

# SAFETY DATA SHEET



## QuikChange Site-Directed Mutagenesis Kit, Part Number 200518

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

#### 1.1 Product identifier

<b>Product name</b>	:	QuikChange Site-Directed Mutagenesis Kit, Part Number 200518	
<b>Part No. (Kit)</b>	:	200518	
<b>Part No.</b>	:	XL1-Blue	200236-41
		supercompetent cells	
		pUC 18 DNA Control Plasmid	200231-42
		PfuTurbo DNA Polymerase	200518-57
		10X Reaction Buffer	200518-58
		Dpn I	200518-52
		Control Primer 1 (34-mer)	200518-53
		Control Primer 2 (34-mer)	200518-54
		pWS4.5 Control Template	200518-55
		dNTP Mix	200518-56

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

##### Identified uses

Analytical reagent.	
XL1-Blue supercompetent cells	1.6 ml (8 x 0.2 ml)
pUC 18 DNA Control Plasmid	0.1 ml (0.1 ng/ $\mu$ l)
PfuTurbo DNA Polymerase	0.032 ml (80 U 2.5 U/ $\mu$ l)
10X Reaction Buffer	0.5 ml
Dpn I	0.3 ml (10 U/ $\mu$ l 300 U)
Control Primer 1 (34-mer)	0.0075 ml ( 750 ng 100 ng/ $\mu$ l )
Control Primer 2 (34-mer)	0.0075 ml ( 750 ng 100 ng/ $\mu$ l )
pWS4.5 Control Template	0.01 ml ( 50 ng 5 ng/ $\mu$ l )
dNTP Mix	0.03 ml

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

Agilent Technologies Manufacturing GmbH & Co. KG  
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®: +(44)-870-8200418

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

<b>Product definition</b>	:	XL1-Blue supercompetent cells	Mixture
		pUC 18 DNA Control Plasmid	Mixture
		PfuTurbo DNA Polymerase	Mixture
		10X Reaction Buffer	Mixture
		Dpn I	Mixture
		Control Primer 1 (34-mer)	Mixture
		Control Primer 2 (34-mer)	Mixture
		pWS4.5 Control Template	Mixture
		dNTP Mix	Mixture

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

#### 10X Reaction Buffer

H319 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2

<b>Ingredients of unknown toxicity</b>	:	XL1-Blue supercompetent cells	Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10%
		PfuTurbo DNA Polymerase	Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30%
		10X Reaction Buffer	Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 30 - 60%
		Dpn I	Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10%
		dNTP Mix	Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 1 - 10%
			Percentage of the mixture consisting of ingredient(s) of unknown oral toxicity: 1 - 10%
<b>Ingredients of unknown ecotoxicity</b>	:	10X Reaction Buffer	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 3.2%
		dNTP Mix	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 5.7%

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

**Hazard pictograms** : 10X Reaction Buffer



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<b>Signal word</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP Mix	No signal word. No signal word. No signal word. Warning No signal word. No signal word. No signal word. No signal word. No signal word. No signal word.
<b>Hazard statements</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP 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. H319 - Causes serious eye irritation. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b><u>Precautionary statements</u></b>		
<b>Prevention</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer  Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP Mix	Not applicable. Not applicable. Not applicable. P280 - Wear eye or face protection. P264 - Wash hands thoroughly after handling. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
<b>Response</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer  Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer)	Not applicable. Not applicable. Not applicable. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Not applicable. Not applicable. Not applicable.

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	pWS4.5 Control Template	Not applicable.
	dNTP Mix	Not applicable.
<b>Storage</b>	: XL1-Blue supercompetent cells	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
	PfuTurbo DNA Polymerase	Not applicable.
	10X Reaction Buffer	Not applicable.
	Dpn I	Not applicable.
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	Not applicable.
	pWS4.5 Control Template	Not applicable.
	dNTP Mix	Not applicable.
<b>Disposal</b>	: XL1-Blue supercompetent cells	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
	PfuTurbo DNA Polymerase	Not applicable.
	10X Reaction Buffer	Not applicable.
	Dpn I	Not applicable.
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	Not applicable.
	pWS4.5 Control Template	Not applicable.
	dNTP Mix	Not applicable.
<b>Hazardous ingredients</b>	: PfuTurbo DNA Polymerase	Not applicable.
	10X Reaction Buffer	Not applicable.
	Dpn I	Not applicable.
<b>Supplemental label elements</b>	: XL1-Blue supercompetent cells	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
	PfuTurbo DNA Polymerase	Not applicable.
	10X Reaction Buffer	Not applicable.
	Dpn I	Safety data sheet available on request.
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	Not applicable.
	pWS4.5 Control Template	Not applicable.
	dNTP Mix	Not applicable.
<b>Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles</b>	: XL1-Blue supercompetent cells	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
	PfuTurbo DNA Polymerase	Not applicable.
	10X Reaction Buffer	Not applicable.
	Dpn I	Not applicable.
	Control Primer 1	Not applicable.

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## SECTION 2: Hazards identification

(34-mer) Control Primer 2	Not applicable.
(34-mer) pWS4.5 Control Template	Not applicable.
dNTP Mix	Not applicable.

### Special packaging requirements

<b>Tactile warning of danger</b>	:	XL1-Blue supercompetent cells	Not applicable.
		pUC 18 DNA Control Plasmid	Not applicable.
		PfuTurbo DNA Polymerase	Not applicable.
		10X Reaction Buffer	Not applicable.
		Dpn I	Not applicable.
		Control Primer 1 (34-mer)	Not applicable.
		Control Primer 2 (34-mer)	Not applicable.
		pWS4.5 Control Template	Not applicable.
		dNTP Mix	Not applicable.

### 2.3 Other hazards

<b>Other hazards which do not result in classification</b>	:	XL1-Blue supercompetent cells	None known.
		pUC 18 DNA Control Plasmid	None known.
		PfuTurbo DNA Polymerase	None known.
		10X Reaction Buffer	None known.
		Dpn I	None known.
		Control Primer 1 (34-mer)	None known.
		Control Primer 2 (34-mer)	None known.
		pWS4.5 Control Template	None known.
		dNTP Mix	None known.

## SECTION 3: Composition/information on ingredients

<b>3.1 Substances</b>	:	XL1-Blue supercompetent cells	Mixture
		pUC 18 DNA Control Plasmid	Mixture
		PfuTurbo DNA Polymerase	Mixture
		10X Reaction Buffer	Mixture
		Dpn I	Mixture
		Control Primer 1 (34-mer)	Mixture
		Control Primer 2 (34-mer)	Mixture
		pWS4.5 Control Template	Mixture
		dNTP Mix	Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type

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**SECTION 3: Composition/information on ingredients**

<b>XL1-Blue supercompetent cells</b> Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sucrose	REACH #: Annex IV EC: 200-334-9 CAS: 57-50-1	≤10	Not classified.	[2]
<b>PfuTurbo DNA Polymerase</b> Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
Poly(oxy-1,2-ethanediyl), .alpha.-[ (1,1,3,3-tetramethylbutyl)phenyl]- omega.-hydroxy-	CAS: 9036-19-5	≤0.3	Skin Irrit. 2, H315 Eye Dam. 1, H318 Aquatic Chronic 2, H411	[1] [5]
<b>10X Reaction Buffer</b> 2-Amino-2-(hydroxymethyl) propane-1,3-diol hydrochloride	EC: 214-684-5 CAS: 1185-53-1	≤5	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335	[1]
Polyoxyethylene octyl phenyl ether	CAS: 9002-93-1	≤2.3	Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 Aquatic Chronic 2, H411	[1] [5]
<b>Dpn I</b> Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤3	Eye Irrit. 2, H319	[1]
<b>See Section 16 for the full text of the H statements declared above.</b>				

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.

Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

[5] Substance of equivalent concern

[6] Additional disclosure due to company policy

**SECTION 4: First aid measures**

**4.1 Description of first aid measures**

<b>Eye contact</b>	: XL1-Blue supercompetent cells	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.
	pUC 18 DNA Control Plasmid	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.
	PfuTurbo DNA Polymerase	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.
	10X Reaction 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.

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**Inhalation**

Dpn I	Get medical attention. 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.
Control Primer 1 (34-mer)	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.
Control Primer 2 (34-mer)	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.
pWS4.5 Control Template	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.
dNTP 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.
: XL1-Blue supercompetent cells	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
pUC 18 DNA Control Plasmid	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
PfuTurbo DNA Polymerase	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
10X Reaction Buffer	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. 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	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Control Primer 1 (34-mer)	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Control Primer 2 (34-mer)	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
pWS4.5 Control Template	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
dNTP Mix	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.



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<b>Skin contact</b>	: XL1-Blue supercompetent cells	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	pUC 18 DNA Control Plasmid	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	PfuTurbo DNA Polymerase	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10X Reaction Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	Dpn I	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Control Primer 1 (34-mer)	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Control Primer 2 (34-mer)	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	pWS4.5 Control Template	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	dNTP Mix	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	<b>Ingestion</b>	: XL1-Blue supercompetent cells
pUC 18 DNA Control Plasmid		Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
PfuTurbo DNA Polymerase		Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
10X Reaction Buffer		Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Dpn I		Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If



## SECTION 4: First aid measures

	Control Primer 1 (34-mer)	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. Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
	Control Primer 2 (34-mer)	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
	pWS4.5 Control Template	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
	dNTP Mix	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
<b>Protection of first-aiders</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer	No action shall be taken involving any personal risk or without suitable training.
	Dpn I	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 (34-mer)	No action shall be taken involving any personal risk or without suitable training.
	Control Primer 2 (34-mer)	No action shall be taken involving any personal risk or without suitable training.
	pWS4.5 Control Template	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.

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

#### Potential acute health effects

<b>Eye contact</b>	: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
	PfuTurbo DNA Polymerase	No known significant effects or critical hazards.
	10X Reaction Buffer	Causes serious eye irritation.
	Dpn I	No known significant effects or critical hazards.
	Control Primer 1 (34-mer)	No known significant effects or critical hazards.
	Control Primer 2	No known significant effects or critical hazards.

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	(34-mer)	
	pWS4.5 Control Template	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
<b>Inhalation</b>	: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	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	No known significant effects or critical hazards.
	Control Primer 1 (34-mer)	No known significant effects or critical hazards.
	Control Primer 2 (34-mer)	No known significant effects or critical hazards.
	pWS4.5 Control Template	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
<b>Skin contact</b>	: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	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	No known significant effects or critical hazards.
	Control Primer 1 (34-mer)	No known significant effects or critical hazards.
	Control Primer 2 (34-mer)	No known significant effects or critical hazards.
	pWS4.5 Control Template	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
<b>Ingestion</b>	: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	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	No known significant effects or critical hazards.
	Control Primer 1 (34-mer)	No known significant effects or critical hazards.
	Control Primer 2 (34-mer)	No known significant effects or critical hazards.
	pWS4.5 Control Template	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.

### Over-exposure signs/symptoms

<b>Eye contact</b>	: XL1-Blue supercompetent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	PfuTurbo DNA Polymerase	No specific data.
	10X Reaction Buffer	Adverse symptoms may include the following: pain or irritation watering redness
	Dpn I	No specific data.

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	Control Primer 1 (34-mer)	No specific data.
	Control Primer 2 (34-mer)	No specific data.
	pWS4.5 Control Template	No specific data.
	dNTP Mix	No specific data.
<b>Inhalation</b>	: XL1-Blue supercompetent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	PfuTurbo DNA Polymerase	No specific data.
	10X Reaction Buffer	No specific data.
	Dpn I	No specific data.
	Control Primer 1 (34-mer)	No specific data.
	Control Primer 2 (34-mer)	No specific data.
	pWS4.5 Control Template	No specific data.
	dNTP Mix	No specific data.
<b>Skin contact</b>	: XL1-Blue supercompetent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	PfuTurbo DNA Polymerase	No specific data.
	10X Reaction Buffer	No specific data.
	Dpn I	No specific data.
	Control Primer 1 (34-mer)	No specific data.
	Control Primer 2 (34-mer)	No specific data.
	pWS4.5 Control Template	No specific data.
	dNTP Mix	No specific data.
<b>Ingestion</b>	: XL1-Blue supercompetent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	PfuTurbo DNA Polymerase	No specific data.
	10X Reaction Buffer	No specific data.
	Dpn I	No specific data.
	Control Primer 1 (34-mer)	No specific data.
	Control Primer 2 (34-mer)	No specific data.
	pWS4.5 Control Template	No specific data.
	dNTP Mix	No specific data.

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

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<b>Notes to physician</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer  Dpn I  Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP Mix	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. 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. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. 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>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP Mix	No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment.

**SECTION 5: Firefighting measures**

**5.1 Extinguishing media**

<b>Suitable extinguishing media</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template 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.
<b>Unsuitable extinguishing media</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I	None known. None known. None known. None known. None known.

## SECTION 5: Firefighting measures

Control Primer 1 (34-mer)	None known.
Control Primer 2 (34-mer)	None known.
pWS4.5 Control Template	None known.
dNTP Mix	None known.

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

#### Hazards from the substance or mixture

: XL1-Blue supercompetent cells	In a fire or if heated, a pressure increase will occur and the container may burst.
pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
PfuTurbo DNA Polymerase	In a fire or if heated, a pressure increase will occur and the container may burst.
10X Reaction Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
Dpn I	In a fire or if heated, a pressure increase will occur and the container may burst.
Control Primer 1 (34-mer)	In a fire or if heated, a pressure increase will occur and the container may burst.
Control Primer 2 (34-mer)	In a fire or if heated, a pressure increase will occur and the container may burst.
pWS4.5 Control Template	In a fire or if heated, a pressure increase will occur and the container may burst.
dNTP Mix	In a fire or if heated, a pressure increase will occur and the container may burst.

#### Hazardous combustion products

: XL1-Blue supercompetent cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
pUC 18 DNA Control Plasmid	No specific data.
PfuTurbo DNA Polymerase	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	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
Control Primer 1 (34-mer)	No specific data.
Control Primer 2 (34-mer)	No specific data.
pWS4.5 Control Template	No specific data.
dNTP Mix	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides

## SECTION 5: Firefighting measures

phosphorus oxides

### 5.3 Advice for firefighters

<b>Special precautions for fire-fighters</b>	: XL1-Blue supercompetent cells	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.
	pUC 18 DNA Control Plasmid	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.
	PfuTurbo DNA Polymerase	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	10X Reaction 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.
	Dpn I	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.
	Control Primer 1 (34-mer)	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.
	Control Primer 2 (34-mer)	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.
	pWS4.5 Control Template	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.
	dNTP 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>	: XL1-Blue supercompetent cells	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.
	pUC 18 DNA Control Plasmid	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.
	PfuTurbo DNA Polymerase	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. 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.
	10X Reaction 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.
	Dpn I	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.
	Control Primer 1	Fire-fighters should wear appropriate protective equipment



## SECTION 5: Firefighting measures

(34-mer)	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.
Control Primer 2 (34-mer)	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.
pWS4.5 Control Template	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.
dNTP 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>	: 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 spilt material. Put on appropriate personal protective equipment.
	pUC 18 DNA 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 spilt material. Put on appropriate personal protective equipment.
	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 through spilt material. Put on appropriate personal protective equipment.
	10X Reaction 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.
	Dpn I	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.
	Control Primer 1 (34-mer)	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.
	Control Primer 2 (34-mer)	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering.



**SECTION 6: Accidental release measures**

		Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	pWS4.5 Control Template	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.
	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 spilt material. Put on appropriate personal protective equipment.
<b>For emergency responders</b>	: XL1-Blue supercompetent cells	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".
	pUC 18 DNA Control Plasmid	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".
	PfuTurbo DNA Polymerase	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	10X Reaction 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".
	Dpn I	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".
	Control Primer 1 (34-mer)	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".
	Control Primer 2 (34-mer)	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".
	pWS4.5 Control Template	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".
	dNTP 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".
<b>6.2 Environmental precautions</b>	: XL1-Blue supercompetent cells	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).
	pUC 18 DNA Control Plasmid	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).
	PfuTurbo DNA Polymerase	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

## SECTION 6: Accidental release measures

10X Reaction 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).
Dpn I	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).
Control Primer 1 (34-mer)	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).
Control Primer 2 (34-mer)	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).
pWS4.5 Control Template	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).
dNTP 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).

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

<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.
pUC 18 DNA 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.
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	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 (34-mer)	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 2 (34-mer)	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.

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pWS4.5 Control Template	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.

**6.4 Reference to other sections** : 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.

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling**

<b>Protective measures</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer	Put on appropriate personal protective equipment (see Section 8). Put on appropriate personal protective equipment (see Section 8). Put on appropriate personal protective equipment (see Section 8). Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	Dpn I	Put on appropriate personal protective equipment (see Section 8).
	Control Primer 1 (34-mer)	Put on appropriate personal protective equipment (see Section 8).
	Control Primer 2 (34-mer)	Put on appropriate personal protective equipment (see Section 8).
	pWS4.5 Control Template	Put on appropriate personal protective equipment (see Section 8).
	dNTP Mix	Put on appropriate personal protective equipment (see Section 8).
<b>Advice on general occupational hygiene</b>	: XL1-Blue supercompetent cells	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.
	pUC 18 DNA Control Plasmid	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.
	PfuTurbo DNA Polymerase	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	10X Reaction Buffer	Eating, drinking and smoking should be prohibited in areas

## SECTION 7: Handling and storage

Dpn I	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. 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.
Control Primer 1 (34-mer)	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.
Control Primer 2 (34-mer)	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.
pWS4.5 Control Template	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.
dNTP 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.

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

#### 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
pUC 18 DNA 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
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

## SECTION 7: Handling and storage

	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.
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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
Dpn I	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.
Control Primer 1 (34-mer)	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.
Control Primer 2 (34-mer)	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.
pWS4.5 Control Template	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.
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



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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.

**7.3 Specific end use(s)**

<b>Recommendations</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP Mix	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
<b>Industrial sector specific solutions</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP Mix	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.

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

**8.1 Control parameters**

Occupational exposure limits

Product/ingredient name	Exposure limit values
<b>XL1-Blue supercompetent cells</b> Glycerol  Sucrose	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Mist <b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> STEL: 20 mg/m <sup>3</sup> 15 minutes. TWA: 10 mg/m <sup>3</sup> 8 hours.
<b>PfuTurbo DNA Polymerase</b> Glycerol	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Mist
<b>Dpn I</b> Glycerol	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Mist

## SECTION 8: Exposure controls/personal protection

**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. 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

No DNELs/DMELs available.

### PNECs

No PNECs available

## 8.2 Exposure controls

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

### 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.

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

### Skin protection

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

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

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

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

**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.



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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state</b>	:	XL1-Blue	Liquid.
		supercompetent cells	
		pUC 18 DNA Control	Liquid.
		Plasmid	
		PfuTurbo DNA	Liquid.
		Polymerase	
		10X Reaction Buffer	Liquid.
		Dpn I	Liquid.
		Control Primer 1 (34-mer)	Liquid.
		Control Primer 2 (34-mer)	Liquid.
		pWS4.5 Control	Liquid.
		Template	
		dNTP Mix	Liquid.
<b>Colour</b>	:	XL1-Blue	Not available.
		supercompetent cells	
		pUC 18 DNA Control	Not available.
		Plasmid	
		PfuTurbo DNA	Not available.
		Polymerase	
		10X Reaction Buffer	Not available.
		Dpn I	Not available.
		Control Primer 1 (34-mer)	Not available.
		Control Primer 2 (34-mer)	Not available.
		pWS4.5 Control	Not available.
		Template	
		dNTP Mix	Not available.
<b>Odour</b>	:	XL1-Blue	Not available.
		supercompetent cells	
		pUC 18 DNA Control	Not available.
		Plasmid	
		PfuTurbo DNA	Not available.
		Polymerase	
		10X Reaction Buffer	Not available.
		Dpn I	Not available.
		Control Primer 1 (34-mer)	Not available.
		Control Primer 2 (34-mer)	Not available.
		pWS4.5 Control	Not available.
		Template	
		dNTP Mix	Not available.
<b>Odour threshold</b>	:	XL1-Blue	Not available.
		supercompetent cells	
		pUC 18 DNA Control	Not available.
		Plasmid	
		PfuTurbo DNA	Not available.
		Polymerase	
		10X Reaction Buffer	Not available.
		Dpn I	Not available.
		Control Primer 1 (34-mer)	Not available.
		Control Primer 2 (34-mer)	Not available.
		pWS4.5 Control	Not available.
		Template	
		dNTP Mix	Not available.

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	Template	
	dNTP Mix	Not available.
<b>pH</b>	: XL1-Blue	6.4
	supercompetent cells	
	pUC 18 DNA Control	7.5
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	8.8
	Dpn I	Not available.
	Control Primer 1	7.5
	(34-mer)	
	Control Primer 2	7.5
	(34-mer)	
	pWS4.5 Control	7.5
	Template	
	dNTP Mix	7.5
<b>Melting point/freezing point</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	0°C
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	0°C
	(34-mer)	
	Control Primer 2	0°C
	(34-mer)	
	pWS4.5 Control	0°C
	Template	
	dNTP Mix	Not available.
<b>Initial boiling point and boiling range</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	100°C
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	100°C
	(34-mer)	
	Control Primer 2	100°C
	(34-mer)	
	pWS4.5 Control	100°C
	Template	
	dNTP Mix	Not available.
<b>Flash point</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	Not available.
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	Not available.
	(34-mer)	
	Control Primer 2	Not available.
	(34-mer)	
	pWS4.5 Control	Not available.
	Template	

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	dNTP Mix	Not available.
<b>Evaporation rate</b>	: XL1-Blue supercompetent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1 (34-mer)	Not available.
	Control Primer 2 (34-mer)	Not available.
	pWS4.5 Control Template	Not available.
	dNTP Mix	Not available.
<b>Flammability (solid, gas)</b>	: XL1-Blue supercompetent cells	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
	PfuTurbo DNA Polymerase	Not applicable.
	10X Reaction Buffer	Not applicable.
	Dpn I	Not applicable.
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	Not applicable.
	pWS4.5 Control Template	Not applicable.
	dNTP Mix	Not applicable.
<b>Upper/lower flammability or explosive limits</b>	: XL1-Blue supercompetent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1 (34-mer)	Not available.
	Control Primer 2 (34-mer)	Not available.
	pWS4.5 Control Template	Not available.
	dNTP Mix	Not available.
<b>Vapour pressure</b>	: XL1-Blue supercompetent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1 (34-mer)	Not available.
	Control Primer 2 (34-mer)	Not available.
	pWS4.5 Control Template	Not available.
	dNTP Mix	Not available.

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## SECTION 9: Physical and chemical properties

<b>Vapour density</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	Not available.
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	Not available.
	(34-mer)	
	Control Primer 2	Not available.
	(34-mer)	
	pWS4.5 Control	Not available.
Template		
dNTP Mix	Not available.	
<b>Relative density</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	Not available.
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	Not available.
	(34-mer)	
	Control Primer 2	Not available.
	(34-mer)	
	pWS4.5 Control	Not available.
Template		
dNTP Mix	Not available.	
<b>Solubility(ies)</b>	: XL1-Blue	Soluble in the following materials: cold water and hot water.
	supercompetent cells	
	pUC 18 DNA Control	Easily soluble in the following materials: cold water and hot water.
	Plasmid	
	PfuTurbo DNA	Soluble in the following materials: cold water and hot water.
	Polymerase	
	10X Reaction Buffer	Easily soluble in the following materials: cold water and hot water.
	Dpn I	Soluble in the following materials: cold water and hot water.
	Control Primer 1	Easily soluble in the following materials: cold water and hot water.
	(34-mer)	
	Control Primer 2	Easily soluble in the following materials: cold water and hot water.
	(34-mer)	
	pWS4.5 Control	Easily soluble in the following materials: cold water and hot water.
Template		
dNTP Mix	Easily soluble in the following materials: cold water and hot water.	
<b>Partition coefficient: n-octanol/water</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	Not available.
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	Not available.
	(34-mer)	
	Control Primer 2	Not available.
	(34-mer)	

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**SECTION 9: Physical and chemical properties**

	pWS4.5 Control	Not available.
	Template	
	dNTP Mix	Not available.
<b>Auto-ignition temperature</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	Not available.
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	Not available.
	(34-mer)	
	Control Primer 2	Not available.
	(34-mer)	
	pWS4.5 Control	Not available.
	Template	
	dNTP Mix	Not available.
<b>Decomposition temperature</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	Not available.
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	Not available.
	(34-mer)	
	Control Primer 2	Not available.
	(34-mer)	
	pWS4.5 Control	Not available.
	Template	
	dNTP Mix	Not available.
<b>Viscosity</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	Not available.
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	Not available.
	(34-mer)	
	Control Primer 2	Not available.
	(34-mer)	
	pWS4.5 Control	Not available.
	Template	
	dNTP Mix	Not available.
<b>Explosive properties</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	Not available.
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	Not available.
	(34-mer)	
	Control Primer 2	Not available.
	(34-mer)	
	pWS4.5 Control	Not available.

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**SECTION 9: Physical and chemical properties**

	Template	
	dNTP Mix	Not available.
<b>Oxidising properties</b>	: XL1-Blue	Not available.
	supercompetent cells	
	pUC 18 DNA Control	Not available.
	Plasmid	
	PfuTurbo DNA	Not available.
	Polymerase	
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1	Not available.
	(34-mer)	
	Control Primer 2	Not available.
	(34-mer)	
	pWS4.5 Control	Not available.
	Template	
	dNTP Mix	Not available.

**9.2 Other information**

No additional information.

**SECTION 10: Stability and reactivity**

<b>10.1 Reactivity</b>	: XL1-Blue	No specific test data related to reactivity available for this product or its ingredients.
	supercompetent cells	
	pUC 18 DNA Control	No specific test data related to reactivity available for this product or its ingredients.
	Plasmid	
	PfuTurbo DNA	No specific test data related to reactivity available for this product or its ingredients.
	Polymerase	
	10X Reaction Buffer	No specific test data related to reactivity available for this product or its ingredients.
	Dpn I	No specific test data related to reactivity available for this product or its ingredients.
	Control Primer 1	No specific test data related to reactivity available for this product or its ingredients.
	(34-mer)	
	Control Primer 2	No specific test data related to reactivity available for this product or its ingredients.
	(34-mer)	
	pWS4.5 Control	No specific test data related to reactivity available for this product or its ingredients.
	Template	
	dNTP Mix	No specific test data related to reactivity available for this product or its ingredients.

<b>10.2 Chemical stability</b>	: XL1-Blue	The product is stable.
	supercompetent cells	
	pUC 18 DNA Control	The product is stable.
	Plasmid	
	PfuTurbo DNA	The product is stable.
	Polymerase	
	10X Reaction Buffer	The product is stable.
	Dpn I	The product is stable.
	Control Primer 1	The product is stable.
	(34-mer)	
	Control Primer 2	The product is stable.
	(34-mer)	
	pWS4.5 Control	The product is stable.
	Template	
	dNTP Mix	The product is stable.

## SECTION 10: Stability and reactivity

<b>10.3 Possibility of hazardous reactions</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC 18 DNA Control Plasmid</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li> <li>Dpn I</li> <li>Control Primer 1 (34-mer)</li> <li>Control Primer 2 (34-mer)</li> <li>pWS4.5 Control Template</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>
<b>10.4 Conditions to avoid</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC 18 DNA Control Plasmid</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li> <li>Dpn I</li> <li>Control Primer 1 (34-mer)</li> <li>Control Primer 2 (34-mer)</li> <li>pWS4.5 Control Template</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>10.5 Incompatible materials</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC 18 DNA Control Plasmid</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li> <li>Dpn I</li> <li>Control Primer 1 (34-mer)</li> <li>Control Primer 2 (34-mer)</li> <li>pWS4.5 Control Template</li> <li>dNTP Mix</li> </ul>	<ul style="list-style-type: none"> <li>May react or be incompatible with oxidising materials.</li> <li>May react or be incompatible with oxidising materials.</li> <li>May react or be incompatible with oxidising materials.</li> <li>May react or be incompatible with oxidising materials.</li> <li>May react or be incompatible with oxidising materials.</li> <li>May react or be incompatible with oxidising materials.</li> <li>May react or be incompatible with oxidising materials.</li> <li>May react or be incompatible with oxidising materials.</li> <li>May react or be incompatible with oxidising materials.</li> </ul>
<b>10.6 Hazardous decomposition products</b>	<ul style="list-style-type: none"> <li>: XL1-Blue supercompetent cells</li> <li>pUC 18 DNA Control Plasmid</li> <li>PfuTurbo DNA Polymerase</li> <li>10X Reaction Buffer</li> <li>Dpn I</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> </ul>



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**SECTION 10: Stability and reactivity**

Control Primer 1 (34-mer)	decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Control Primer 2 (34-mer)	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
pWS4.5 Control Template	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
dNTP 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>PfuTurbo DNA Polymerase</b> Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3, 3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	LD50 Oral	Rat	2800 mg/kg	-
<b>10X Reaction Buffer</b> Polyoxyethylene octyl phenyl ether	LD50 Oral	Rat	1800 mg/kg	-
<b>Dpn I</b> Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-

Acute toxicity estimates

Route	ATE value
<b>XL1-Blue supercompetent cells</b> Oral	31250 mg/kg
<b>10X Reaction Buffer</b> Oral	180000 mg/kg

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>PfuTurbo DNA Polymerase</b> Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3, 3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	Eyes - Severe irritant	Rabbit	-	1%	-
<b>10X Reaction Buffer</b> Polyoxyethylene octyl phenyl ether	Eyes - Moderate irritant	Rabbit	-	24 hours 10 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 microliters	-
<b>Dpn I</b> Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

Sensitiser

**Conclusion/Summary** : Not available.

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## SECTION 11: Toxicological information

### Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
<b>10X Reaction Buffer</b> 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	Category 3	Not applicable.	Respiratory tract irritation

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

### Information on likely routes of exposure

: XL1-Blue supercompetent cells	Routes of entry anticipated: Oral, Dermal, Inhalation.
pUC 18 DNA Control Plasmid	Not available.
PfuTurbo DNA Polymerase	Routes of entry anticipated: Oral, Dermal, Inhalation.
10X Reaction Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation.
Dpn I	Routes of entry anticipated: Oral, Dermal, Inhalation.
Control Primer 1 (34-mer)	Not available.
Control Primer 2 (34-mer)	Not available.
pWS4.5 Control Template	Not available.
dNTP Mix	Not available.

### Potential acute health effects

#### Inhalation

: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid	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	No known significant effects or critical hazards.
Control Primer 1 (34-mer)	No known significant effects or critical hazards.
Control Primer 2 (34-mer)	No known significant effects or critical hazards.
pWS4.5 Control Template	No known significant effects or critical hazards.
dNTP Mix	No known significant effects or critical hazards.

#### Ingestion

: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid	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	No known significant effects or critical hazards.
Control Primer 1 (34-mer)	No known significant effects or critical hazards.
Control Primer 2 (34-mer)	No known significant effects or critical hazards.
pWS4.5 Control Template	No known significant effects or critical hazards.
dNTP Mix	No known significant effects or critical hazards.

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**SECTION 11: Toxicological information**

<b>Skin contact</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP 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. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Eye contact</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP 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. Causes serious eye irritation. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

**Symptoms related to the physical, chemical and toxicological characteristics**

<b>Inhalation</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP Mix	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
<b>Ingestion</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP Mix	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.

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**SECTION 11: Toxicological information**

<b>Skin contact</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP Mix	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
<b>Eye contact</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer  Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template dNTP Mix	No specific data. No specific data. No specific data. No specific data. Adverse symptoms may include the following: pain or irritation watering redness No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.

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

**Short term exposure**

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

**Long term exposure**

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

**Potential chronic health effects**

<b>General</b>	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
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## SECTION 11: Toxicological information

<b>Carcinogenicity</b>	Template	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
	: XL1-Blue	No known significant effects or critical hazards.
	supercompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control	No known significant effects or critical hazards.
	Plasmid	No known significant effects or critical hazards.
	PfuTurbo DNA	No known significant effects or critical hazards.
	Polymerase	No known significant effects or critical hazards.
	10X Reaction Buffer	No known significant effects or critical hazards.
	Dpn I	No known significant effects or critical hazards.
<b>Mutagenicity</b>	Control Primer 1 (34-mer)	No known significant effects or critical hazards.
	Control Primer 2 (34-mer)	No known significant effects or critical hazards.
	pWS4.5 Control	No known significant effects or critical hazards.
	Template	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
	: XL1-Blue	No known significant effects or critical hazards.
	supercompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control	No known significant effects or critical hazards.
	Plasmid	No known significant effects or critical hazards.
	PfuTurbo DNA	No known significant effects or critical hazards.
<b>Teratogenicity</b>	Polymerase	No known significant effects or critical hazards.
	10X Reaction Buffer	No known significant effects or critical hazards.
	Dpn I	No known significant effects or critical hazards.
	Control Primer 1 (34-mer)	No known significant effects or critical hazards.
	Control Primer 2 (34-mer)	No known significant effects or critical hazards.
	pWS4.5 Control	No known significant effects or critical hazards.
	Template	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
	: XL1-Blue	No known significant effects or critical hazards.
	supercompetent cells	No known significant effects or critical hazards.
<b>Developmental effects</b>	pUC 18 DNA Control	No known significant effects or critical hazards.
	Plasmid	No known significant effects or critical hazards.
	PfuTurbo DNA	No known significant effects or critical hazards.
	Polymerase	No known significant effects or critical hazards.
	10X Reaction Buffer	No known significant effects or critical hazards.
	Dpn I	No known significant effects or critical hazards.
	Control Primer 1 (34-mer)	No known significant effects or critical hazards.
	Control Primer 2 (34-mer)	No known significant effects or critical hazards.
	pWS4.5 Control	No known significant effects or critical hazards.
	Template	No known significant effects or critical hazards.

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**SECTION 11: Toxicological information**

<b>Fertility effects</b>	dNTP Mix	No known significant effects or critical hazards.
	: XL1-Blue supercompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	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	No known significant effects or critical hazards.
	Control Primer 1 (34-mer)	No known significant effects or critical hazards.
	Control Primer 2 (34-mer)	No known significant effects or critical hazards.
	pWS4.5 Control Template	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.

**SECTION 12: Ecological information**

**12.1 Toxicity**

Product/ingredient name	Result	Species	Exposure
<b>PfuTurbo DNA Polymerase</b> Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	Acute EC50 210 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute LC50 10800 µg/l Marine water	Crustaceans - Pandalus montagui - Adult	48 hours
	Acute LC50 8600 to 9800 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 7200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
<b>10X Reaction Buffer</b> Polyoxyethylene octyl phenyl ether	Acute LC50 5.85 mg/l Fresh water	Crustaceans - Ceriodaphnia rigaudi - Neonate	48 hours
	Acute LC50 11.2 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 4500 µg/l Fresh water	Fish - Pimephales promelas	96 hours
<b>Dpn I</b> Sodium chloride	Acute EC50 4.74 g/L Fresh water	Algae - Chlamydomonas reinhardtii	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute LC50 1.56 g/L Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - Morone saxatilis - Larvae	96 hours
	Chronic LC10 781 mg/l Fresh water	Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water	Aquatic plants - Lemna minor	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	

**12.2 Persistence and degradability**

Not available.

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**SECTION 12: Ecological information**

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
<b>10X Reaction Buffer</b> Polyoxyethylene octyl phenyl ether	-	-	Readily

**12.3 Bioaccumulative potential**

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>PfuTurbo DNA Polymerase</b> Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3, 3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	3.77	78.67	low
<b>10X Reaction Buffer</b> Polyoxyethylene octyl phenyl ether	4.86	-	high

**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**

**PBT** : Not applicable.

**vPvB** : Not applicable.

**12.6 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.

**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.



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## SECTION 14: Transport information

ADR/RID / IMDG / IATA : Not regulated.

**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.

**14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** : 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

Ingredient name	Intrinsic property	Status	Reference number	Date of revision
<b>PfuTurbo DNA Polymerase</b> Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	Substance of equivalent concern for environment	Recommended	ED/169/2012	2/10/2014
<b>10X Reaction Buffer</b> Polyoxyethylene octyl phenyl ether	Substance of equivalent concern for environment	Recommended	ED/169/2012	2/10/2014

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** : XL1-Blue supercompetent cells Not applicable.  
pUC 18 DNA Control Plasmid Not applicable.  
PfuTurbo DNA Polymerase Not applicable.  
10X Reaction Buffer Not applicable.  
Dpn I Not applicable.  
Control Primer 1 (34-mer) Not applicable.  
Control Primer 2 (34-mer) Not applicable.  
pWS4.5 Control Template Not applicable.  
dNTP Mix Not applicable.

Other EU regulations

Ozone depleting substances (1005/2009/EU)

Not listed.

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

Not listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

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## SECTION 15: Regulatory information

### Stockholm Convention on Persistent Organic Pollutants

Not listed.

### Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

### Inventory list

<b>Australia</b>	: Not determined.
<b>Canada</b>	: All components are listed or exempted.
<b>China</b>	: Not determined.
<b>Europe</b>	: All components are listed or exempted.
<b>Japan</b>	: <b>Japan inventory (ENCS)</b> : Not determined. <b>Japan inventory (ISHL)</b> : Not determined.
<b>Malaysia</b>	: Not determined.
<b>New Zealand</b>	: Not determined.
<b>Philippines</b>	: Not determined.
<b>Republic of Korea</b>	: Not determined.
<b>Taiwan</b>	: All components are listed or exempted.
<b>Thailand</b>	: Not determined.
<b>Turkey</b>	: Not determined.
<b>United States</b>	: All components are listed or exempted.
<b>Viet Nam</b>	: 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]  
DNEL = Derived No Effect Level  
EUH statement = CLP-specific Hazard statement  
PNEC = Predicted No Effect Concentration  
RRN = REACH Registration Number

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

Classification	Justification
<b>10X Reaction Buffer</b> Eye Irrit. 2, H319	Calculation method

### Full text of abbreviated H statements

<b>PfuTurbo DNA Polymerase</b> H315 H318 H411	Causes skin irritation. Causes serious eye damage. Toxic to aquatic life with long lasting effects.
<b>10X Reaction Buffer</b> H302 H315 H318 H319	Harmful if swallowed. Causes skin irritation. Causes serious eye damage. Causes serious eye irritation.

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H335 H411	May cause respiratory irritation. Toxic to aquatic life with long lasting effects.
<b>Dpn I</b> H319	Causes serious eye irritation.

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

<p><b>PfuTurbo DNA Polymerase</b> Aquatic Chronic 2, H411 Eye Dam. 1, H318 Skin Irrit. 2, H315</p> <p><b>10X Reaction Buffer</b> Acute Tox. 4, H302 Aquatic Chronic 2, H411 Eye Dam. 1, H318 Eye Irrit. 2, H319 Skin Irrit. 2, H315 STOT SE 3, H335</p> <p><b>Dpn I</b> Eye Irrit. 2, H319</p>	<p>LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SKIN CORROSION/IRRITATION - Category 2</p> <p>ACUTE TOXICITY (oral) - Category 4 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 SKIN CORROSION/IRRITATION - Category 2 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3</p> <p>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2</p>
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**Date of issue/ Date of revision** : 21/06/2017

**Date of previous issue** : No previous validation.

**Version** : 1

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