

SAFETY DATA SHEET



QuikChange II XL Site-Directed Mutagenesis Kit, Part Number 200522

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

1.1 Product identifier

Product name	: QuikChange II XL Site-Directed Mutagenesis Kit, Part Number 200522
Part no. (chemical kit)	: 200522
Part no.	: QuikSolution 200516-51 PfuUltra HF DNA Polymerase 200524-51 10X Reaction Buffer 200518-58 Dpn I 200518-52 Control Primer 1 (34-mer) 200518-53 Control Primer 2 (34-mer) 200518-54 pWS4.5 Control Template 200518-55 QuikChange XL dNTP Mix 200516-52 XL10-Gold Ultracompetent cells 200315-41 XL10-Gold 2-Mercaptoethanol 200314-43 pUC 18 DNA Control Plasmid 200231-42

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

Material uses	: Analytical reagent.
	<input checked="" type="checkbox"/> QuikSolution 0.5 mL PfuUltra HF DNA Polymerase 0.032 mL (80 U 2.5 U/μl) 10X Reaction Buffer 0.5 mL Dpn I 0.03 mL (10 U/μl 300 U) 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) QuikChange XL dNTP Mix 0.03 mL XL10-Gold Ultracompetent cells 1.35 mL (10 x 0.135 mL) XL10-Gold 2-Mercaptoethanol 2 x 0.05 mL pUC 18 DNA Control Plasmid 0.01 mL (0.1 ng/μl)

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	:	QuikSolution	Mono-constituent substance
		PfuUltra HF 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
		QuikChange XL dNTP Mix	Mixture
		XL10-Gold Ultracompetent cells	Mixture
		XL10-Gold 2-Mercaptoethanol	Mixture
		pUC 18 DNA Control Plasmid	Mixture

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

XL10-Gold 2-Mercaptoethanol

H318	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
H317	SKIN SENSITISATION - Category 1
H412	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3

Ingredients of unknown toxicity	:	PfuUltra HF DNA Polymerase	Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 30 - 60%
		10X Reaction Buffer	Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10%
			Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 1 - 10%
		Dpn I	Percentage of the mixture consisting of ingredient(s) of unknown oral toxicity: 1 - 10%
		QuikChange XL dNTP Mix	Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 30 - 60%
			Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10%
			Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 1 - 10%
			Percentage of the mixture consisting of ingredient(s) of unknown oral toxicity: 1 - 10%
		XL10-Gold Ultracompetent cells	Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10%
			Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30%
		XL10-Gold 2-Mercaptoethanol	Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30%
Ingredients of unknown ecotoxicity	:	10X Reaction Buffer	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 3.2%
		QuikChange XL 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

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Hazard pictograms : XL10-Gold
2-Mercaptoethanol



Signal word : QuikSolution No signal word.
PfuUltra HF DNA No signal word.
Polymerase
10X Reaction Buffer No signal word.
Dpn I No signal word.
Control Primer 1 No signal word.
(34-mer)
Control Primer 2 No signal word.
(34-mer)
pWS4.5 Control No signal word.
Template
QuikChange XL dNTP No signal word.
Mix
XL10-Gold No signal word.
Ultracompetent cells
XL10-Gold Danger
2-Mercaptoethanol
pUC 18 DNA Control No signal word.
Plasmid

Hazard statements : QuikSolution No known significant effects or critical hazards.
PfuUltra HF 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
QuikChange XL dNTP No known significant effects or critical hazards.
Mix
XL10-Gold No known significant effects or critical hazards.
Ultracompetent cells
XL10-Gold H318 - Causes serious eye damage.
2-Mercaptoethanol

H317 - May cause an allergic skin reaction.
H412 - Harmful to aquatic life with long lasting effects.
pUC 18 DNA Control No known significant effects or critical hazards.
Plasmid

Precautionary statements

Prevention : QuikSolution Not applicable.
PfuUltra HF DNA Not applicable.
Polymerase
10X Reaction Buffer Not applicable.
Dpn I Not applicable.
Control Primer 1 Not applicable.
(34-mer)
Control Primer 2 Not applicable.
(34-mer)
pWS4.5 Control Not applicable.
Template
QuikChange XL dNTP Not applicable.
Mix
XL10-Gold Not applicable.
Ultracompetent cells

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	XL10-Gold	P280 - Wear protective gloves. Wear eye or face protection.
	2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	P273 - Avoid release to the environment. Not applicable.
Response	: QuikSolution	Not applicable.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
	XL10-Gold 2-Mercaptoethanol	P305 + P351 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Immediately call a POISON CENTER or physician.
	pUC 18 DNA Control Plasmid	Not applicable.
Storage	: QuikSolution	Not applicable.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
	XL10-Gold 2-Mercaptoethanol	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
Disposal	: QuikSolution	Not applicable.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
	XL10-Gold 2-Mercaptoethanol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

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	pUC 18 DNA Control Plasmid	Not applicable.
Hazardous ingredients	: PfuUltra HF DNA Polymerase	Not applicable.
	10X Reaction Buffer	Not applicable.
	Dpn I	Not applicable.
	XL10-Gold - 2-Mercaptoethanol	- 2-Mercaptoethanol
Supplemental label elements	: QuikSolution	Not applicable.
	PfuUltra HF DNA Polymerase	Not applicable.
	10X Reaction Buffer	Safety data sheet available on request.
	Dpn I	Safety data sheet available on request.
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	Not applicable.
	pWS4.5 Control Template	Not applicable.
	QuikChange XL dNTP Mix	Not applicable.
	XL10-Gold	Not applicable.
	Ultracompetent cells	Not applicable.
	XL10-Gold	Not applicable.
	2-Mercaptoethanol	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: QuikSolution	Not applicable.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not applicable.
	XL10-Gold	Not applicable.
	Ultracompetent cells	Not applicable.
	XL10-Gold	Not applicable.
	2-Mercaptoethanol	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
Special packaging requirements		
Tactile warning of danger	: QuikSolution	Not applicable.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not applicable.

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XL10-Gold Ultracompetent cells	Not applicable.
XL10-Gold 2-Mercaptoethanol	Not applicable.
pUC 18 DNA Control Plasmid	Not applicable.

2.3 Other hazards

Other hazards which do not result in classification	QuikSolution	None known.
	PfuUltra HF DNA Polymerase	None known.
	10X Reaction Buffer	None known.
	Dpn I	None known.
	Control Primer 1 (34-mer)	None known.
	Control Primer 2 (34-mer)	None known.
	pWS4.5 Control Template	None known.
	QuikChange XL dNTP Mix	None known.
	XL10-Gold Ultracompetent cells	None known.
	XL10-Gold 2-Mercaptoethanol	None known.
	pUC 18 DNA Control Plasmid	None known.

SECTION 3: Composition/information on ingredients

3.1 Substances	QuikSolution	Mono-constituent substance
	PfuUltra HF 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
	QuikChange XL dNTP Mix	Mixture
	XL10-Gold Ultracompetent cells	Mixture
	XL10-Gold 2-Mercaptoethanol	Mixture
pUC 18 DNA Control Plasmid	Mixture	

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
 QuikSolution Dimethyl sulfoxide	EC: 200-664-3 CAS: 67-68-5	100	Not classified.	[A]
PfuUltra HF DNA Polymerase Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	CAS: 9036-19-5	<0.25	Eye Irrit. 2, H319 Aquatic Acute 1, H400 (M=1) Aquatic Chronic 1, H410 (M=1)	[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]
Ammonium sulphate	EC: 231-984-1	<2.5	Aquatic Acute 1, H400 (M=10)	[1]

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SECTION 3: Composition/information on ingredients

Polyoxyethylene octyl phenyl ether	CAS: 7783-20-2 CAS: 9002-93-1	≤2.2	Aquatic Chronic 3, H412 Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Chronic 2, H411	[1] [5]
Dpn I Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤3	Eye Irrit. 2, H319	[1]
XL10-Gold Ultracompetent cells Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sucrose	REACH #: Annex IV EC: 200-334-9 CAS: 57-50-1	≤10	Not classified.	[2]
XL10-Gold 2-Mercaptoethanol Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≥10 - ≤25	Eye Irrit. 2, H319	[1]
2-Mercaptoethanol	EC: 200-464-6 CAS: 60-24-2	≤5	Acute Tox. 3, H301 Acute Tox. 2, H310 Acute Tox. 2, H330 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT SE 3, H335 Aquatic Chronic 2, H411 See Section 16 for the full text of the H statements declared above.	[1]

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

Type

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
- [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
- [5] Substance of equivalent concern
- [6] Additional disclosure due to company policy
- [A] Constituent
- [B] Impurity
- [C] Stabilising additive

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact	: QuikSolution	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.
	PfuUltra HF 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. Get medical attention if irritation occurs.

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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.
QuikChange XL 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.
XL10-Gold Ultracompetent 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.
XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. 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. Chemical burns must be treated promptly by a physician.
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.
Inhalation : QuikSolution	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
PfuUltra HF 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. 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.
Dpn I	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Control Primer 1 (34-mer)	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Control Primer 2 (34-mer)	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
pWS4.5 Control Template	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
QuikChange XL 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.
XL10-Gold Ultracompetent cells	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a

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Skin contact

:  QuikSolution

pUC 18 DNA Control Plasmid

position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. 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.

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

PfuUltra HF DNA Polymerase

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

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.

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.

QuikChange XL dNTP Mix

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

XL10-Gold Ultracompetent cells

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

XL10-Gold 2-Mercaptoethanol

Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

pUC 18 DNA Control Plasmid

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion

:  QuikSolution

PfuUltra HF 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.

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

SECTION 4: First aid measures

	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 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.
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.
QuikChange XL 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.
XL10-Gold Ultracompetent 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.
XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
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

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Protection of first-aiders	<p>: QuikSolution</p> <p>PfuUltra HF DNA Polymerase 10X Reaction Buffer</p> <p>Dpn I</p> <p>Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol</p> <p>pUC 18 DNA Control Plasmid</p>	<p>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.</p> <p>No action shall be taken involving any personal risk or without suitable training.</p> <p>No action shall be taken involving any personal risk or without suitable training.</p> <p>No action shall be taken involving any personal risk or without suitable training.</p> <p>No action shall be taken involving any personal risk or without suitable training.</p> <p>No action shall be taken involving any personal risk or without suitable training.</p> <p>No action shall be taken involving any personal risk or without suitable training.</p> <p>No action shall be taken involving any personal risk or without suitable training.</p> <p>No action shall be taken involving any personal risk or without suitable training.</p> <p>No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.</p> <p>No action shall be taken involving any personal risk or without suitable training.</p>
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4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact	<p>: QuikSolution</p> <p>PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid</p>	<p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>Causes serious eye damage.</p> <p>No known significant effects or critical hazards.</p>
Inhalation	<p>: QuikSolution</p> <p>PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer)</p>	<p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p>

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	Control Primer 2 (34-mer)	No known significant effects or critical hazards.
	pWS4.5 Control Template	No known significant effects or critical hazards.
	QuikChange XL dNTP Mix	No known significant effects or critical hazards.
	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Skin contact	: QuikSolution	No known significant effects or critical hazards.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	No known significant effects or critical hazards.
	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	May cause an allergic skin reaction.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Ingestion	: QuikSolution	No known significant effects or critical hazards.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	No known significant effects or critical hazards.
	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: QuikSolution	No specific data.
	PfuUltra HF 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	No specific data.

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SECTION 4: First aid measures

	Template	
	QuikChange XL dNTP	No specific data.
	Mix	
	XL10-Gold	No specific data.
	Ultracompetent cells	
	XL10-Gold	Adverse symptoms may include the following:
	2-Mercaptoethanol	pain watering redness
	pUC 18 DNA Control	No specific data.
	Plasmid	
Inhalation	: QuikSolution	No specific data.
	PfuUltra HF 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	
	QuikChange XL dNTP	No specific data.
	Mix	
	XL10-Gold	No specific data.
	Ultracompetent cells	
	XL10-Gold	No specific data.
	2-Mercaptoethanol	
	pUC 18 DNA Control	No specific data.
	Plasmid	
Skin contact	: QuikSolution	No specific data.
	PfuUltra HF 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	
	QuikChange XL dNTP	No specific data.
	Mix	
	XL10-Gold	No specific data.
	Ultracompetent cells	
	XL10-Gold	Adverse symptoms may include the following:
	2-Mercaptoethanol	pain or irritation redness blistering may occur
	pUC 18 DNA Control	No specific data.
	Plasmid	
Ingestion	: QuikSolution	No specific data.
	PfuUltra HF 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	No specific data.

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SECTION 4: First aid measures

(34-mer)	
pWS4.5 Control Template	No specific data.
QuikChange XL dNTP Mix	No specific data.
XL10-Gold Ultracompetent cells	No specific data.
XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: stomach pains
pUC 18 DNA Control Plasmid	No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	: QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	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. 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.
Specific treatments	: QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	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. No specific treatment. No specific treatment. No specific treatment. No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	QuikSolution	Use an extinguishing agent suitable for the surrounding fire.
		PfuUltra HF DNA Polymerase	Use an extinguishing agent suitable for the surrounding fire.
		10X Reaction Buffer	Use an extinguishing agent suitable for the surrounding fire.
		Dpn I	Use an extinguishing agent suitable for the surrounding fire.
		Control Primer 1 (34-mer)	Use an extinguishing agent suitable for the surrounding fire.
		Control Primer 2 (34-mer)	Use an extinguishing agent suitable for the surrounding fire.
		pWS4.5 Control Template	Use an extinguishing agent suitable for the surrounding fire.
		QuikChange XL dNTP Mix	Use an extinguishing agent suitable for the surrounding fire.
		XL10-Gold	Use an extinguishing agent suitable for the surrounding fire.
		Ultracompetent cells	Use an extinguishing agent suitable for the surrounding fire.
		XL10-Gold	Use an extinguishing agent suitable for the surrounding fire.
		2-Mercaptoethanol	Use an extinguishing agent suitable for the surrounding fire.
		pUC 18 DNA Control Plasmid	Use an extinguishing agent suitable for the surrounding fire.
	Unsuitable extinguishing media	:	QuikSolution
		PfuUltra HF DNA Polymerase	None known.
		10X Reaction Buffer	None known.
		Dpn I	None known.
		Control Primer 1 (34-mer)	None known.
		Control Primer 2 (34-mer)	None known.
		pWS4.5 Control Template	None known.
		QuikChange XL dNTP Mix	None known.
		XL10-Gold	None known.
		Ultracompetent cells	None known.
		XL10-Gold	None known.
		2-Mercaptoethanol	None known.
		pUC 18 DNA Control Plasmid	None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	:	QuikSolution	In a fire or if heated, a pressure increase will occur and the container may burst.
		PfuUltra HF 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.
		QuikChange XL dNTP Mix	In a fire or if heated, a pressure increase will occur and the container may burst.
		XL10-Gold	In a fire or if heated, a pressure increase will occur and the container may burst.
		Ultracompetent cells	In a fire or if heated, a pressure increase will occur and the container may burst.
		XL10-Gold	In a fire or if heated, a pressure increase will occur and the container may burst.

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Hazardous combustion products

2-Mercaptoethanol	container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
: QuikSolution	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides
PfuUltra HF 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.
QuikChange XL dNTP Mix	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides
XL10-Gold Ultracompetent cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
XL10-Gold 2-Mercaptoethanol	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.

5.3 Advice for firefighters

SECTION 5: Firefighting measures

Special precautions for fire-fighters	: QuikSolution	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.
	PfuUltra HF DNA Polymerase	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	10X Reaction Buffer	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	Dpn I	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	Control Primer 1 (34-mer)	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	Control Primer 2 (34-mer)	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	pWS4.5 Control Template	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	QuikChange XL dNTP Mix	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	XL10-Gold Ultracompetent cells	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	XL10-Gold 2-Mercaptoethanol	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	pUC 18 DNA Control Plasmid	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	: QuikSolution	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.
	PfuUltra HF DNA Polymerase	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	10X Reaction Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	Dpn I	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	Control Primer 1 (34-mer)	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves)

SECTION 5: Firefighting measures

Control Primer 2 (34-mer)	conforming to European standard EN 469 will provide a basic level of protection for chemical incidents. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
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.
QuikChange XL 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.
XL10-Gold Ultracompetent cells	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
XL10-Gold 2-Mercaptoethanol	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
pUC 18 DNA Control Plasmid	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: <input checked="" type="checkbox"/> QuikSolution	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.
	PfuUltra HF 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. 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.

SECTION 6: Accidental release measures

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.
QuikChange XL dNTP Mix	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
XL10-Gold Ultracompetent 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.
XL10-Gold 2-Mercaptoethanol	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. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.
For emergency responders : QuikSolution	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".
PfuUltra HF 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	If specialised clothing is required to deal with the spillage,

SECTION 6: Accidental release measures

Template	take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
QuikChange XL 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".
XL10-Gold Ultracompetent cells	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
XL10-Gold 2-Mercaptoethanol	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
pUC 18 DNA Control Plasmid	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

: QuikSolution	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).
PfuUltra HF DNA Polymerase	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
10X Reaction Buffer	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Dpn I	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Control Primer 1 (34-mer)	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Control Primer 2 (34-mer)	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
pWS4.5 Control Template	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
QuikChange XL 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).
XL10-Gold Ultracompetent cells	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
XL10-Gold 2-Mercaptoethanol	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large

SECTION 6: Accidental release measures

pUC 18 DNA Control Plasmid	quantities. 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).
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6.3 Methods and material for containment and cleaning up

Methods for cleaning up : QuikSolution

PfuUltra HF 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.
QuikChange XL 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.
XL10-Gold Ultracompetent 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.
XL10-Gold 2-Mercaptoethanol	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

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of via a licensed waste disposal contractor.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage


7.1 Precautions for safe handling

Protective measures	: QuikSolution	Put on appropriate personal protective equipment (see Section 8).
	PfuUltra HF DNA Polymerase	Put on appropriate personal protective equipment (see Section 8).
	10X Reaction Buffer	Put on appropriate personal protective equipment (see Section 8).
	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).
	QuikChange XL dNTP Mix	Put on appropriate personal protective equipment (see Section 8).
	XL10-Gold Ultracompetent cells	Put on appropriate personal protective equipment (see Section 8).
	XL10-Gold 2-Mercaptoethanol	Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	pUC 18 DNA Control Plasmid	Put on appropriate personal protective equipment (see Section 8).
Advice on general occupational hygiene	: QuikSolution	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.
	PfuUltra HF 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.

SECTION 7: Handling and storage

Control Primer 1 (34-mer)	Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
Control Primer 2 (34-mer)	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
pWS4.5 Control Template	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
QuikChange XL 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.
XL10-Gold Ultracompetent 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.
XL10-Gold 2-Mercaptoethanol	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.

7.2 Conditions for safe storage, including any incompatibilities

Storage	:  QuikSolution	Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
	PfuUltra HF DNA Polymerase	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and

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	<p>well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.</p>
10X Reaction Buffer	<p>Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.</p>
Dpn I	<p>Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.</p>
Control Primer 1 (34-mer)	<p>Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.</p>
Control Primer 2 (34-mer)	<p>Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.</p>
pWS4.5 Control Template	<p>Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.</p>
QuikChange XL dNTP Mix	<p>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</p>

SECTION 7: Handling and storage

	closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
XL10-Gold Ultracompetent cells	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
XL10-Gold 2-Mercaptoethanol	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
pUC 18 DNA Control Plasmid	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

Recommendations

QuikSolution	Industrial applications, Professional applications.
PfuUltra HF 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.
QuikChange XL dNTP Mix	Industrial applications, Professional applications.
XL10-Gold Ultracompetent cells	Industrial applications, Professional applications.
XL10-Gold 2-Mercaptoethanol	Industrial applications, Professional applications.
pUC 18 DNA Control Plasmid	Industrial applications, Professional applications.

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Industrial sector specific solutions	QuikSolution	Not applicable.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
	XL10-Gold	Not applicable.
	2-Mercaptoethanol	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
PfuUltra HF 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
XL10-Gold Ultracompetent 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.

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

Date of issue/Date of revision : 20/11/2018

SECTION 8: Exposure controls/personal protection

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

Individual protection measures

Hygiene measures : Handle as biohazard material (Biosafety level 1). Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. 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 and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

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	: QuikSolution	Liquid. [Clear.]
	PfuUltra HF DNA Polymerase	Liquid.
	10X Reaction Buffer	Liquid.
	Dpn I	Liquid.
	Control Primer 1 (34-mer)	Liquid.
	Control Primer 2 (34-mer)	Liquid.
	pWS4.5 Control Template	Liquid.
	QuikChange XL dNTP Mix	Liquid.
	XL10-Gold Ultracompetent cells	Liquid.
	XL10-Gold 2-Mercaptoethanol	Liquid.

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	pUC 18 DNA Control Plasmid	Liquid.
Colour	: QuikSolution	Colourless.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not available.
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.
Odour	: QuikSolution	Slight [Slight]
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not available.
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.
Odour threshold	: QuikSolution	Not available.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not available.
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.

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pH	:	QuikSolution	Not available.	
		PfuUltra HF DNA Polymerase	8.2	
		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	
		QuikChange XL dNTP Mix	7.5	
		XL10-Gold Ultracompetent cells	6.4	
		XL10-Gold	Not available.	
		2-Mercaptoethanol		
		pUC 18 DNA Control Plasmid	7.5	
	Melting point/freezing point	:	QuikSolution	18.4°C
			PfuUltra HF 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 Template	0°C	
		QuikChange XL dNTP Mix	Not available.	
		XL10-Gold Ultracompetent cells	Not available.	
		XL10-Gold	Not available.	
		2-Mercaptoethanol		
		pUC 18 DNA Control Plasmid	0°C	
Initial boiling point and boiling range		:	QuikSolution	188.8°C
			PfuUltra HF 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	
		QuikChange XL dNTP Mix	Not available.	
		XL10-Gold Ultracompetent cells	Not available.	
		XL10-Gold	Not available.	
		2-Mercaptoethanol		
		pUC 18 DNA Control Plasmid	100°C	

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SECTION 9: Physical and chemical properties

Upper/lower flammability or explosive limits	: QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Lower: 2.6% Upper: 42% 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. Not available.
Vapour pressure	: QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	0.056 kPa [room temperature] 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.
Vapour density	: QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	2.71 [Air = 1] 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.

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Relative density	:	QuikSolution	1.1
		PfuUltra HF 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.
		QuikChange XL dNTP Mix	Not available.
		XL10-Gold Ultracompetent cells	Not available.
		XL10-Gold	Not available.
		2-Mercaptoethanol	Not available.
		pUC 18 DNA Control Plasmid	Not available.
Solubility(ies)	:	QuikSolution	Easily soluble in the following materials: cold water and hot water.
		PfuUltra HF DNA Polymerase	Soluble in the following materials: cold water and hot water.
		10X Reaction Buffer	Easily soluble in the following materials: cold water and hot water.
		Dpn I	Soluble in the following materials: cold water and hot water.
		Control Primer 1 (34-mer)	Easily soluble in the following materials: cold water and hot water.
		Control Primer 2 (34-mer)	Easily soluble in the following materials: cold water and hot water.
		pWS4.5 Control Template	Easily soluble in the following materials: cold water and hot water.
		QuikChange XL dNTP Mix	Easily soluble in the following materials: cold water and hot water.
		XL10-Gold Ultracompetent cells	Soluble in the following materials: cold water and hot water.
		XL10-Gold	Easily soluble in the following materials: cold water and hot water.
		2-Mercaptoethanol	Easily soluble in the following materials: cold water and hot water.
		pUC 18 DNA Control Plasmid	Easily soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	:	QuikSolution	-2.029
		PfuUltra HF 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.
		QuikChange XL dNTP Mix	Not available.
		XL10-Gold Ultracompetent cells	Not available.
		XL10-Gold	Not available.
		2-Mercaptoethanol	Not available.
		pUC 18 DNA Control Plasmid	Not available.

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SECTION 9: Physical and chemical properties

Auto-ignition temperature	: QuikSolution	300 to 302°C
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not available.
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.
Decomposition temperature	: QuikSolution	140 to 189°C
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not available.
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.
Viscosity	: QuikSolution	Dynamic (room temperature): 2.14 mPa·s
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not available.
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.

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SECTION 9: Physical and chemical properties

Explosive properties	:	QuikSolution	Not available.	
		PfuUltra HF 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.	
		QuikChange XL dNTP Mix	Not available.	
		XL10-Gold Ultracompetent cells	Not available.	
		XL10-Gold	Not available.	
		2-Mercaptoethanol	Not available.	
		pUC 18 DNA Control Plasmid	Not available.	
	Oxidising properties	:	QuikSolution	Not available.
			PfuUltra HF 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.	
		QuikChange XL dNTP Mix	Not available.	
		XL10-Gold Ultracompetent cells	Not available.	
		XL10-Gold	Not available.	
		2-Mercaptoethanol	Not available.	
		pUC 18 DNA Control Plasmid	Not available.	

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	:	QuikSolution	No specific test data related to reactivity available for this product or its ingredients.
		PfuUltra HF DNA Polymerase	No specific test data related to reactivity available for this product or its ingredients.
		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.
		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.
		QuikChange XL dNTP Mix	No specific test data related to reactivity available for this product or its ingredients.
		XL10-Gold	No specific test data related to reactivity available for this product or its ingredients.

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SECTION 10: Stability and reactivity

Ultracompetent cells	product or its ingredients.
XL10-Gold	No specific test data related to reactivity available for this product or its ingredients.
2-Mercaptoethanol	No specific test data related to reactivity available for this product or its ingredients.
pUC 18 DNA Control Plasmid	No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability

: QuikSolution	The product is stable.
PfuUltra HF 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.
QuikChange XL dNTP Mix	The product is stable.
XL10-Gold Ultracompetent cells	The product is stable.
XL10-Gold	The product is stable.
2-Mercaptoethanol	The product is stable.
pUC 18 DNA Control Plasmid	The product is stable.

10.3 Possibility of hazardous reactions

: QuikSolution	Under normal conditions of storage and use, hazardous reactions will not occur.
PfuUltra HF 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.
QuikChange XL dNTP Mix	Under normal conditions of storage and use, hazardous reactions will not occur.
XL10-Gold Ultracompetent cells	Under normal conditions of storage and use, hazardous reactions will not occur.
XL10-Gold	Under normal conditions of storage and use, hazardous reactions will not occur.
2-Mercaptoethanol	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.

10.4 Conditions to avoid

: QuikSolution	No specific data.
PfuUltra HF 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.
QuikChange XL dNTP	No specific data.

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SECTION 10: Stability and reactivity

	Mix	
	XL10-Gold	No specific data.
	Ultracompetent cells	
	XL10-Gold	No specific data.
	2-Mercaptoethanol	
	pUC 18 DNA Control	No specific data.
	Plasmid	
10.5 Incompatible materials	: QuikSolution	May react or be incompatible with oxidising materials.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	May react or be incompatible with oxidising materials.
	XL10-Gold	May react or be incompatible with oxidising materials.
	Ultracompetent cells	
	XL10-Gold	May react or be incompatible with oxidising materials.
	2-Mercaptoethanol	
	pUC 18 DNA Control	May react or be incompatible with oxidising materials.
	Plasmid	
10.6 Hazardous decomposition products	: QuikSolution	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	XL10-Gold	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Ultracompetent cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	XL10-Gold	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	2-Mercaptoethanol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	pUC 18 DNA Control	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Plasmid	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

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SECTION 11: Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
QuikSolution Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
PfuUltra HF DNA Polymerase Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	LD50 Oral	Rat	2800 mg/kg	-
10X Reaction Buffer Ammonium sulphate Polyoxyethylene octyl phenyl ether	LD50 Oral LD50 Oral	Rat Rat	2840 mg/kg 1800 mg/kg	- -
Dpn I Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
XL10-Gold 2-Mercaptoethanol Sodium chloride 2-Mercaptoethanol	LD50 Oral LD50 Dermal LD50 Oral	Rat Rabbit Rat	3000 mg/kg 167.1 mg/kg 244 mg/kg	- - -

Acute toxicity estimates

Route	ATE value
10X Reaction Buffer Oral	180000 mg/kg
XL10-Gold Ultracompetent cells Oral	31250 mg/kg
XL10-Gold 2-Mercaptoethanol Oral Dermal Inhalation (vapours)	5545.5 mg/kg 3797.7 mg/kg 40.5 mg/l

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
QuikSolution Dimethyl sulfoxide	Eyes - Mild irritant Eyes - Mild irritant Skin - Mild irritant Skin - Mild irritant	Rabbit Rabbit Rabbit Rabbit	- - - -	24 hours 500 milligrams 100 milligrams 24 hours 500 milligrams 100 milligrams	- - - -
PfuUltra HF 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	Eyes - Moderate irritant	Rabbit	-	24 hours 10	-

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ether	Skin - Mild irritant	Rabbit	-	microliters 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	-
XL10-Gold 2-Mercaptoethanol Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 milligrams	-

Sensitiser

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
10X Reaction Buffer 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	Category 3	Not applicable.	Respiratory tract irritation
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	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

QuikSolution	Routes of entry anticipated: Oral, Dermal, Inhalation.
PfuUltra HF 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.

SECTION 11: Toxicological information

QuikChange XL dNTP Mix	Not available.
XL10-Gold Ultracompetent cells	Routes of entry anticipated: Oral, Dermal, Inhalation.
XL10-Gold 2-Mercaptoethanol	Routes of entry anticipated: Oral, Dermal, Inhalation.
pUC 18 DNA Control Plasmid	Not available.

Potential acute health effects

Inhalation

: QuikSolution	No known significant effects or critical hazards.
PfuUltra HF 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.
QuikChange XL dNTP Mix	No known significant effects or critical hazards.
XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

Ingestion

: QuikSolution	No known significant effects or critical hazards.
PfuUltra HF 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.
QuikChange XL dNTP Mix	No known significant effects or critical hazards.
XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

Skin contact

: QuikSolution	No known significant effects or critical hazards.
PfuUltra HF 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.
QuikChange XL dNTP Mix	No known significant effects or critical hazards.
XL10-Gold	No known significant effects or critical hazards.

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	Ultracompetent cells	
	XL10-Gold	May cause an allergic skin reaction.
	2-Mercaptoethanol	
	pUC 18 DNA Control	No known significant effects or critical hazards.
	Plasmid	
Eye contact	: QuikSolution	No known significant effects or critical hazards.
	PfuUltra HF 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	
	QuikChange XL dNTP	No known significant effects or critical hazards.
	Mix	
	XL10-Gold	No known significant effects or critical hazards.
	Ultracompetent cells	
	XL10-Gold	Causes serious eye damage.
	2-Mercaptoethanol	
	pUC 18 DNA Control	No known significant effects or critical hazards.
	Plasmid	

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	: QuikSolution	No specific data.
	PfuUltra HF 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	
	QuikChange XL dNTP	No specific data.
	Mix	
	XL10-Gold	No specific data.
	Ultracompetent cells	
	XL10-Gold	No specific data.
	2-Mercaptoethanol	
	pUC 18 DNA Control	No specific data.
	Plasmid	
Ingestion	: QuikSolution	No specific data.
	PfuUltra HF 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	
	QuikChange XL dNTP	No specific data.
	Mix	
	XL10-Gold	No specific data.
	Ultracompetent cells	
	XL10-Gold	Adverse symptoms may include the following:
	2-Mercaptoethanol	

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		pUC 18 DNA Control Plasmid	stomach pains No specific data.
Skin contact	:	QuikSolution	No specific data.
		PfuUltra HF 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.
		QuikChange XL dNTP Mix	No specific data.
		XL10-Gold Ultracompetent cells	No specific data.
		XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur
		pUC 18 DNA Control Plasmid	No specific data.
Eye contact	:	<input checked="" type="checkbox"/> QuikSolution	No specific data.
		PfuUltra HF 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.
		QuikChange XL dNTP Mix	No specific data.
		XL10-Gold Ultracompetent cells	No specific data.
		XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
		pUC 18 DNA Control Plasmid	No specific data.

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

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General	:	<p>QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid</p>	<p>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. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. No known significant effects or critical hazards.</p>
Carcinogenicity	:	<p>QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid</p>	<p>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. No known significant effects or critical hazards. No known significant effects or critical hazards.</p>
Mutagenicity	:	<p>QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid</p>	<p>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. No known significant effects or critical hazards. No known significant effects or critical hazards.</p>

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Teratogenicity	:	<p>QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid</p>	<p>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.</p>
Developmental effects	:	<p>QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid</p>	<p>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. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.</p>
Fertility effects	:	<p>QuikSolution PfuUltra HF DNA Polymerase 10X Reaction Buffer Dpn I Control Primer 1 (34-mer) Control Primer 2 (34-mer) pWS4.5 Control Template QuikChange XL dNTP Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid</p>	<p>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. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.</p>

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure	
QuikSolution Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours	
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours	
	Chronic NOEC 3323 µg/l Marine water	Algae - Nitzschia pungens	96 hours	
PfuUltra HF 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 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 Ammonium sulphate	Acute LC50 2.6 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Young	48 hours	
	Acute LC50 14000 µg/l Fresh water	Daphnia - Daphnia magna - Young	48 hours	
	Acute LC50 68 µg/l Fresh water	Fish - Oncorhynchus gorbuscha - Alevin	96 hours	
	Chronic NOEC 7.5 mg/l Marine water	Algae - Phaeodactylum tricornutum - Exponential growth phase	96 hours	
Polyoxyethylene octyl phenyl ether	Chronic NOEC 143 µg/l Marine water	Fish - Salmo salar - Post-smolt	5 weeks	
	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	Acute LC50 4500 µg/l Fresh water	Fish - Pimephales promelas	96 hours	
	Dpn I Sodium chloride	Acute EC50 4.74 g/L Fresh water	Algae - Chlamydomonas reinhardtii	96 hours
		Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
Acute EC50 402.6 mg/l Fresh water		Daphnia - Daphnia magna	48 hours	
Acute IC50 6.87 g/L Fresh water		Aquatic plants - Lemna minor	96 hours	
Acute LC50 1000000 µg/l Fresh water		Fish - Morone saxatilis - Larvae	96 hours	
Chronic LC10 781 mg/l Fresh water		Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks	
Chronic NOEC 6 g/L Fresh water		Aquatic plants - Lemna minor	96 hours	
Chronic NOEC 0.314 g/L Fresh water	Chronic NOEC 0.314 g/L Fresh water	Daphnia - Daphnia pulex	21 days	
	Chronic NOEC 100 mg/l Fresh water	Fish - Gambusia holbrooki - Adult	8 weeks	
	XL10-Gold 2-Mercaptoethanol Sodium chloride	Acute EC50 4.74 g/L Fresh water	Algae - Chlamydomonas reinhardtii	96 hours
Acute EC50 519.6 mg/l Fresh water		Crustaceans - Cypris subglobosa	48 hours	
Acute EC50 402.6 mg/l Fresh water		Daphnia - Daphnia magna	48 hours	

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SECTION 12: Ecological information

	Acute IC50 6.87 g/L Fresh water Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water	Aquatic plants - Lemna minor Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	96 hours 96 hours 3 weeks
	Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 21 days 8 weeks

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	OECD 310 Ready Biodegradability - CO2 in Sealed Vessels (Headspace Test)	69 % - Inherent - 60 days	20 mg/l	-
Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability	
10X Reaction Buffer Ammonium sulphate Polyoxyethylene octyl phenyl ether	- -	- -	Readily Readily	

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
QuikSolution Dimethyl sulfoxide	-2.029	3.16	low
PfuUltra HF DNA Polymerase Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	3.77	78.67	low
10X Reaction Buffer Ammonium sulphate Polyoxyethylene octyl phenyl ether	-5.1 4.86	- -	low high
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	-0.056	-	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.
Mobility : Not available.

12.5 Results of PBT and vPvB assessment

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SECTION 12: Ecological information

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

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

Ingredient name	Intrinsic property	Status	Reference number	Date of revision
10X Reaction Buffer Polyoxyethylene octyl phenyl ether	Substance of equivalent concern for environment	Listed	42	7/3/2017

Substances of very high concern

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SECTION 15: Regulatory information

Ingredient name	Intrinsic property	Status	Reference number	Date of revision
PfuUltra HF DNA Polymerase Poly(oxy-1,2-ethanediyl), .alpha.-(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	Substance of equivalent concern for human health	Recommended	ED/169/2012	2/10/2014
10X Reaction Buffer Polyoxyethylene octyl phenyl ether	Substance of equivalent concern for human health	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	QuikSolution	Not applicable.
	PfuUltra HF 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.
	QuikChange XL dNTP Mix	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
	XL10-Gold	Not applicable.
	2-Mercaptoethanol	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.

Other EU regulations

Industrial emissions (integrated pollution prevention and control) - Air : Listed

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.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia	: Not determined.
Canada	: All components are listed or exempted.

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SECTION 15: Regulatory information

China	: Not determined.
Europe	: All components are listed or exempted.
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.
Thailand	: <input checked="" type="checkbox"/> Not determined.
Turkey	: Not determined.
United States	: All components are listed or exempted.
Viet Nam	: <input checked="" type="checkbox"/> Not determined.

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

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number

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

Classification	Justification
<input checked="" type="checkbox"/> XL10-Gold 2-Mercaptoethanol Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	Calculation method Calculation method Calculation method

Full text of abbreviated H statements

<input checked="" type="checkbox"/> PfuUltra HF DNA Polymerase H319 H400 H410	Causes serious eye irritation. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.
10X Reaction Buffer H302 H315 H319 H335 H400 H411 H412	Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects. Harmful to aquatic life with long lasting effects.
Dpn I H319	Causes serious eye irritation.
XL10-Gold 2-Mercaptoethanol H301 H310 H315	Toxic if swallowed. Fatal in contact with skin. Causes skin irritation.

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SECTION 16: Other information

H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

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

<p>PfuUltra HF DNA Polymerase Aquatic Acute 1, H400 Aquatic Chronic 1, H410 Eye Irrit. 2, H319</p> <p>10X Reaction Buffer Acute Tox. 4, H302 Aquatic Acute 1, H400 Aquatic Chronic 2, H411 Aquatic Chronic 3, H412 Eye Irrit. 2, H319 Skin Irrit. 2, H315 STOT SE 3, H335</p> <p>Dpn I Eye Irrit. 2, H319</p> <p>XL10-Gold 2-Mercaptoethanol Acute Tox. 2, H310 Acute Tox. 2, H330 Acute Tox. 3, H301 Aquatic Chronic 2, H411 Aquatic Chronic 3, H412 Eye Dam. 1, H318 Eye Irrit. 2, H319 Skin Irrit. 2, H315 Skin Sens. 1, H317 STOT SE 3, H335</p>	<p>SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2</p> <p>ACUTE TOXICITY (oral) - Category 4 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 SKIN CORROSION/IRRITATION - Category 2 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3</p> <p>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2</p> <p>ACUTE TOXICITY (dermal) - Category 2 ACUTE TOXICITY (inhalation) - Category 2 ACUTE TOXICITY (oral) - Category 3 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 SKIN CORROSION/IRRITATION - Category 2 SKIN SENSITISATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3</p>
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