

# Material Safety Data Sheet



## QuikChange Site-Directed Mutagenesis Kit

### 1. Product and company identification

<b>Product name</b>	: QuikChange Site-Directed Mutagenesis Kit	
<b>Material uses</b>	: Analytical reagent.	
	XL1-Blue supercompetent cells	1.6 ml (8 tubes each containing 0.2 ml)
	pUC18 Control Plasmid DNA	0.01 ml
	PfuTurbo DNA Polymerase	0.01 ml
	10X Reaction Buffer	0.5 ml
	Dpn I restriction enzyme	0.01 ml
	Control primer 1	0.075 ml
	Control primer 2	0.075 ml
	pWhitescript Control Plasmid	0.01 ml
	dNTP Mix	0.01 ml
<b>Supplier/Manufacturer</b>	: Agilent Technologies, Inc. 1834 State Highway 71 West Cedar Creek, TX 78612 800-227-9770	
<b>Part No. (Chemical Kit)</b>	: 200519	
<b>Part No.</b>	XL1-Blue supercompetent cells	200236-41
	pUC18 Control Plasmid DNA	200231-42
	PfuTurbo DNA Polymerase	200519-51
	10X Reaction Buffer	200518-58
	Dpn I restriction enzyme	200519-53
	Control primer 1	200518-53
	Control primer 2	200518-54
	pWhitescript Control Plasmid	200518-55
	dNTP Mix	200519-52
<b>Validation date</b>	: 05/07/2012	
<b>In case of emergency</b>	: Chemtrec: 1-800-424-9300	

### 2. Hazards identification

<b>Physical state</b>	: XL1-Blue supercompetent cells	Liquid.
	pUC18 Control Plasmid DNA	Liquid.
	PfuTurbo DNA Polymerase	Liquid.
	10X Reaction Buffer	Liquid.
	Dpn I restriction enzyme	Liquid.
	Control primer 1	Liquid.
	Control primer 2	Liquid.
	pWhitescript Control Plasmid	Liquid.
	dNTP Mix	Liquid.
<b>Odor</b>	: XL1-Blue supercompetent cells	Not available.
	pUC18 Control Plasmid DNA	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I restriction enzyme	Not available.
	Control primer 1	Not available.
	Control primer 2	Not available.
	pWhitescript Control Plasmid	Not available.
	dNTP Mix	Not available.
<b>OSHA/HCS status</b>	: XL1-Blue supercompetent cells	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	pUC18 Control Plasmid DNA	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained

## 2. Hazards identification

PfuTurbo DNA Polymerase	and available for employees and other users of this product. This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
10X Reaction Buffer	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Dpn I restriction enzyme	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Control primer 1	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.
Control primer 2	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.
pWhitescript Control Plasmid	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.
dNTP Mix	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

### Emergency overview

#### Signal word

: XL1-Blue supercompetent cells	No signal word.
pUC18 Control Plasmid DNA	No signal word.
PfuTurbo DNA Polymerase	No signal word.
10X Reaction Buffer	WARNING!
Dpn I restriction enzyme	CAUTION!
Control primer 1	No signal word.
Control primer 2	No signal word.
pWhitescript Control Plasmid	No signal word.
dNTP Mix	No signal word.

#### Hazard statements

: XL1-Blue supercompetent cells	MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
pUC18 Control Plasmid DNA	NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
PfuTurbo DNA Polymerase	MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
10X Reaction Buffer	CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF

## 2. Hazards identification

	SWALLOWED. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
Dpn I restriction enzyme	MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
Control primer 1	NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
Control primer 2	NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
pWhitescript Control Plasmid	NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
dNTP Mix	MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
<b>Precautions</b> : XL1-Blue supercompetent cells	Avoid breathing vapor or mist. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
pUC18 Control Plasmid DNA	No known significant effects or critical hazards. Avoid prolonged contact with eyes, skin and clothing.
PfuTurbo DNA Polymerase	Avoid breathing vapor or mist. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
10X Reaction Buffer	Do not ingest. Do not get in eyes. Avoid breathing vapor or mist. Avoid contact with skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
Dpn I restriction enzyme	Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
Control primer 1	No known significant effects or critical hazards. Avoid prolonged contact with eyes, skin and clothing.
Control primer 2	No known significant effects or critical hazards. Avoid prolonged contact with eyes, skin and clothing.
pWhitescript Control Plasmid	No known significant effects or critical hazards. Avoid prolonged contact with eyes, skin and clothing.
dNTP Mix	Avoid breathing vapor or mist. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

## 2. Hazards identification

<b>Routes of entry</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC18 Control Plasmid DNA</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li> <li>Dpn I restriction enzyme</li> <li>Control primer 1</li> <li>Control primer 2</li> <li>pWhitescript Control Plasmid</li> <li>dNTP Mix</li> </ul>	<ul style="list-style-type: none"> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> </ul>
<b><u>Potential acute health effects</u></b>		
<b>Inhalation</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC18 Control Plasmid DNA</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li>   <li>Dpn I restriction enzyme</li> <li>Control primer 1</li> <li>Control primer 2</li> <li>pWhitescript Control Plasmid</li> <li>dNTP Mix</li> </ul>	<ul style="list-style-type: none"> <li>Slightly irritating to the respiratory system.</li> <li>No known significant effects or critical hazards.</li> <li>Slightly irritating to the respiratory system.</li> <li>Irritating to respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.</li> <li>Slightly irritating to the respiratory system.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>Slightly irritating to the respiratory system.</li> <li>Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.</li> </ul>
<b>Ingestion</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC18 Control Plasmid DNA</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li> <li>Dpn I restriction enzyme</li> <li>Control primer 1</li> <li>Control primer 2</li> <li>pWhitescript Control Plasmid</li> <li>dNTP Mix</li> </ul>	<ul style="list-style-type: none"> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>Harmful if swallowed.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> </ul>
<b>Skin</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC18 Control Plasmid DNA</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li> <li>Dpn I restriction enzyme</li> <li>Control primer 1</li> <li>Control primer 2</li> <li>pWhitescript Control Plasmid</li> <li>dNTP Mix</li> </ul>	<ul style="list-style-type: none"> <li>Slightly irritating to the skin.</li> <li>No known significant effects or critical hazards.</li> <li>Slightly irritating to the skin.</li> <li>Irritating to skin.</li> <li>Slightly irritating to the skin.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>Slightly irritating to the skin.</li> </ul>
<b>Eyes</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC18 Control Plasmid DNA</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li>   <li>Dpn I restriction enzyme</li> <li>Control primer 1</li> <li>Control primer 2</li> <li>pWhitescript Control Plasmid</li> <li>dNTP Mix</li> </ul>	<ul style="list-style-type: none"> <li>Slightly irritating to the eyes.</li> <li>No known significant effects or critical hazards.</li> <li>Slightly irritating to the eyes.</li> <li>Severely irritating to eyes. Risk of serious damage to eyes.</li> <li>Moderately irritating to eyes.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>No known significant effects or critical hazards.</li> <li>Slightly irritating to the eyes.</li> </ul>
<b><u>Potential chronic health effects</u></b>		
<b>Chronic effects</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li>   <li>pUC18 Control Plasmid DNA</li> <li>PfuTurbo DNA Polymerase</li>   <li>10X Reaction Buffer</li> </ul>	<ul style="list-style-type: none"> <li>Contains material that may cause target organ damage, based on animal data.</li> <li>No known significant effects or critical hazards.</li> <li>Contains material that may cause target organ damage, based on animal data.</li> <li>Contains material that may cause target organ damage, based on animal data.</li> </ul>

## 2. Hazards identification

	Dpn I restriction enzyme	Contains material that may cause target organ damage, based on animal data.
	Control primer 1	No known significant effects or critical hazards.
	Control primer 2	No known significant effects or critical hazards.
	pWhitescript Control Plasmid	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
	pUC18 Control Plasmid DNA	No known significant effects or critical hazards.
	PfuTurbo DNA Polymerase	No known significant effects or critical hazards.
	10X Reaction Buffer	No known significant effects or critical hazards.
	Dpn I restriction enzyme	No known significant effects or critical hazards.
	Control primer 1	No known significant effects or critical hazards.
	Control primer 2	No known significant effects or critical hazards.
	pWhitescript Control Plasmid	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
<b>Mutagenicity</b>	: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
	pUC18 Control Plasmid DNA	No known significant effects or critical hazards.
	PfuTurbo DNA Polymerase	No known significant effects or critical hazards.
	10X Reaction Buffer	No known significant effects or critical hazards.
	Dpn I restriction enzyme	No known significant effects or critical hazards.
	Control primer 1	No known significant effects or critical hazards.
	Control primer 2	No known significant effects or critical hazards.
	pWhitescript Control Plasmid	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
<b>Teratogenicity</b>	: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
	pUC18 Control Plasmid DNA	No known significant effects or critical hazards.
	PfuTurbo DNA Polymerase	No known significant effects or critical hazards.
	10X Reaction Buffer	No known significant effects or critical hazards.
	Dpn I restriction enzyme	No known significant effects or critical hazards.
	Control primer 1	No known significant effects or critical hazards.
	Control primer 2	No known significant effects or critical hazards.
	pWhitescript Control Plasmid	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
<b>Developmental effects</b>	: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
	pUC18 Control Plasmid DNA	No known significant effects or critical hazards.
	PfuTurbo DNA Polymerase	No known significant effects or critical hazards.
	10X Reaction Buffer	No known significant effects or critical hazards.
	Dpn I restriction enzyme	No known significant effects or critical hazards.
	Control primer 1	No known significant effects or critical hazards.
	Control primer 2	No known significant effects or critical hazards.
	pWhitescript Control Plasmid	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
<b>Fertility effects</b>	: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
	pUC18 Control Plasmid DNA	No known significant effects or critical hazards.
	PfuTurbo DNA Polymerase	No known significant effects or critical hazards.
	10X Reaction Buffer	No known significant effects or critical hazards.
	Dpn I restriction enzyme	No known significant effects or critical hazards.
	Control primer 1	No known significant effects or critical hazards.
	Control primer 2	No known significant effects or critical hazards.
	pWhitescript Control Plasmid	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
<b>Target organs</b>	: XL1-Blue supercompetent cells	Contains material which may cause damage to the following organs: kidneys, liver, gastrointestinal tract, upper respiratory tract, skin, eye, lens or cornea, teeth.
	pUC18 Control Plasmid DNA	Not available.
	PfuTurbo DNA Polymerase	Contains material which may cause damage to the following organs: kidneys, upper respiratory tract, skin, eye, lens or cornea.
	10X Reaction Buffer	Contains material which may cause damage to the following organs: upper respiratory tract, skin, eyes.
	Dpn I restriction enzyme	Contains material which may cause damage to the

## 2. Hazards identification

Control primer 1  
Control primer 2  
pWhitescript Control Plasmid  
dNTP Mix

following organs: kidneys, upper respiratory tract, skin, eye, lens or cornea, stomach.  
Not available.  
Not available.  
Not available.  
Not available.

### Over-exposure signs/symptoms

#### Inhalation

: XL1-Blue supercompetent cells

Adverse symptoms may include the following:  
respiratory tract irritation  
coughing

pUC18 Control Plasmid DNA  
PfuTurbo DNA Polymerase

No specific data.  
Adverse symptoms may include the following:  
respiratory tract irritation  
coughing

10X Reaction Buffer

Adverse symptoms may include the following:  
respiratory tract irritation  
coughing

Dpn I restriction enzyme

Adverse symptoms may include the following:  
respiratory tract irritation  
coughing

Control primer 1  
Control primer 2  
pWhitescript Control Plasmid  
dNTP Mix

No specific data.  
No specific data.  
No specific data.  
Adverse symptoms may include the following:  
respiratory tract irritation  
coughing

#### Ingestion

: XL1-Blue supercompetent cells

No specific data.

pUC18 Control Plasmid DNA  
PfuTurbo DNA Polymerase

No specific data.

10X Reaction Buffer

No specific data.

Dpn I restriction enzyme

No specific data.

Control primer 1  
Control primer 2  
pWhitescript Control Plasmid  
dNTP Mix

No specific data.  
No specific data.  
No specific data.  
No specific data.

#### Skin

: XL1-Blue supercompetent cells

Adverse symptoms may include the following:  
irritation  
redness

pUC18 Control Plasmid DNA  
PfuTurbo DNA Polymerase

No specific data.  
Adverse symptoms may include the following:  
irritation  
redness

10X Reaction Buffer

Adverse symptoms may include the following:  
irritation  
redness

Dpn I restriction enzyme

Adverse symptoms may include the following:  
irritation  
redness

Control primer 1  
Control primer 2  
pWhitescript Control Plasmid  
dNTP Mix

No specific data.  
No specific data.  
No specific data.  
Adverse symptoms may include the following:  
irritation  
redness

#### Eyes

: XL1-Blue supercompetent cells

Adverse symptoms may include the following:  
irritation  
watering  
redness

pUC18 Control Plasmid DNA  
PfuTurbo DNA Polymerase

No specific data.  
Adverse symptoms may include the following:  
irritation  
watering  
redness

## 2. Hazards identification

10X Reaction Buffer	Adverse symptoms may include the following: pain or irritation watering redness
Dpn I restriction enzyme	Adverse symptoms may include the following: irritation watering redness
Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	No specific data. No specific data. No specific data. Adverse symptoms may include the following: irritation watering redness
<b>Medical conditions aggravated by over-exposure</b> : XL1-Blue supercompetent cells	Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.
pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase	None known. Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.
10X Reaction Buffer	Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.
Dpn I restriction enzyme	Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.
Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	None known. None known. None known. None known.

See toxicological information (Section 11)

## 3. Composition/information on ingredients

Name	CAS number	%
<b>XL1-Blue supercompetent cells</b>		
Glycerol	56-81-5	5 - 10
Dimethyl sulfoxide	67-68-5	5 - 10
Sucrose	57-50-1	1 - 5
Potassium chloride	7447-40-7	1 - 5
<b>PfuTurbo DNA Polymerase</b>		
Glycerol	56-81-5	30 - 60
<b>10X Reaction Buffer</b>		
2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	1185-53-1	1 - 5
Ammonium sulphate	7783-20-2	1 - 5
Poly(oxy-1,2-ethanediyl), .alpha.-[4-(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	9002-93-1	0.1 - 1
<b>Dpn I restriction enzyme</b>		
Glycerol	56-81-5	30 - 60
Sodium chloride	7647-14-5	1 - 5
<b>dNTP Mix</b>		
2'-Deoxyguanosine 5'-(tetrahydrogen triphosphate)	2564-35-4	1 - 5
2'-Deoxyadenosine 5'-(tetrahydrogen triphosphate)	1927-31-7	1 - 5

### 3. Composition/information on ingredients

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

### 4. First aid measures

<b>Eye contact</b>	: XL1-Blue supercompetent cells	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
	pUC18 Control Plasmid DNA	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.
	PfuTurbo DNA Polymerase	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
	10X Reaction Buffer	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
	Dpn I restriction enzyme	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
	Control primer 1	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.
	Control primer 2	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.
	pWhitescript Control Plasmid	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.
	dNTP Mix	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
<b>Skin contact</b>	: XL1-Blue supercompetent cells	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
	pUC18 Control Plasmid DNA	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.
	PfuTurbo DNA Polymerase	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
	10X Reaction Buffer	In case of contact, immediately flush skin with



## 4. First aid measures

Dpn I restriction enzyme	<p>plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.</p> <p>In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.</p>
Control primer 1	<p>In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.</p>
Control primer 2	<p>In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.</p>
pWhitescript Control Plasmid	<p>In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.</p>
dNTP Mix	<p>In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.</p>
<b>Inhalation</b> : XL1-Blue supercompetent cells	<p>Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.</p>
pUC18 Control Plasmid DNA	<p>Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.</p>
PfuTurbo DNA Polymerase	<p>Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.</p>
10X Reaction Buffer	<p>Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.</p>
Dpn I restriction enzyme	<p>Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.</p>
Control primer 1	<p>Move exposed person to fresh air. If not breathing,</p>

## 4. First aid measures

		if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.
	Control primer 2	Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.
	pWhitescript Control Plasmid	Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.
	dNTP Mix	Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
<b>Ingestion</b>	: XL1-Blue supercompetent cells	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
	pUC18 Control Plasmid DNA	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.
	PfuTurbo DNA Polymerase	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
	10X Reaction Buffer	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
	Dpn I restriction enzyme	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
	Control primer 1	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.
	Control primer 2	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.
	pWhitescript Control Plasmid	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

## 4. First aid measures

	dNTP Mix	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
<b>Protection of first-aiders</b>	: XL1-Blue supercompetent cells	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.
	pUC18 Control Plasmid DNA	No action shall be taken involving any personal risk or without suitable training.
	PfuTurbo 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.
	10X Reaction Buffer	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
	Dpn I restriction enzyme	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.
	Control primer 1	No action shall be taken involving any personal risk or without suitable training.
	Control primer 2	No action shall be taken involving any personal risk or without suitable training.
	pWhitescript Control Plasmid	No action shall be taken involving any personal risk or without suitable training.
	dNTP 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.
<b>Notes to physician</b>	: XL1-Blue supercompetent cells	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	pUC18 Control Plasmid DNA	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	PfuTurbo DNA Polymerase	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	10X Reaction 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.
	Dpn I restriction enzyme	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Control primer 1	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Control primer 2	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	pWhitescript Control Plasmid	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	dNTP 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

## 4. First aid measures

surveillance for 48 hours.

## 5. Fire-fighting measures

<b>Flammability of the product</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst.
<b>Extinguishing media Suitable</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
<b>Not suitable</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	None known. None known. None known. None known. None known. None known. None known. None known. None known.
<b>Special exposure hazards</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2	No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training.

## 5. Fire-fighting measures

	pWhitescript Control Plasmid	or without suitable training. No action shall be taken involving any personal risk or without suitable training.
	dNTP Mix	No action shall be taken involving any personal risk or without suitable training.
<b>Hazardous thermal decomposition products</b>	: XL1-Blue supercompetent cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
	pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase	No specific data. Decomposition products may include the following materials: carbon dioxide carbon monoxide
	10X Reaction Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides halogenated compounds
	Dpn I restriction enzyme	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
	Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	No specific data. No specific data. No specific data. Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides
<b>Special protective equipment for fire-fighters</b>	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.	

## 6. Accidental release measures

<b>Personal precautions</b>	: XL1-Blue supercompetent cells	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
	pUC18 Control Plasmid DNA	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment (see Section 8).
	PfuTurbo 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

## 6. Accidental release measures

10X Reaction Buffer	through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8). No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
Dpn I restriction enzyme	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
Control primer 1	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment (see Section 8).
Control primer 2	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment (see Section 8).
pWhitescript Control Plasmid	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment (see Section 8).
dNTP Mix	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

**Environmental precautions :** XL1-Blue supercompetent cells

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

pUC18 Control Plasmid DNA

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

PfuTurbo DNA Polymerase

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers,

## 6. Accidental release measures

		waterways, soil or air).
	10X Reaction Buffer	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	Dpn I restriction enzyme	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	Control primer 1	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	Control primer 2	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	pWhitescript Control Plasmid	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	dNTP Mix	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
<b>Methods for cleaning up</b>	: XL1-Blue supercompetent cells	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.
	pUC18 Control Plasmid DNA	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.
	PfuTurbo 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.
	10X Reaction 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.
	Dpn I restriction enzyme	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.
	Control primer 1	Stop leak if without risk. Move containers from spill

## 6. Accidental release measures

Control primer 2

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.

pWhitescript Control Plasmid

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.

dNTP 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.

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.

## 7. Handling and storage

### Handling

: XL1-Blue supercompetent cells

Potentially biohazardous material. Put on appropriate personal protective equipment (see Section 8). 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. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.

pUC18 Control Plasmid DNA

Put on appropriate personal protective equipment (see Section 8). 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.

PfuTurbo DNA Polymerase

Put on appropriate personal protective equipment (see Section 8). 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. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain



## 7. Handling and storage

10X Reaction Buffer

reuse container.

Put on appropriate personal protective equipment (see Section 8). 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. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.

Dpn I restriction enzyme

Put on appropriate personal protective equipment (see Section 8). 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. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.

Control primer 1

Put on appropriate personal protective equipment (see Section 8). 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.

Control primer 2

Put on appropriate personal protective equipment (see Section 8). 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.

pWhitescript Control Plasmid

Put on appropriate personal protective equipment (see Section 8). 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.

dNTP Mix

Put on appropriate personal protective equipment (see Section 8). 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. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only

## 7. Handling and storage

with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.

**Storage** : XL1-Blue supercompetent cells

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

pUC18 Control Plasmid DNA

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

PfuTurbo DNA Polymerase

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

10X Reaction Buffer

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

Dpn I restriction enzyme

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

Control primer 1

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

## 7. Handling and storage

Control primer 2

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

pWhitescript Control Plasmid

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

dNTP Mix

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

## 8. Exposure controls/personal protection

Ingredient	Exposure limits
XL1-Blue supercompetent cells Glycerol  Dimethyl sulfoxide  Sucrose  PfuTurbo DNA Polymerase Glycerol	<p><b>ACGIH TLV (United States, 2/2010).</b>                      TWA: 10 mg/m<sup>3</sup> 8 hour(s). Form: Inhalable fraction</p> <p><b>OSHA PEL (United States, 6/2010).</b>                      TWA: 5 mg/m<sup>3</sup> 8 hour(s). Form: Respirable fraction                      TWA: 15 mg/m<sup>3</sup> 8 hour(s). Form: Total dust</p> <p><b>OSHA PEL 1989 (United States, 3/1989).</b>                      TWA: 5 mg/m<sup>3</sup> 8 hour(s). Form: Respirable fraction                      TWA: 10 mg/m<sup>3</sup> 8 hour(s). Form: Total dust</p> <p><b>AIHA WEEL (United States, 5/2010).</b>                      TWA: 250 ppm 8 hour(s).</p> <p><b>ACGIH TLV (United States, 2/2010).</b>                      TWA: 10 mg/m<sup>3</sup> 8 hour(s).</p> <p><b>OSHA PEL 1989 (United States, 3/1989).</b>                      TWA: 5 mg/m<sup>3</sup> 8 hour(s). Form: Respirable fraction                      TWA: 15 mg/m<sup>3</sup> 8 hour(s). Form: Total dust</p> <p><b>NIOSH REL (United States, 6/2009).</b>                      TWA: 5 mg/m<sup>3</sup> 10 hour(s). Form: Respirable fraction                      TWA: 10 mg/m<sup>3</sup> 10 hour(s). Form: Total</p> <p><b>OSHA PEL (United States, 6/2010).</b>                      TWA: 5 mg/m<sup>3</sup> 8 hour(s). Form: Respirable fraction                      TWA: 15 mg/m<sup>3</sup> 8 hour(s). Form: Total dust</p> <p><b>ACGIH TLV (United States, 2/2010).</b></p>

## 8. Exposure controls/personal protection

<p><b>Dpn I restriction enzyme</b> Glycerol</p>	<p>TWA: 10 mg/m<sup>3</sup> 8 hour(s). Form: Inhalable fraction  <b>OSHA PEL (United States, 6/2010).</b>                      TWA: 5 mg/m<sup>3</sup> 8 hour(s). Form: Respirable fraction                      TWA: 15 mg/m<sup>3</sup> 8 hour(s). Form: Total dust  <b>OSHA PEL 1989 (United States, 3/1989).</b>                      TWA: 5 mg/m<sup>3</sup> 8 hour(s). Form: Respirable fraction                      TWA: 10 mg/m<sup>3</sup> 8 hour(s). Form: Total dust</p> <p><b>ACGIH TLV (United States, 2/2010).</b>                      TWA: 10 mg/m<sup>3</sup> 8 hour(s). Form: Inhalable fraction  <b>OSHA PEL (United States, 6/2010).</b>                      TWA: 5 mg/m<sup>3</sup> 8 hour(s). Form: Respirable fraction                      TWA: 15 mg/m<sup>3</sup> 8 hour(s). Form: Total dust  <b>OSHA PEL 1989 (United States, 3/1989).</b>                      TWA: 5 mg/m<sup>3</sup> 8 hour(s). Form: Respirable fraction                      TWA: 10 mg/m<sup>3</sup> 8 hour(s). Form: Total dust</p>
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- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor 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.
- 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.
- Personal protection**
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : 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.
- Eyes** : 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 or dusts.
- Skin** : 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.
- 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.
- Other protection** : Not available.

## 9. Physical and chemical properties

<b>Physical state</b>	<p>: XL1-Blue supercompetent cells                      Liquid.                      pUC18 Control Plasmid DNA                              Liquid.                      PfuTurbo DNA Polymerase                                Liquid.                      10X Reaction Buffer                                         Liquid.                      Dpn I restriction enzyme                                    Liquid.                      Control primer 1     Liquid.                      Control primer 2     Liquid.</p>
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## 9. Physical and chemical properties

	pWhitescript Control Plasmid	Liquid.
	dNTP Mix	Liquid.
<b>Flash point</b>	: XL1-Blue supercompetent cells	Not available.
	pUC18 Control Plasmid DNA	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I restriction enzyme	Not available.
	Control primer 1	Not available.
	Control primer 2	Not available.
	pWhitescript Control Plasmid	Not available.
	dNTP Mix	Not available.
<b>Auto-ignition temperature</b>	: XL1-Blue supercompetent cells	Not available.
	pUC18 Control Plasmid DNA	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I restriction enzyme	Not available.
	Control primer 1	Not available.
	Control primer 2	Not available.
	pWhitescript Control Plasmid	Not available.
	dNTP Mix	Not available.
<b>Flammable limits</b>	: XL1-Blue supercompetent cells	Not available.
	pUC18 Control Plasmid DNA	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I restriction enzyme	Not available.
	Control primer 1	Not available.
	Control primer 2	Not available.
	pWhitescript Control Plasmid	Not available.
	dNTP Mix	Not available.
<b>Color</b>	: XL1-Blue supercompetent cells	Not available.
	pUC18 Control Plasmid DNA	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I restriction enzyme	Not available.
	Control primer 1	Not available.
	Control primer 2	Not available.
	pWhitescript Control Plasmid	Not available.
	dNTP Mix	Not available.
<b>Odor</b>	: XL1-Blue supercompetent cells	Not available.
	pUC18 Control Plasmid DNA	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I restriction enzyme	Not available.
	Control primer 1	Not available.
	Control primer 2	Not available.
	pWhitescript Control Plasmid	Not available.
	dNTP Mix	Not available.
<b>pH</b>	: XL1-Blue supercompetent cells	6.4
	pUC18 Control Plasmid DNA	7.5
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	8.8
	Dpn I restriction enzyme	Not available.
	Control primer 1	7.5
	Control primer 2	7.5
	pWhitescript Control Plasmid	7.5
	dNTP Mix	Not available.

## 9. Physical and chemical properties

<b>Boiling/condensation point</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	Not available. 100°C (212°F) Not available. Not available. Not available. 100°C (212°F) 100°C (212°F) 100°C (212°F) Not available.
<b>Melting/freezing point</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	Not available. 0°C (32°F) Not available. Not available. Not available. 0°C (32°F) 0°C (32°F) 0°C (32°F) Not available.
<b>Specific gravity</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
<b>Vapor pressure</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
<b>Vapor density</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
<b>Volatility</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2 pWhitescript Control Plasmid dNTP Mix	Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
<b>Odor threshold</b>	: XL1-Blue supercompetent cells pUC18 Control Plasmid DNA PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I restriction enzyme Control primer 1 Control primer 2 pWhitescript Control Plasmid	Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.

## 9. Physical and chemical properties

	dNTP Mix	Not available.
<b>Evaporation rate</b>	: XL1-Blue supercompetent cells	Not available.
	pUC18 Control Plasmid DNA	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I restriction enzyme	Not available.
	Control primer 1	Not available.
	Control primer 2	Not available.
	pWhitescript Control Plasmid	Not available.
	dNTP Mix	Not available.
<b>Viscosity</b>	: XL1-Blue supercompetent cells	Not available.
	pUC18 Control Plasmid DNA	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I restriction enzyme	Not available.
	Control primer 1	Not available.
	Control primer 2	Not available.
	pWhitescript Control Plasmid	Not available.
	dNTP Mix	Not available.
<b>Solubility</b>	: XL1-Blue supercompetent cells	Soluble in the following materials: cold water and hot water.
	pUC18 Control Plasmid DNA	Easily soluble in the following materials: cold water and hot water.
	PfuTurbo DNA Polymerase	Soluble in the following materials: cold water and hot water.
	10X Reaction Buffer	Easily soluble in the following materials: cold water and hot water.
	Dpn I restriction enzyme	Soluble in the following materials: cold water and hot water.
	Control primer 1	Easily soluble in the following materials: cold water and hot water.
	Control primer 2	Easily soluble in the following materials: cold water and hot water.
	pWhitescript Control Plasmid	Easily soluble in the following materials: cold water and hot water.
	dNTP Mix	Easily soluble in the following materials: cold water and hot water.

## 10. Stability and reactivity

<b>Chemical stability</b>	: XL1-Blue supercompetent cells	The product is stable.
	pUC18 Control Plasmid DNA	The product is stable.
	PfuTurbo DNA Polymerase	The product is stable.
	10X Reaction Buffer	The product is stable.
	Dpn I restriction enzyme	The product is stable.
	Control primer 1	The product is stable.
	Control primer 2	The product is stable.
	pWhitescript Control Plasmid	The product is stable.
	dNTP Mix	The product is stable.
<b>Conditions to avoid</b>	: XL1-Blue supercompetent cells	No specific data.
	pUC18 Control Plasmid DNA	No specific data.
	PfuTurbo DNA Polymerase	No specific data.
	10X Reaction Buffer	No specific data.
	Dpn I restriction enzyme	No specific data.
	Control primer 1	No specific data.
	Control primer 2	No specific data.
	pWhitescript Control Plasmid	No specific data.
	dNTP Mix	No specific data.

## 10. Stability and reactivity

<b>Materials to avoid</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC18 Control Plasmid DNA</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li> <li>Dpn I restriction enzyme</li> <li>Control primer 1</li> <li>Control primer 2</li> <li>pWhitescript Control Plasmid</li> <li>dNTP Mix</li> </ul>	<ul style="list-style-type: none"> <li>No specific data.</li> <li>No specific data.</li> <li>No specific data.</li> <li>No specific data.</li> <li>No specific data.</li> <li>No specific data.</li> <li>No specific data.</li> <li>No specific data.</li> <li>No specific data.</li> </ul>
<b>Hazardous decomposition products</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li> </li> <li>pUC18 Control Plasmid DNA</li> <li> </li> <li>PfuTurbo DNA Polymerase</li> <li> </li> <li>10X Reaction Buffer</li> <li> </li> <li>Dpn I restriction enzyme</li> <li> </li> <li>Control primer 1</li> <li> </li> <li>Control primer 2</li> <li> </li> <li>pWhitescript Control Plasmid</li> <li> </li> <li>dNTP Mix</li> </ul>	<ul style="list-style-type: none"> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> <li>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</li> </ul>
<b>Possibility of hazardous reactions</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC18 Control Plasmid DNA</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li> <li>Dpn I restriction enzyme</li> <li>Control primer 1</li> <li>Control primer 2</li> <li>pWhitescript Control Plasmid</li> <li>dNTP Mix</li> </ul>	<ul style="list-style-type: none"> <li>Under normal conditions of storage and use, hazardous reactions will not occur.</li> <li>Under normal conditions of storage and use, hazardous reactions will not occur.</li> <li>Under normal conditions of storage and use, hazardous reactions will not occur.</li> <li>Under normal conditions of storage and use, hazardous reactions will not occur.</li> <li>Under normal conditions of storage and use, hazardous reactions will not occur.</li> <li>Under normal conditions of storage and use, hazardous reactions will not occur.</li> <li>Under normal conditions of storage and use, hazardous reactions will not occur.</li> <li>Under normal conditions of storage and use, hazardous reactions will not occur.</li> <li>Under normal conditions of storage and use, hazardous reactions will not occur.</li> </ul>



# 11. Toxicological information

## Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<b>XL1-Blue supercompetent cells</b>				
Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
Sucrose	LD50 Oral	Rat	29700 mg/kg	-
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
<b>PfuTurbo DNA Polymerase</b>				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
<b>10X Reaction Buffer</b>				
Poly(oxy-1,2-ethanediyl), .alpha.-[4-(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	LD50 Oral	Rat	1800 mg/kg	-
Ammonium sulphate	LD50 Oral	Rat	2840 mg/kg	-
<b>Dpn I restriction enzyme</b>				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Sodium chloride	LC50 Inhalation Dusts and mists	Rat	>42 g/m <sup>3</sup>	1 hours
	LD50 Oral	Rat	3000 mg/kg	-

## Chronic toxicity

**Conclusion/Summary** : Not available.

## Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>XL1-Blue supercompetent cells</b>					
Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 milligrams	-
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
<b>PfuTurbo DNA Polymerase</b>					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
<b>10X Reaction Buffer</b>					
Poly(oxy-1,2-ethanediyl), .alpha.-[4-(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	Eyes - Moderate irritant	Rabbit	-	24 hours 10 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 microliters	-
<b>Dpn I restriction enzyme</b>					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500	-

## 11. Toxicological information

Sodium chloride	Skin - Mild irritant	Rabbit	-	milligrams 24 hours 500	-
	Eyes - Moderate irritant	Rabbit	-	milligrams 24 hours 100	-
	Eyes - Moderate irritant	Rabbit	-	milligrams 10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

### Sensitizer

**Conclusion/Summary** : Not available.

### Carcinogenicity

#### Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
XL1-Blue supercompetent cells						
Sucrose	A4	-	-	-	-	-

### Mutagenicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

**Other adverse symptoms** : XL1-Blue supercompetent cells Not available.  
 pUC18 Control Plasmid DNA Not available.  
 PfuTurbo DNA Polymerase Not available.  
 10X Reaction Buffer Not available.  
 Dpn I restriction enzyme Not available.  
 Control primer 1 Not available.  
 Control primer 2 Not available.  
 pWhitescript Control Plasmid Not available.  
 dNTP Mix Not available.

## 12. Ecological information

**Ecotoxicity** : This material is harmful to aquatic life. May cause long-term adverse effects in the aquatic environment.

### Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
XL1-Blue supercompetent cells	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate - <24 hours	48 hours
	Acute LC50 34000000 ug/L Fresh water	Fish - Pimephales promelas - 31 days - 15.8 mm - 0.062 g	96 hours
	Chronic NOEC <0.1 g/L Fresh water	Fish - Danio rerio - Embryo - 4 to 6 hours	30 days
Glycerol	Acute LC50 54 to 57 ml/L Fresh water	Fish - Oncorhynchus mykiss - 0.9 g	96 hours
	Potassium chloride	Algae - Navicula seminulum	96 hours
PfuTurbo DNA Polymerase	Acute EC50 1337000 ug/L Fresh water	Daphnia - Daphnia magna - 12 hours	48 hours
	Acute LC50 16.5 mg/L Fresh water	Crustaceans - Diaphanosoma brachyurum - Neonate - 24 hours	48 hours
	Acute LC50 435000 ug/L Fresh water	Fish - Gambusia affinis - Adult	96 hours
Glycerol	Acute LC50 54 to 57 ml/L Fresh water	Fish - Oncorhynchus mykiss - 0.9 g	96 hours

## 12. Ecological information

<b>10X Reaction Buffer</b> Poly(oxy-1,2-ethanediyl), .alpha.-[4-(1,1,3,3- tetramethylbutyl)phenyl]- .omega.-hydroxy-	Acute LC50 5.85 mg/L Fresh water	Crustaceans - Ceriodaphnia rigaudi - Neonate - 24 hours	48 hours
	Acute LC50 11.2 mg/L Fresh water	Daphnia - Daphnia magna - Neonate - 24 hours	48 hours
	Acute LC50 2800 to 3200 ug/L Fresh water	Fish - Lepomis macrochirus - 1 g	96 hours
	Ammonium sulphate Acute EC50 59000 ug/L Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
	Acute LC50 14000 to 15000 ug/L Fresh water	Daphnia - Daphnia magna - Young - <=24 hours	48 hours
	Acute LC50 68 ug/L Fresh water	Fish - Oncorhynchus gorbuscha - Alevin	96 hours
<b>Dpn I restriction enzyme</b> Glycerol	Chronic NOEC 143 ug/L Marine water	Fish - Salmo salar - Post-smolt - 225 g	5 weeks
	Sodium chloride Acute LC50 54 to 57 ml/L Fresh water	Fish - Oncorhynchus mykiss - 0.9 g	96 hours
		Algae - Navicula seminulum	96 hours
		Daphnia - Daphnia magna	48 hours
	Acute EC50 2430000 ug/L Fresh water	Crustaceans - Ceriodaphnia dubia - <24 hours	48 hours
	Acute EC50 402600 to 469200 ug/L Fresh water		
Acute LC50 1042 mg/L Fresh water			
Acute LC50 1000000 ug/L Fresh water	Fish - Morone saxatilis - Larvae	96 hours	
Chronic NOEC 0.314 g/L Fresh water	Daphnia - Daphnia pulex	21 days	
Chronic NOEC 100 mg/L Fresh water	Fish - Gambusia holbrooki - Adult	8 weeks	

<b>Partition coefficient: n- octanol/water</b>	: XL1-Blue supercompetent cells	Not available.
	: pUC18 Control Plasmid DNA	Not available.
	: PfuTurbo DNA Polymerase	Not available.
	: 10X Reaction Buffer	Not available.
	: Dpn I restriction enzyme	Not available.
	: Control primer 1	Not available.
	: Control primer 2	Not available.
	: pWhitescript Control Plasmid	Not available.
	: dNTP Mix	Not available.

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

## 13. Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

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

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

## 13. Disposal considerations

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

## 14. Transport information

### Regulatory information

DOT / IMDG / IATA / : Not regulated.

## 15. Regulatory information

**HCS Classification** : XL1-Blue supercompetent cells Target organ effects  
 pUC18 Control Plasmid DNA Not regulated.  
 PfuTurbo DNA Polymerase Target organ effects  
 10X Reaction Buffer Irritating material  
 Dpn I restriction enzyme Target organ effects  
 Control primer 1 Irritating material  
 Control primer 2 Target organ effects  
 pWhitescript Control Plasmid Not regulated.  
 dNTP Mix Not regulated.

**U.S. Federal regulations** : **TSCA 8(a) PAIR:** Poly(oxy-1,2-ethanediyl), .alpha.-[4-(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-; Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-

**TSCA 8(a) IUR:** Not determined

**United States inventory (TSCA 8b):** At least one component is not listed.

**SARA 302/304/311/312 extremely hazardous substances:** No products were found.

**SARA 302/304 emergency planning and notification:** No products were found.

**SARA 302/304/311/312 hazardous chemicals:** Glycerol

**SARA 311/312 MSDS distribution - chemical inventory - hazard identification:**

Glycerol: Immediate (acute) health hazard, Delayed (chronic) health hazard

**Clean Water Act (CWA) 311:** Edetic acid

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

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

### SARA 313

	Product name	CAS number	Concentration
<b>Form R - Reporting requirements</b>	<b>10X Reaction Buffer</b> Ammonium sulphate	7783-20-2	0.5 - 1.5
<b>Supplier notification</b>	<b>10X Reaction Buffer</b> Ammonium sulphate	7783-20-2	0.5 - 1.5

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

### State regulations

**Massachusetts** : The following components are listed: GLYCERINE MIST

**New York** : None of the components are listed.

## 15. Regulatory information

**New Jersey** : The following components are listed: GLYCERIN; 1,2,3-PROPANETRIOL

**Pennsylvania** : The following components are listed: 1,2,3-PROPANETRIOL

**California Prop. 65**

No products were found.

## 16. Other information

<b>Label requirements</b>	: XL1-Blue supercompetent cells	MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
	pUC18 Control Plasmid DNA	NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
	PfuTurbo DNA Polymerase	MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
	10X Reaction Buffer	CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF SWALLOWED. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
	Dpn I restriction enzyme	MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
	Control primer 1	NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
	Control primer 2	NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
	pWhitescript Control Plasmid	NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
	dNTP Mix	MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

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**Version** : 3

☑ Indicates information that has changed from previously issued version.

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