

SAFETY DATA SHEET



QuikChange Site-Directed Mutagenesis Kit, Part Number 200519

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

1.1 Product identifier

Product name	: QuikChange Site-Directed Mutagenesis Kit, Part Number 200519	
Part No. (Kit)	: 200519	
Part No.	: XL1-Blue	200236-41
	supercompetent cells	
	pUC 18 DNA Control	200231-42
	Plasmid	
	PfuTurbo DNA	200519-51
	Polymerase	
	10X Reaction Buffer	200518-58
	Dpn I	200519-53
	Control Primer 1	200518-53
	(34-mer)	
	Control Primer 2	200518-54
	(34-mer)	
	pWS4.5 Control	200518-55
	Template	
	dNTP Mix	200519-52

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	0.01 mL (0.1 ng/μl)
PfuTurbo DNA Polymerase	0.01 mL (25 U 2.5 U/μl)
10X Reaction Buffer	0.5 mL
Dpn I	0.01 mL (100 U 10 U/μl)
Control Primer 1 (34-mer)	0.0075 mL (750 ng 100 ng/μl)
Control Primer 2 (34-mer)	0.0075 mL (750 ng 100 ng/μl)
pWS4.5 Control Template	0.01 mL (50 ng 5 ng/μl)
dNTP Mix	0.01 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

Product definition	: 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

Ingredients of unknown toxicity	: 10X Reaction Buffer	Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 3.2%
	dNTP Mix	Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 5.7%
Ingredients of unknown ecotoxicity	: 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 :



Signal word	: XL1-Blue supercompetent cells	No signal word.
	pUC 18 DNA Control Plasmid	No signal word.
	PfuTurbo DNA Polymerase	No signal word.
	10X Reaction Buffer	Warning
	Dpn I	No signal word.
	Control Primer 1 (34-mer)	No signal word.
	Control Primer 2 (34-mer)	No signal word.
	pWS4.5 Control Template	No signal word.
	dNTP Mix	No signal word.

Hazard statements	: 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	GHS07 - Causes serious eye irritation.

SECTION 2: Hazards identification

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.

Precautionary statements

Prevention

: XL1-Blue supercompetent cells	Not applicable.
pUC 18 DNA Control Plasmid	Not applicable.
PfuTurbo DNA Polymerase	Not applicable.
10X Reaction Buffer	P280 - Wear eye or face protection. P264 - Wash hands thoroughly after handling.

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.

Response

: XL1-Blue supercompetent cells	Not applicable.
pUC 18 DNA Control Plasmid	Not applicable.
PfuTurbo DNA Polymerase	Not applicable.
10X Reaction Buffer	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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.

Storage

: 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.

SECTION 2: Hazards identification

Disposal	: 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.
Hazardous ingredients	: 10X Reaction Buffer Dpn I	Not applicable. Not applicable.
Supplemental label elements	: 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. Safety data sheet available on request. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: 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. Not applicable. Not applicable.
<u>Special packaging requirements</u>		
Tactile warning of danger	: 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. Not applicable. Not applicable.

SECTION 2: Hazards identification

2.3 Other hazards

Other hazards which do not result in classification	: 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	None known. None known. None known. None known. None known. None known. None known. None known. None known.
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SECTION 3: Composition/information on ingredients

3.2 Mixtures	: 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	Mixture Mixture Mixture Mixture Mixture Mixture Mixture Mixture Mixture
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Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
XL1-Blue supercompetent cells Glycerol	EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sucrose	EC: 200-334-9 CAS: 57-50-1	≤10	Not classified.	[2]
PfuTurbo DNA Polymerase Glycerol	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]
10X Reaction Buffer 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]
Dpn I Glycerol	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]
			See Section 16 for the full text of the H statements declared above.	

SECTION 3: Composition/information on ingredients

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

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

SECTION 4: First aid measures**4.1 Description of first aid measures**

Eye contact	:	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. Get medical attention.
		Dpn I	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.
		Inhalation	:
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		

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	Control Primer 1 (34-mer)	comfortable for breathing. Get medical attention if symptoms occur. 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.
Skin contact	: 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.
Ingestion	: XL1-Blue supercompetent cells	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.
	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.

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	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 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 1 (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.
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.
Protection of first-aiders :	
XL1-Blue supercompetent cells	No action shall be taken involving any personal risk or without suitable training.
pUC 18 DNA Control Plasmid	No action shall be taken involving any personal risk or without suitable training.
PfuTurbo DNA Polymerase	No action shall be taken involving any personal risk or without suitable training.
10X Reaction Buffer	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
Dpn I	No action shall be taken involving any personal risk or without suitable training.
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

SECTION 4: First aid measures

Potential acute health effects

Eye contact	:	XL1-Blue	No known significant effects or critical hazards.
		supercompetent cells	
		pUC 18 DNA Control	No known significant effects or critical hazards.
		Plasmid	
		PfuTurbo DNA	No known significant effects or critical hazards.
		Polymerase	
		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 (34-mer)	No known significant effects or critical hazards.
Inhalation	:	XL1-Blue	No known significant effects or critical hazards.
		supercompetent cells	
		pUC 18 DNA Control	No known significant effects or critical hazards.
		Plasmid	
		PfuTurbo DNA	No known significant effects or critical hazards.
		Polymerase	
		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.
Skin contact	:	XL1-Blue	No known significant effects or critical hazards.
		supercompetent cells	
		pUC 18 DNA Control	No known significant effects or critical hazards.
		Plasmid	
		PfuTurbo DNA	No known significant effects or critical hazards.
		Polymerase	
		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.
Ingestion	:	XL1-Blue	No known significant effects or critical hazards.
		supercompetent cells	
		pUC 18 DNA Control	No known significant effects or critical hazards.
		Plasmid	
		PfuTurbo DNA	No known significant effects or critical hazards.
		Polymerase	
		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		
	dNTP Mix	No known significant effects or critical hazards.	

Over-exposure signs/symptoms

SECTION 4: First aid measures

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

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4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	: 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. 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. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Specific treatments	: 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

Suitable extinguishing media	: 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.
Unsuitable extinguishing media	: XL1-Blue supercompetent cells pUC 18 DNA Control Plasmid PfuTurbo DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1	None known. None known. None known. None known. None known. None known.

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(34-mer) Control Primer 2	None known.
(34-mer) 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 phosphorus oxides

5.3 Advice for firefighters

SECTION 5: Firefighting measures

Special precautions for fire-fighters	<p>: XL1-Blue supercompetent cells</p> <p>pUC 18 DNA Control Plasmid</p> <p>PfuTurbo DNA Polymerase</p> <p>10X Reaction Buffer</p> <p>Dpn I</p> <p>Control Primer 1 (34-mer)</p> <p>Control Primer 2 (34-mer)</p> <p>pWS4.5 Control Template</p> <p>dNTP Mix</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
Special protective equipment for fire-fighters	<p>: XL1-Blue supercompetent cells</p> <p>pUC 18 DNA Control Plasmid</p> <p>PfuTurbo DNA Polymerase</p> <p>10X Reaction Buffer</p> <p>Dpn I</p> <p>Control Primer 1 (34-mer)</p> <p>Control Primer 2</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>

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.
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**

For non-emergency personnel	: 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. 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

SECTION 6: Accidental release measures

For emergency responders

: XL1-Blue supercompetent cells

without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

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".

6.2 Environmental precautions

: XL1-Blue supercompetent cells

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

pUC 18 DNA Control Plasmid

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

PfuTurbo DNA Polymerase

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

10X Reaction Buffer

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

Dpn I

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

Control Primer 1 (34-mer)

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant

SECTION 6: Accidental release measures

	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

Methods for cleaning up	:	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.
		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.

SECTION 6: Accidental release measures

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

Protective measures	: 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).
Advice on general occupational hygiene	: 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 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.
	Dpn I	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,

SECTION 7: Handling and storage

Control Primer 2 (34-mer)	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.
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.
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.
PfuTurbo DNA Polymerase	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
10X Reaction Buffer	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
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

SECTION 7: Handling and storage

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

7.3 Specific end use(s)

Recommendations

: XL1-Blue supercompetent cells	Industrial applications, Professional applications.
pUC 18 DNA Control Plasmid	Industrial applications, Professional applications.
PfuTurbo DNA Polymerase	Industrial applications, Professional applications.
10X Reaction Buffer	Industrial applications, Professional applications.
Dpn I	Industrial applications, Professional applications.
Control Primer 1 (34-mer)	Industrial applications, Professional applications.
Control Primer 2 (34-mer)	Industrial applications, Professional applications.
pWS4.5 Control Template	Industrial applications, Professional applications.
dNTP Mix	Industrial applications, Professional applications.

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Industrial sector specific solutions	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.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

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

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

SECTION 8: Exposure controls/personal protection

- 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.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: 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.
Colour	: 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.	

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

SECTION 9: Physical and chemical properties

	Template	
	dNTP Mix	Not available.
Initial boiling point and boiling range	: XL1-Blue supercompetent cells	Not available.
	pUC 18 DNA Control Plasmid	100°C
	PfuTurbo DNA Polymerase	Not available.
	10X Reaction Buffer	Not available.
	Dpn I	Not available.
	Control Primer 1 (34-mer)	100°C
	Control Primer 2 (34-mer)	100°C
	pWS4.5 Control Template	100°C
	dNTP Mix	Not available.
Flash point	: 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.
Evaporation rate	: 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.
Flammability (solid, gas)	: 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.

SECTION 9: Physical and chemical properties

Upper/lower flammability or explosive limits	:	XL1-Blue	Not available.	
		supercompetent cells		
		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.	
	Vapour pressure	:	XL1-Blue	Not available.
			supercompetent cells	
		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.	
Vapour density		:	XL1-Blue	Not available.
			supercompetent cells	
		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.	
	Relative density	:	XL1-Blue	Not available.
			supercompetent cells	
		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.	

SECTION 9: Physical and chemical properties

Solubility(ies)	: 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	Soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: 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 available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
Auto-ignition temperature	: 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 available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
Decomposition temperature	: 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 available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.

SECTION 9: Physical and chemical properties

Viscosity	:	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.
	Explosive properties	:	XL1-Blue
		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.
Oxidising properties		:	XL1-Blue
		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.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	:	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 (34-mer)	No specific test data related to reactivity available for this product or its ingredients.

SECTION 10: Stability and reactivity

Control Primer 2 (34-mer)	No specific test data related to reactivity available for this product or its ingredients.
pWS4.5 Control Template	No specific test data related to reactivity available for this product or its ingredients.
dNTP Mix	No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability :

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

10.3 Possibility of hazardous reactions :

XL1-Blue supercompetent cells	Under normal conditions of storage and use, hazardous reactions will not occur.
pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous reactions will not occur.
PfuTurbo DNA Polymerase	Under normal conditions of storage and use, hazardous reactions will not occur.
10X Reaction Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
Dpn I	Under normal conditions of storage and use, hazardous reactions will not occur.
Control Primer 1 (34-mer)	Under normal conditions of storage and use, hazardous reactions will not occur.
Control Primer 2 (34-mer)	Under normal conditions of storage and use, hazardous reactions will not occur.
pWS4.5 Control Template	Under normal conditions of storage and use, hazardous reactions will not occur.
dNTP Mix	Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid :

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.

SECTION 10: Stability and reactivity

10.5 Incompatible materials	:	XL1-Blue supercompetent cells	May react or be incompatible with oxidising materials.
		pUC 18 DNA Control Plasmid	May react or be incompatible with oxidising materials.
		PfuTurbo DNA Polymerase	May react or be incompatible with oxidising materials.
		10X Reaction Buffer	May react or be incompatible with oxidising materials.
		Dpn I	May react or be incompatible with oxidising materials.
		Control Primer 1 (34-mer)	May react or be incompatible with oxidising materials.
		Control Primer 2 (34-mer)	May react or be incompatible with oxidising materials.
		pWS4.5 Control Template	May react or be incompatible with oxidising materials.
		dNTP Mix	May react or be incompatible with oxidising materials.

10.6 Hazardous decomposition products	:	XL1-Blue supercompetent cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		PfuTurbo DNA Polymerase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		10X Reaction Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		Dpn I	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		Control Primer 1 (34-mer)	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
PfuTurbo DNA Polymerase Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	LD50 Oral	Rat	2800 mg/kg	-
Dpn I Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-

Acute toxicity estimates

Route	ATE value
XL1-Blue supercompetent cells Oral	31250 mg/kg
10X Reaction Buffer Oral	50000 mg/kg

Irritation/Corrosion

SECTION 11: Toxicological information

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

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
10X Reaction Buffer 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	No known significant effects or critical hazards.

SECTION 11: Toxicological information

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

Symptoms related to the physical, chemical and toxicological characteristics

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

SECTION 11: Toxicological information

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

SECTION 11: Toxicological information**Potential chronic health effects**

General	: 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.
Carcinogenicity	: 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. 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.
Mutagenicity	: 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. 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.
Teratogenicity	: 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. 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.

SECTION 11: Toxicological information

Developmental effects	:	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.		
		Fertility effects	:	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
PfuTurbo DNA Polymerase 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
10X Reaction Buffer 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
Dpn I Sodium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	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 1661 mg/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

SECTION 12: Ecological information

	Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	21 days 8 weeks
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12.2 Persistence and degradability

Not available.

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

12.3 Bioaccumulative potential

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

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

Regulatory 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
PfuTurbo DNA Polymerase 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
10X Reaction Buffer 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

Europe inventory : All components are listed or exempted.

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.

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.

International lists

National inventory

Australia	: Not determined.
Canada	: All components are listed or exempted.
China	: Not determined.
Japan	: Japan inventory (ENCS) : Not determined. Japan inventory (ISHL) : Not determined.
Malaysia	: Not determined.
New Zealand	: Not determined.
Philippines	: Not determined.
Republic of Korea	: Not determined.
Taiwan	: All components are listed or exempted.
Turkey	: Not determined.
United States	: All components are listed or exempted.

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
10X Reaction Buffer Eye Irrit. 2, H319	Calculation method

Full text of abbreviated H statements

PfuTurbo DNA Polymerase H315 H318 H411	Causes skin irritation. Causes serious eye damage. Toxic to aquatic life with long lasting effects.
10X Reaction Buffer H302 H315 H318 H319 H335 H411	Harmful if swallowed. Causes skin irritation. Causes serious eye damage. Causes serious eye irritation. May cause respiratory irritation. Toxic to aquatic life with long lasting effects.
Dpn I H319	Causes serious eye irritation.

SECTION 16: Other information

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

<p>PfuTurbo DNA Polymerase Aquatic Chronic 2, H411 Eye Dam. 1, H318 Skin Irrit. 2, H315</p>	<p>LONG-TERM AQUATIC HAZARD - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SKIN CORROSION/IRRITATION - Category 2</p>
<p>10X Reaction Buffer 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>ACUTE TOXICITY (oral) - Category 4 LONG-TERM 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>Dpn I Eye Irrit. 2, H319</p>	<p>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2</p>

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