

# SAFETY DATA SHEET

SureSelect Max Enzymatic Fragmentation Library Preparation Module, 16\_96 Reactions

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

### 1.1 Product identifier

<b>Product name</b>	: SureSelect Max Enzymatic Fragmentation Library Preparation Module, 16_96 Reactions		
<b>Part no. (chemical kit)</b>	: 5280-0063, 5280-0064		
<b>Part no.</b>	: Frag/A-Tail Buffer	5271-0076 / 5271-0080	
	: Frag/A-Tail Enzyme Mix	5271-0077 / 5271-0081	
	: Ligation Master Mix	5271-0078 / 5271-0082	
	: Amplification Master Mix	5271-0079 / 5271-0083	

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

<b>Identified uses</b>	: Analytical reagent. For research use only.		
	: Frag/A-Tail Buffer	0.072 ml (16 reactions) / 0.512 ml (96 reactions)	
	: Frag/A-Tail Enzyme Mix	0.108 ml (16 reactions) / 0.768 ml (96 reactions)	
	: Ligation Master Mix	0.36 ml (16 reactions) / 2.32 ml (96 reactions)	
	: Amplification Master Mix	0.45 ml (16 reactions) / 2.84 ml (96 reactions)	
<b>Uses advised against</b>	: Not for use in diagnostic procedures.		

### 1.3 Details of the supplier of the safety data sheet

Agilent Technologies Deutschland GmbH  
Hewlett-Packard-Str. 8  
76337 Waldbronn  
Germany  
0800 603 1000

**e-mail address of person responsible for this SDS** : pdl-msds\_author@agilent.com

### 1.4 Emergency telephone number

**Emergency telephone number (with hours of operation)** : CHEMTREC®: +353 1 901 4670

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

<b>Product definition</b>	: Frag/A-Tail Buffer	Mixture
	: Frag/A-Tail Enzyme Mix	Mixture
	: Ligation Master Mix	Mixture
	: Amplification Master Mix	Mixture

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

##### **Frag/A-Tail Buffer**

H302	ACUTE TOXICITY (oral)	Category 4
H371	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	Category 2
H411	LONG-TERM (CHRONIC) AQUATIC HAZARD	Category 2

##### **Amplification Master Mix**

H302	ACUTE TOXICITY (oral)	Category 4
H315	SKIN CORROSION/IRRITATION	Category 2
H371	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	Category 2

**SECTION 2: Hazards identification**

H412	LONG-TERM (CHRONIC) AQUATIC HAZARD	Category 3
Frag/A-Tail Buffer	The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.	
Frag/A-Tail Enzyme Mix	The product is not classified as hazardous according to Regulation (EC) 1272/2008 as amended.	
Ligation Master Mix	The product is not classified as hazardous according to Regulation (EC) 1272/2008 as amended.	
Amplification Master Mix	The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.	

<b>Ingredients of unknown toxicity</b>	: Frag/A-Tail Buffer	Percentage of the mixture consisting of ingredient(s) of unknown acute dermal toxicity: 1 - 10% Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 10 - 30% Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 1 - 10%
	Frag/A-Tail Enzyme Mix	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: > 60%
	Ligation Master Mix	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: > 60%
	Amplification Master Mix	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%
<b>Ingredients of unknown ecotoxicity</b>	: Frag/A-Tail Buffer	Contains 1% of components with unknown hazards to the aquatic environment

See Section 16 for the full text of the H statements declared above.  
See Section 11 for more detailed information on health effects and symptoms.

**2.2 Label elements**

<b>Hazard pictograms</b>	: Frag/A-Tail Buffer	
	Amplification Master Mix	

<b>Signal word</b>	: Frag/A-Tail Buffer	Warning
	Frag/A-Tail Enzyme Mix	No signal word.
	Ligation Master Mix	No signal word.
	Amplification Master Mix	Warning

<b>Hazard statements</b>	: Frag/A-Tail Buffer	H302 - Harmful if swallowed. H371 - May cause damage to organs. H411 - Toxic to aquatic life with long lasting effects.
	Frag/A-Tail Enzyme Mix	No known significant effects or critical hazards.
	Ligation Master Mix	No known significant effects or critical hazards.
	Amplification Master Mix	H302 - Harmful if swallowed. H315 - Causes skin irritation. H371 - May cause damage to organs. H412 - Harmful to aquatic life with long lasting effects.

**Precautionary statements**

<b>Prevention</b>	: Frag/A-Tail Buffer	P273 - Avoid release to the environment. P260 - Do not breathe vapour. P270 - Do not eat, drink or smoke when using this product. P264 - Wash thoroughly after handling.
	Frag/A-Tail Enzyme Mix	Not applicable.
	Ligation Master Mix	Not applicable.
	Amplification Master Mix	P280 - Wear protective gloves. P273 - Avoid release to the environment. P260 - Do not breathe vapour. P270 - Do not eat, drink or smoke when using this product.

## SECTION 2: Hazards identification

<b>Response</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	P391 - Collect spillage. Not applicable. Not applicable. P308 + P311 - IF exposed or concerned: Call a POISON CENTER or doctor.
<b>Storage</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	Not applicable. Not applicable. Not applicable. Not applicable.
<b>Disposal</b>	: Frag/A-Tail Buffer  Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.  Not applicable. Not applicable. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
<b>Hazardous ingredients</b>	: Frag/A-Tail Buffer Amplification Master Mix	tetramethylammonium chloride tetramethylammonium chloride
<b>Supplemental label elements</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	Not applicable. Not applicable. Not applicable. Not applicable.
<b>Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	Not applicable. Not applicable. Not applicable. Not applicable.
<b><u>Special packaging requirements</u></b>		
<b>Tactile warning of danger</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	Not applicable. Not applicable. Not applicable. Not applicable.
<b>2.3 Other hazards</b>		
<b>Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
<b>Other hazards which do not result in classification</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	None known. None known. None known. None known.

## SECTION 3: Composition/information on ingredients

<b>3.1 Substances</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	Mixture Mixture Mixture Mixture
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**SECTION 3: Composition/information on ingredients**

Product/ingredient name	Identifiers	%	Classification	Specific Conc. Limits, M-factors and ATEs	Type
<b>Frag/A-Tail Buffer</b>					
magnesium chloride	EC: 232-094-6 CAS: 7786-30-3	≥10 - <25	Aquatic Chronic 1, H410	M [Chronic] = 1	[1]
tetramethylammonium chloride	EC: 200-880-8 CAS: 75-57-0	<10	Acute Tox. 2, H300 Acute Tox. 3, H311 Skin Irrit. 2, H315 STOT SE 1, H370 (central nervous system (CNS)) (oral) Aquatic Chronic 2, H411	ATE [Oral] = 50 mg/kg ATE [Dermal] = 300 mg/kg	[1]
<b>Frag/A-Tail Enzyme Mix</b>					
glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	-	[1]
<b>Ligation Master Mix</b>					
glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	-	[1]
<b>Amplification Master Mix</b>					
glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥25 - ≤50	Not classified.	-	[2]
trometamol	EC: 201-064-4 CAS: 77-86-1	<10	Skin Irrit. 2, H315 Eye Irrit. 2, H319	-	[1]
tetramethylammonium chloride	EC: 200-880-8 CAS: 75-57-0	<10	Acute Tox. 2, H300 Acute Tox. 3, H311 Skin Irrit. 2, H315 STOT SE 1, H370 (central nervous system (CNS)) (oral) Aquatic Chronic 2, H411  <b>See Section 16 for the full text of the H statements declared above.</b>	ATE [Oral] = 50 mg/kg ATE [Dermal] = 300 mg/kg	[1]

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type	
Frag/A-Tail Buffer	[1] Substance classified with a health or environmental hazard
Frag/A-Tail Enzyme Mix	[1] Substance with a workplace exposure limit
Ligation Master Mix	[1] Substance with a workplace exposure limit
Amplification Master Mix	[1] Substance classified with a health or environmental hazard [2] Substance with a workplace exposure limit

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

**SECTION 4: First aid measures**

**4.1 Description of first aid measures**

<b>Eye contact</b>	: Frag/A-Tail 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. Get medical attention following exposure or if feeling unwell. If necessary, call a poison center or physician.
	Frag/A-Tail Enzyme Mix	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	Ligation Master 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.
	Amplification Master Mix	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention. If necessary, call a poison center or physician.
<b>Inhalation</b>	: Frag/A-Tail 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 following exposure or if feeling unwell. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	Frag/A-Tail Enzyme Mix	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	Ligation Master Mix	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	Amplification Master Mix	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
<b>Skin contact</b>	: Frag/A-Tail Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. If necessary, call a poison center or physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	Frag/A-Tail Enzyme Mix	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Ligation Master Mix	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

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	Amplification Master Mix	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. If necessary, call a poison center or physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
<b>Ingestion</b>	: Frag/A-Tail 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 necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	Frag/A-Tail Enzyme Mix	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	Ligation Master Mix	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	Amplification Master 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 necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
<b>Protection of first-aiders</b>	: Frag/A-Tail 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.
	Frag/A-Tail Enzyme Mix	No action shall be taken involving any personal risk or without suitable training.
	Ligation Master Mix	No action shall be taken involving any personal risk or without suitable training.
	Amplification Master 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.

**4.2 Most important symptoms and effects, both acute and delayed**

Potential acute health effects

<b>Eye contact</b>	: Frag/A-Tail Buffer	No known significant effects or critical hazards.
	Frag/A-Tail Enzyme Mix	No known significant effects or critical hazards.
	Ligation Master Mix	No known significant effects or critical hazards.
	Amplification Master Mix	No known significant effects or critical hazards.
<b>Inhalation</b>	: Frag/A-Tail Buffer	May cause damage to organs following a single exposure if inhaled.
	Frag/A-Tail Enzyme Mix	No known significant effects or critical hazards.
	Ligation Master Mix	No known significant effects or critical hazards.
	Amplification Master Mix	May cause damage to organs following a single exposure if inhaled.

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<b>Skin contact</b>	: Frag/A-Tail Buffer	May cause damage to organs following a single exposure in contact with skin.
	Frag/A-Tail Enzyme Mix	No known significant effects or critical hazards.
	Ligation Master Mix	No known significant effects or critical hazards.
	Amplification Master Mix	May cause damage to organs following a single exposure in contact with skin. Causes skin irritation.
<b>Ingestion</b>	: Frag/A-Tail Buffer	Harmful if swallowed. May cause damage to organs following a single exposure if swallowed.
	Frag/A-Tail Enzyme Mix	No known significant effects or critical hazards.
	Ligation Master Mix	No known significant effects or critical hazards.
	Amplification Master Mix	Harmful if swallowed. May cause damage to organs following a single exposure if swallowed.
<b><u>Over-exposure signs/symptoms</u></b>		
<b>Eye contact</b>	: Frag/A-Tail Buffer	No specific data.
	Frag/A-Tail Enzyme Mix	No specific data.
	Ligation Master Mix	No specific data.
	Amplification Master Mix	Adverse symptoms may include the following: pain or irritation watering redness
<b>Inhalation</b>	: Frag/A-Tail Buffer	No specific data.
	Frag/A-Tail Enzyme Mix	No specific data.
	Ligation Master Mix	No specific data.
	Amplification Master Mix	No specific data.
<b>Skin contact</b>	: Frag/A-Tail Buffer	No specific data.
	Frag/A-Tail Enzyme Mix	No specific data.
	Ligation Master Mix	No specific data.
	Amplification Master Mix	Adverse symptoms may include the following: irritation redness
<b>Ingestion</b>	: Frag/A-Tail Buffer	No specific data.
	Frag/A-Tail Enzyme Mix	No specific data.
	Ligation Master Mix	No specific data.
	Amplification Master Mix	No specific data.

### 4.3 Indication of any immediate medical attention and special treatment needed

<b>Notes to physician</b>	: Frag/A-Tail 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.
	Frag/A-Tail Enzyme Mix	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Ligation Master Mix	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Amplification Master Mix	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
<b>Specific treatments</b>	: Frag/A-Tail Buffer	No specific treatment.
	Frag/A-Tail Enzyme Mix	No specific treatment.
	Ligation Master Mix	No specific treatment.
	Amplification Master Mix	No specific treatment.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

<b>Suitable extinguishing media</b>	: Frag/A-Tail Buffer	Use an extinguishing agent suitable for the surrounding fire.
	Frag/A-Tail Enzyme Mix	Use an extinguishing agent suitable for the surrounding fire.
	Ligation Master Mix	Use an extinguishing agent suitable for the surrounding fire.
	Amplification Master Mix	Use an extinguishing agent suitable for the surrounding fire.

## SECTION 5: Firefighting measures

<b>Unsuitable extinguishing media</b>	: Frag/A-Tail Buffer	None known.
	Frag/A-Tail Enzyme Mix	None known.
	Ligation Master Mix	None known.
	Amplification Master Mix	None known.

### 5.2 Special hazards arising from the substance or mixture

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

### 5.3 Advice for firefighters

<b>Special precautions for fire-fighters</b>	: Frag/A-Tail 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.
	Frag/A-Tail 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.
	Ligation Master Mix	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	Amplification Master Mix	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
<b>Special protective equipment for fire-fighters</b>	: Frag/A-Tail Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	Frag/A-Tail 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. Clothing for fire-fighters (including helmets, protective boots and gloves)

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Ligation Master Mix	conforming to European standard EN 469 will provide a basic level of protection for chemical incidents. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
Amplification Master Mix	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

<b>For non-emergency personnel</b>	: Frag/A-Tail 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.
	Frag/A-Tail Enzyme Mix	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	Ligation Master Mix	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	Amplification Master Mix	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
<b>For emergency responders</b>	: Frag/A-Tail 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".
	Frag/A-Tail 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".
	Ligation Master Mix	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	Amplification Master Mix	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

## SECTION 6: Accidental release measures

<b>6.2 Environmental precautions</b>	: Frag/A-Tail 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). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.
	Frag/A-Tail 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).
	Ligation Master Mix	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	Amplification Master Mix	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

### 6.3 Methods and material for containment and cleaning up

<b>Methods for cleaning up</b>	: Frag/A-Tail 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.
	Frag/A-Tail 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.
	Ligation Master 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.
	Amplification Master 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.

<b>6.4 Reference to other sections</b>	: See Section 1 for emergency contact information. See Section 8 for information on appropriate personal protective equipment. See Section 13 for additional waste treatment information.
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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

<b>Protective measures</b>	: Frag/A-Tail Buffer	Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	Frag/A-Tail Enzyme Mix	Put on appropriate personal protective equipment (see Section 8).
	Ligation Master Mix	Put on appropriate personal protective equipment (see

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	Amplification Master Mix	Section 8). Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
<b>Advice on general occupational hygiene</b>	: Frag/A-Tail 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.
	Frag/A-Tail 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.
	Ligation Master 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.
	Amplification Master Mix	Potentially biohazardous material. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

**7.2 Conditions for safe storage, including any incompatibilities**

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

**SECTION 7: Handling and storage**

Amplification Master Mix

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.

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

**Seveso Directive - Reporting thresholds**

**Danger criteria**

Category	Notification and MAPP threshold	Safety report threshold
Frag/A-Tail Buffer E2	200 tonne	500 tonne

**7.3 Specific end use(s)**

- Recommendations** :
- Frag/A-Tail Buffer Industrial applications, Professional applications.
  - Frag/A-Tail Enzyme Mix Industrial applications, Professional applications.
  - Ligation Master Mix Industrial applications, Professional applications.
  - Amplification Master Mix Industrial applications, Professional applications.
- Industrial sector specific solutions** :
- Frag/A-Tail Buffer Not available.
  - Frag/A-Tail Enzyme Mix Not available.
  - Ligation Master Mix Not available.
  - Amplification Master Mix Not available.

**SECTION 8: Exposure controls/personal protection**

**8.1 Control parameters**

**Occupational exposure limits**

Product/ingredient name	Exposure limit values
Frag/A-Tail Enzyme Mix Glycerol	NAOSH (Ireland, 5/2021). Notes: Advisory Occupational Exposure Limit Values (OELVs) OELV: 10 mg/m <sup>3</sup> 8 hours. Form: mist
Ligation Master Mix Glycerol	NAOSH (Ireland, 5/2021). Notes: Advisory Occupational Exposure Limit Values (OELVs) OELV: 10 mg/m <sup>3</sup> 8 hours. Form: mist
Amplification Master Mix Glycerol	NAOSH (Ireland, 5/2021). Notes: Advisory Occupational Exposure Limit Values (OELVs) OELV: 10 mg/m <sup>3</sup> 8 hours. Form: mist

**Biological exposure indices**

No exposure indices known.

## SECTION 8: Exposure controls/personal protection

**Recommended monitoring procedures** : Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

### DNELs/DMELs

Product/ingredient name	Type	Exposure	Value	Population	Effects
<b>Frag/A-Tail Buffer</b> Magnesium chloride	DNEL	Long term Oral	7 mg/kg bw/day	General population	Systemic
tetramethylammonium chloride	DNEL	Long term Oral	0.25 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	0.25 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	0.4 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	1.76 mg/m <sup>3</sup>	General population	Systemic
	DNEL	Long term Inhalation	2.9 mg/m <sup>3</sup>	Workers	Systemic
	<b>Amplification Master Mix</b> Trometamol	DNEL	Long term Oral	8.3 mg/kg bw/day	General population
tetramethylammonium chloride	DNEL	Long term Inhalation	29 mg/m <sup>3</sup>	General population	Systemic
	DNEL	Long term Dermal	83.3 mg/kg bw/day	General population	Systemic
	DNEL	Long term Inhalation	117.5 mg/m <sup>3</sup>	Workers	Systemic
	DNEL	Long term Dermal	166.7 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Oral	0.25 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	0.25 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	0.4 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	1.76 mg/m <sup>3</sup>	General population	Systemic
	DNEL	Long term Inhalation	2.9 mg/m <sup>3</sup>	Workers	Systemic

### PNECs

No PNECs available

### 8.2 Exposure controls

**Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

### Individual protection measures

**Hygiene measures** : Handle as biohazard material (Biosafety level 1). Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**SECTION 8: Exposure controls/personal protection**

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. 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.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

**SECTION 9: Physical and chemical properties**

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

**9.1 Information on basic physical and chemical properties****Appearance**

<b>Physical state</b>	: Frag/A-Tail Buffer	Liquid.
	Frag/A-Tail Enzyme Mix	Liquid.
	Ligation Master Mix	Liquid.
	Amplification Master Mix	Liquid.
<b>Colour</b>	: Frag/A-Tail Buffer	Not available.
	Frag/A-Tail Enzyme Mix	Not available.
	Ligation Master Mix	Not available.
	Amplification Master Mix	Not available.
<b>Odour</b>	: Frag/A-Tail Buffer	Not available.
	Frag/A-Tail Enzyme Mix	Not available.
	Ligation Master Mix	Not available.
	Amplification Master Mix	Not available.
<b>Odour threshold</b>	: Frag/A-Tail Buffer	Not available.
	Frag/A-Tail Enzyme Mix	Not available.
	Ligation Master Mix	Not available.
	Amplification Master Mix	Not available.
<b>Melting point/freezing point</b>	: Frag/A-Tail Buffer	Not available.
	Frag/A-Tail Enzyme Mix	Not available.
	Ligation Master Mix	Not available.
	Amplification Master Mix	Not available.
<b>Initial boiling point and boiling range</b>	: Frag/A-Tail Buffer	Not available.
	Frag/A-Tail Enzyme Mix	Not available.
	Ligation Master Mix	Not available.
	Amplification Master Mix	Not available.

**SECTION 9: Physical and chemical properties**

**Flammability** : Frag/A-Tail Buffer Not applicable.  
 Frag/A-Tail Enzyme Mix Not applicable.  
 Ligation Master Mix Not applicable.  
 Amplification Master Mix Not applicable.

**Upper/lower flammability or explosive limits** : Frag/A-Tail Buffer Not available.  
 Frag/A-Tail Enzyme Mix Not available.  
 Ligation Master Mix Not available.  
 Amplification Master Mix Not available.

**Flash point** :

Ingredient name	Closed cup		Open cup	
	°C	Method	°C	Method
<b>Frag/A-Tail Enzyme Mix</b>				
glycerol	-	-	177	-
<b>Ligation Master Mix</b>				
Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy- Ethane-1,2-diol, ethoxylated	171 to 235	-	199 to 238	-
glycerol	-	-	177	-
<b>Amplification Master Mix</b>				
glycerol	-	-	177	-

**Auto-ignition temperature** :

Ingredient name	°C	Method
<b>Frag/A-Tail Enzyme Mix</b>		
glycerol	370	-
<b>Ligation Master Mix</b>		
Poly(oxy-1,2-ethanediyl),α-hydro-ω-hydroxy- Ethane-1,2-diol, ethoxylated	360	-
glycerol	370	-
<b>Amplification Master Mix</b>		
glycerol	370	-

**Decomposition temperature** : Frag/A-Tail Buffer Not available.  
 Frag/A-Tail Enzyme Mix Not available.  
 Ligation Master Mix Not available.  
 Amplification Master Mix Not available.

**pH** : Frag/A-Tail Buffer 8.3  
 Frag/A-Tail Enzyme Mix 7  
 Ligation Master Mix 7.8  
 Amplification Master Mix 8.5

**Viscosity** : Frag/A-Tail Buffer Not available.  
 Frag/A-Tail Enzyme Mix Not available.  
 Ligation Master Mix Not available.  
 Amplification Master Mix Not available.

**SECTION 9: Physical and chemical properties**

Solubility(ies)	Media	Result
	<b>Frag/A-Tail Buffer</b> water	Soluble
	<b>Frag/A-Tail Enzyme Mix</b> water	Soluble
	<b>Ligation Master Mix</b> water	Soluble
	<b>Amplification Master Mix</b> water	Soluble

**Partition coefficient: n-octanol/water** : Frag/A-Tail Buffer Not applicable.  
 Frag/A-Tail Enzyme Mix Not applicable.  
 Ligation Master Mix Not applicable.  
 Amplification Master Mix Not applicable.

Vapour pressure	Ingredient name	Vapour Pressure at 20°C			Vapour pressure at 50°C		
		mm Hg	kPa	Method	mm Hg	kPa	Method
	<b>Frag/A-Tail Buffer</b>						
	water	17.5	2.3	-	92.258	12.3	-
	tetramethylammonium chloride	0.000000001	0.0000000013	EU A.4	-	-	-
	<b>Frag/A-Tail Enzyme Mix</b>						
	water	17.5	2.3	-	92.258	12.3	-
	glycerol	0.000075	0.00001	-	0.0025	0.00033	-
	<b>Ligation Master Mix</b>						
	water	17.5	2.3	-	92.258	12.3	-
	glycerol	0.000075	0.00001	-	0.0025	0.00033	-
	<b>Amplification Master Mix</b>						
	water	17.5	2.3	-	92.258	12.3	-
	trometamol	<0.00075006	<0.0001	-	-	-	-

**Evaporation rate** : Frag/A-Tail Buffer Not available.  
 Frag/A-Tail Enzyme Mix Not available.  
 Ligation Master Mix Not available.  
 Amplification Master Mix Not available.

**Relative density** : Frag/A-Tail Buffer Not available.  
 Frag/A-Tail Enzyme Mix Not available.  
 Ligation Master Mix Not available.  
 Amplification Master Mix Not available.

**Vapour density** : Frag/A-Tail Buffer Not available.  
 Frag/A-Tail Enzyme Mix Not available.  
 Ligation Master Mix Not available.  
 Amplification Master Mix Not available.

**SECTION 9: Physical and chemical properties**

**Explosive properties** : Frag/A-Tail Buffer Not available.  
 Frag/A-Tail Enzyme Mix Not available.  
 Ligation Master Mix Not available.  
 Amplification Master Mix Not available.

**Oxidising properties** : Frag/A-Tail Buffer Not available.  
 Frag/A-Tail Enzyme Mix Not available.  
 Ligation Master Mix Not available.  
 Amplification Master Mix Not available.

**Particle characteristics**

**Median particle size** : Frag/A-Tail Buffer Not applicable.  
 Frag/A-Tail Enzyme Mix Not applicable.  
 Ligation Master Mix Not applicable.  
 Amplification Master Mix Not applicable.

**9.2 Other information**

No additional information.

**SECTION 10: Stability and reactivity**

**10.1 Reactivity** : Frag/A-Tail Buffer No specific test data related to reactivity available for this product or its ingredients.  
 Frag/A-Tail Enzyme Mix No specific test data related to reactivity available for this product or its ingredients.  
 Ligation Master Mix No specific test data related to reactivity available for this product or its ingredients.  
 Amplification Master Mix No specific test data related to reactivity available for this product or its ingredients.

**10.2 Chemical stability** : Frag/A-Tail Buffer The product is stable.  
 Frag/A-Tail Enzyme Mix The product is stable.  
 Ligation Master Mix The product is stable.  
 Amplification Master Mix The product is stable.

**10.3 Possibility of hazardous reactions** : Frag/A-Tail Buffer Under normal conditions of storage and use, hazardous reactions will not occur.  
 Frag/A-Tail Enzyme Mix Under normal conditions of storage and use, hazardous reactions will not occur.  
 Ligation Master Mix Under normal conditions of storage and use, hazardous reactions will not occur.  
 Amplification Master Mix Under normal conditions of storage and use, hazardous reactions will not occur.

**10.4 Conditions to avoid** : Frag/A-Tail Buffer No specific data.  
 Frag/A-Tail Enzyme Mix No specific data.  
 Ligation Master Mix No specific data.  
 Amplification Master Mix No specific data.

**10.5 Incompatible materials** : Frag/A-Tail Buffer May react or be incompatible with oxidising materials.  
 Frag/A-Tail Enzyme Mix May react or be incompatible with oxidising materials.  
 Ligation Master Mix May react or be incompatible with oxidising materials.  
 Amplification Master Mix May react or be incompatible with oxidising materials.

**10.6 Hazardous decomposition products** : Frag/A-Tail Buffer Under normal conditions of storage and use, hazardous decomposition products should not be produced.  
 Frag/A-Tail Enzyme Mix Under normal conditions of storage and use, hazardous decomposition products should not be produced.  
 Ligation Master Mix Under normal conditions of storage and use, hazardous decomposition products should not be produced.  
 Amplification Master Mix Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
<b>Frag/A-Tail Buffer</b> Magnesium chloride	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
tetramethylammonium chloride	LD50 Oral	Rat	2800 mg/kg	-
	LD50 Dermal	Rabbit - Male, Female	200 to 500 mg/kg	-
	LD50 Oral	Rat	50 mg/kg	-
<b>Amplification Master Mix</b> Trometamol	LD50 Dermal	Rat	>5000 mg/kg	-
tetramethylammonium chloride	LD50 Dermal	Rabbit - Male, Female	200 to 500 mg/kg	-
	LD50 Oral	Rat	50 mg/kg	-

**Acute toxicity estimates**

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
<b>Frag/A-Tail Buffer</b> Frag/A-Tail Buffer	1000	6000.0	N/A	N/A	N/A
Magnesium chloride	2800	N/A	N/A	N/A	N/A
tetramethylammonium chloride	50	300	N/A	N/A	N/A
<b>Amplification Master Mix</b> Amplification Master Mix	1279.5	7677.0	N/A	N/A	N/A
tetramethylammonium chloride	50	300	N/A	N/A	N/A

**Irritation/Corrosion**

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>Amplification Master Mix</b> Trometamol	Skin - Moderate irritant Skin - Severe irritant	Rabbit Rabbit	- -	25 % 500 mg	- -

**Sensitiser**

**Conclusion/Summary** : Not available.

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Specific target organ toxicity (single exposure)**

Product/ingredient name	Category	Route of exposure	Target organs
<b>Frag/A-Tail Buffer</b> tetramethylammonium chloride	Category 1	oral	central nervous system (CNS)
<b>Amplification Master Mix</b> tetramethylammonium chloride	Category 1	oral	central nervous system (CNS)

**SECTION 11: Toxicological information**Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

<b>Information on likely routes of exposure</b>	: Frag/A-Tail Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
	Frag/A-Tail Enzyme Mix	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
	Ligation Master Mix	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
	Amplification Master Mix	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

<b>Inhalation</b>	: Frag/A-Tail Buffer	May cause damage to organs following a single exposure if inhaled.
	Frag/A-Tail Enzyme Mix	No known significant effects or critical hazards.
	Ligation Master Mix	No known significant effects or critical hazards.
	Amplification Master Mix	May cause damage to organs following a single exposure if inhaled.
<b>Ingestion</b>	: Frag/A-Tail Buffer	Harmful if swallowed. May cause damage to organs following a single exposure if swallowed.
	Frag/A-Tail Enzyme Mix	No known significant effects or critical hazards.
	Ligation Master Mix	No known significant effects or critical hazards.
	Amplification Master Mix	Harmful if swallowed. May cause damage to organs following a single exposure if swallowed.
<b>Skin contact</b>	: Frag/A-Tail Buffer	May cause damage to organs following a single exposure in contact with skin.
	Frag/A-Tail Enzyme Mix	No known significant effects or critical hazards.
	Ligation Master Mix	No known significant effects or critical hazards.
	Amplification Master Mix	May cause damage to organs following a single exposure in contact with skin. Causes skin irritation.
<b>Eye contact</b>	: Frag/A-Tail Buffer	No known significant effects or critical hazards.
	Frag/A-Tail Enzyme Mix	No known significant effects or critical hazards.
	Ligation Master Mix	No known significant effects or critical hazards.
	Amplification Master Mix	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

<b>Inhalation</b>	: Frag/A-Tail Buffer	No specific data.
	Frag/A-Tail Enzyme Mix	No specific data.
	Ligation Master Mix	No specific data.
	Amplification Master Mix	No specific data.
<b>Ingestion</b>	: Frag/A-Tail Buffer	No specific data.
	Frag/A-Tail Enzyme Mix	No specific data.
	Ligation Master Mix	No specific data.
	Amplification Master Mix	No specific data.
<b>Skin contact</b>	: Frag/A-Tail Buffer	No specific data.
	Frag/A-Tail Enzyme Mix	No specific data.
	Ligation Master Mix	No specific data.
	Amplification Master Mix	Adverse symptoms may include the following: irritation redness
<b>Eye contact</b>	: Frag/A-Tail Buffer	No specific data.
	Frag/A-Tail Enzyme Mix	No specific data.
	Ligation Master Mix	No specific data.
	Amplification Master Mix	Adverse symptoms may include the following: pain or irritation watering redness

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

<b>Potential immediate effects</b>	: Not available.
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## SECTION 11: Toxicological information

**Potential delayed effects** : Not available.

### Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

### Potential chronic health effects

**Conclusion/Summary** : Not available.

<b>General</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Mutagenicity</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Reproductive toxicity</b>	: Frag/A-Tail Buffer Frag/A-Tail Enzyme Mix Ligation Master Mix Amplification Master Mix	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

### 11.2 Information on other hazards

#### 11.2.1 Endocrine disrupting properties

Not available.

#### 11.2.2 Other information

Not available.

## SECTION 12: Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<b>Frag/A-Tail Buffer</b> Magnesium chloride	Acute EC50 >100 mg/l Fresh water	Algae - <i>Desmodesmus subspicatus</i>	72 hours
	Acute EC50 180000 µg/l Fresh water	Crustaceans - <i>Eudiaptomus padanus ssp. padanus</i> - Adult	48 hours
	Acute IC50 6.8 mg/l Fresh water	Aquatic plants - <i>Lemna aequinoctialis</i>	96 hours
	Acute LC50 32000 µg/l Fresh water	Daphnia - <i>Daphnia hyalina</i> - Adult	48 hours
	Acute LC50 2120 mg/l Fresh water	Fish - <i>Pimephales promelas</i>	96 hours
	Acute NOEC 100 mg/l Fresh water	Algae - <i>Desmodesmus subspicatus</i>	72 hours
tetramethylammonium chloride	Chronic NOEC 0.1 mg/l Fresh water	Fish - <i>Cyprinus carpio</i>	35 days
	Acute LC50 462 mg/l Fresh water	Fish - <i>Pimephales promelas</i>	96 hours
<b>Amplification Master Mix</b> Trometamol	Acute EC50 >980 mg/l Fresh water	Daphnia	48 hours
	Acute NOEC 520 mg/l Fresh water	Daphnia	48 hours
	Acute LC50 462 mg/l Fresh water	Fish - <i>Pimephales promelas</i>	96 hours
tetramethylammonium chloride			

**SECTION 12: Ecological information**

**12.2 Persistence and degradability**

Product/ingredient name	Test	Result	Dose	Inoculum
<b>Amplification Master Mix</b> Trometamol	OECD 301F Ready Biodegradability - Manometric Respirometry Test	97.1 % - Readily - 28 days	30 mg/l	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
<b>Frag/A-Tail Buffer</b> tetramethylammonium chloride	-	-	Readily
<b>Amplification Master Mix</b> Trometamol	-	-	Readily
tetramethylammonium chloride	-	-	Readily

**12.3 Bioaccumulative potential**

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>Frag/A-Tail Buffer</b> tetramethylammonium chloride	<-1.6	-	Low
<b>Amplification Master Mix</b> Trometamol	-2.31	-	Low
tetramethylammonium chloride	<-1.6	-	Low

**12.4 Mobility in soil**

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.  
**Mobility** : Not available.

**12.5 Results of PBT and vPvB assessment**

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

**12.6 Endocrine disrupting properties**

Not available.

**12.7 Other adverse effects**

No known significant effects or critical hazards.

**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

Product

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

## SECTION 13: Disposal considerations

- Hazardous waste** : The classification of the product may meet the criteria for a hazardous waste.
- Packaging**
- Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
- Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers.

## SECTION 14: Transport information

	ADR/RID	IMDG	IATA
<b>14.1 UN number or ID number</b>	UN3082	UN3082	UN3082
<b>14.2 UN proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Magnesium chloride, tetramethylammonium chloride)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Magnesium chloride, tetramethylammonium chloride)	Environmentally hazardous substance, liquid, n.o.s. (Magnesium chloride, tetramethylammonium chloride)
<b>14.3 Transport hazard class(es)</b>	9 	9 	9 
<b>14.4 Packing group</b>	III	III	III
<b>14.5 Environmental hazards</b>	Yes.	Yes.	Yes.

### Additional information

**Remarks:** De minimis quantities

- ADR/RID** : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.  
**Hazard identification number** 90  
**Limited quantity** 5 L  
**Special provisions** 274, 335, 601, 375  
**Tunnel code** (-)
- IMDG** : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.  
**Emergency schedules** F-A, S-F  
**Special provisions** 274, 335, 969
- IATA** : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.  
**Quantity limitation** Passenger and Cargo Aircraft: 450 L. Packaging instructions: 964. Cargo Aircraft Only: 450 L. Packaging instructions: 964. Limited Quantities - Passenger Aircraft: 30 kg. Packaging instructions: Y964.  
**Special provisions** A97, A158, A197, A215
- 14.6 Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**SECTION 14: Transport information**

14.7 Transport in bulk according to IMO instruments : Not available.

**SECTION 15: Regulatory information**

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

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

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

Product / Ingredient name	Identifiers	Designation [Usage]
<b>Frag/A-Tail Buffer</b> Frag/A-Tail Buffer	-	3
<b>Amplification Master Mix</b> Amplification Master Mix	-	3

**Label** : Frag/A-Tail Buffer Not applicable.  
 Frag/A-Tail Enzyme Mix Not applicable.  
 Ligation Master Mix Not applicable.  
 Amplification Master Mix Not applicable.

Other EU regulations

Ozone depleting substances (1005/2009/EU)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Persistent Organic Pollutants

Not listed.

Seveso Directive

This product is controlled under the Seveso Directive.

Danger criteria

<b>Category</b>
<b>Frag/A-Tail Buffer</b> E2

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.

**SECTION 15: Regulatory information**

Inventory list

- Australia** : Not determined.
- Canada** : Not determined.
- China** : Not determined.
- Eurasian Economic Union** : **Russian Federation inventory**: 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.

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

**SECTION 16: Other information**

✔ Indicates information that has changed from previously issued version.

- Abbreviations and acronyms** :
- ATE = Acute Toxicity Estimate
  - CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
  - DMEL = Derived Minimal Effect Level
  - DNEL = Derived No Effect Level
  - EUH statement = CLP-specific Hazard statement
  - N/A = Not available
  - PBT = Persistent, Bioaccumulative and Toxic
  - PNEC = Predicted No Effect Concentration
  - RRN = REACH Registration Number
  - vPvB = Very Persistent and Very Bioaccumulative

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
<b>Frag/A-Tail Buffer</b> Acute Tox. 4, H302 STOT SE 2, H371 Aquatic Chronic 2, H411	Calculation method Calculation method Calculation method
<b>Amplification Master Mix</b> Acute Tox. 4, H302 Skin Irrit. 2, H315 STOT SE 2, H371 Aquatic Chronic 3, H412	Calculation method Calculation method Calculation method Calculation method

Full text of abbreviated H statements

<b>Frag/A-Tail Buffer</b> H300 H302 H311 H315 H370 H371 H410 H411	Fatal if swallowed. Harmful if swallowed. Toxic in contact with skin. Causes skin irritation. Causes damage to organs. May cause damage to organs. Very toxic to aquatic life with long lasting effects. Toxic to aquatic life with long lasting effects.
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**SECTION 16: Other information**

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

[Full text of classifications \[CLP/GHS\]](#)

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

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