycerol | Acute LC50 54000 mg/l Fresh water | Fish - *Oncorhynchus mykiss* | 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** | | | |
| 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** | | | | |
| Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy- Ethane-1,2-diol, ethoxylated | 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 | - | - |

| Product/ingredient name | Aquatic half-life | Photolysis | Biodegradability |
|---|---|---|---|
| **Ligation Buffer** | | | |
| Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy- Ethane-1,2-diol, ethoxylated | - | - | Readily |
| **5X Herculase II Reaction Buffer with dNTPs** | | | |
| Hexadecan-1-ol, ethoxylated | - | - | Readily |

## Bioaccumulative potential

| Product/ingredient name | $LogP_{ow}$ | BCF | Potential |
|---|---|---|---|
| **End Repair-A Tailing Enzyme Mix** | | | |
| Glycerol | -1.76 | - | Low |
| **T4 DNA Ligase** | | | |
| Glycerol | -1.76 | - | Low |
| **Ligation Buffer** | | | |
| Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy- Ethane-1,2-diol, ethoxylated | - | 3.2 | Low |
| Glycerol | -1.76 | - | Low |
| **Herculase II Fusion DNA Polymerase** | | | |
| Glycerol | -1.76 | - | Low |

# Section 12. Ecological information

**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 minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

# Section 14. Transport information

**ADG / IMDG / IATA** : Not regulated as Dangerous Goods according to the ADG Code .

**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

**Standard for the Uniform Scheduling of Medicines and Poisons**

5

**Model Work Health and Safety Regulations - Scheduled Substances**

No listed substance

**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.

**New Zealand** : Not determined.

# Section 15. Regulatory information

**United States** : Not determined.

# Section 16. Any other relevant information

## History

**Date of issue/Date of revision** : 30/10/2023

**Date of previous issue** : 27/07/2020

**Version** : 2

**Key to abbreviations** : ADG = Australian Dangerous Goods
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
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
SUSMP = Standard Uniform Schedule of Medicine and Poisons
UN = United Nations

## Procedure used to derive the classification

| Classification | Justification |
|---|---|
| **End Repair-A Tailing Enzyme Mix**<br>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2B | Calculation method |
| **T4 DNA Ligase**<br>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2B | Calculation method |
| **Ligation Buffer**<br>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2B | Calculation method |
| **Herculase II Fusion DNA Polymerase**<br>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2B | Calculation method |
| **5X Herculase II Reaction Buffer with dNTPs**<br>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A | Calculation method |

**Indicates information that has changed from previously issued version.**

## Notice to reader

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