

# SAFETY DATA SHEET



QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519

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

### 1.1 Product identifier

<b>Product name</b>	:	QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519
<b>Part no. (chemical kit)</b>	:	210519
<b>Part no.</b>	:	<input checked="" type="checkbox"/> QuikSolution 200516-51
		QuikChange Lightning Enzyme 210519-51
		10X QuikChange Lightning Buffer 5190-7459
		QuikChange XL dNTP Mix 200516-52
		Dpn I Enzyme 210519-52
		pWS4.5 Control Template 200518-55
		Control Primer 1 (34-mer) 200518-53
		Control Primer 2 (34-mer) 200518-54
		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

<b>Material uses</b>	:	Analytical reagent.
		<input checked="" type="checkbox"/> QuikSolution 0.5 ml
		QuikChange Lightning Enzyme 0.03 ml (30 reactions)
		10X QuikChange Lightning Buffer 0.11 ml
		QuikChange XL dNTP Mix 0.03 ml
		Dpn I Enzyme 0.06 ml (30 reactions)
		pWS4.5 Control Template 0.01 ml (50 ng 5 ng/μl)
		Control Primer 1 (34-mer) 0.075 ml (750 ng 100 ng/μl)
		Control Primer 2 (34-mer) 0.075 ml (750 ng 100 ng/μl)
		XL10-Gold Ultracompetent cells 1.35 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

<b>Product definition</b>	:	<input checked="" type="checkbox"/> QuikSolution	Mono-constituent substance
		QuikChange Lightning Enzyme	Mixture
		10X QuikChange Lightning Buffer	Mixture
		QuikChange XL dNTP Mix	Mixture
		Dpn I Enzyme	Mixture
		pWS4.5 Control Template	Mixture
		Control Primer 1 (34-mer)	Mixture
		Control Primer 2 (34-mer)	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

<b>Ingredients of unknown toxicity</b>	:	<input checked="" type="checkbox"/> QuikChange Lightning Enzyme	Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 30 - 60%
		10X QuikChange Lightning 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%
			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 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%
		Dpn I Enzyme	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: 30 - 60%
		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 dermal toxicity: 10 - 30%
	Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30%		
<b>Ingredients of unknown ecotoxicity</b>	:	<input checked="" type="checkbox"/> 10X QuikChange Lightning Buffer	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 5.2%
		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.

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**SECTION 2: Hazards identification**

**2.2 Label elements**

**Hazard pictograms**

:  XL10-Gold  
2-Mercaptoethanol



**Signal word**

:  QuikSolution No signal word.  
 QuikChange Lightning No signal word.  
 Enzyme  
 10X QuikChange No signal word.  
 Lightning Buffer  
 QuikChange XL dNTP No signal word.  
 Mix  
 Dpn I Enzyme No signal word.  
 pWS4.5 Control No signal word.  
 Template  
 Control Primer 1 No signal word.  
 (34-mer)  
 Control Primer 2 No signal word.  
 (34-mer)  
 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.  
 QuikChange Lightning No known significant effects or critical hazards.  
 Enzyme  
 10X QuikChange No known significant effects or critical hazards.  
 Lightning Buffer  
 QuikChange XL dNTP No known significant effects or critical hazards.  
 Mix  
 Dpn I Enzyme No known significant effects or critical hazards.  
 pWS4.5 Control No known significant effects or critical hazards.  
 Template  
 Control Primer 1 No known significant effects or critical hazards.  
 (34-mer)  
 Control Primer 2 No known significant effects or critical hazards.  
 (34-mer)  
 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.  
 QuikChange Lightning Not applicable.  
 Enzyme  
 10X QuikChange Not applicable.  
 Lightning Buffer  
 QuikChange XL dNTP Not applicable.  
 Mix  
 Dpn I Enzyme Not applicable.  
 pWS4.5 Control Not applicable.  
 Template

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**SECTION 2: Hazards identification**

	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
	XL10-Gold 2-Mercaptoethanol	P280 - Wear protective gloves. Wear eye or face protection.
	pUC 18 DNA Control Plasmid	P273 - Avoid release to the environment.
<b>Response</b>	: <input checked="" type="checkbox"/> QuikSolution	Not applicable.
	QuikChange Lightning Enzyme	Not applicable.
	10X QuikChange Lightning Buffer	Not applicable.
	QuikChange XL dNTP Mix	Not applicable.
	Dpn I Enzyme	Not applicable.
	pWS4.5 Control Template	Not applicable.
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	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.
<b>Storage</b>	: <input checked="" type="checkbox"/> QuikSolution	Not applicable.
	QuikChange Lightning Enzyme	Not applicable.
	10X QuikChange Lightning Buffer	Not applicable.
	QuikChange XL dNTP Mix	Not applicable.
	Dpn I Enzyme	Not applicable.
	pWS4.5 Control Template	Not applicable.
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
	XL10-Gold 2-Mercaptoethanol	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
<b>Disposal</b>	: <input checked="" type="checkbox"/> QuikSolution	Not applicable.
	QuikChange Lightning Enzyme	Not applicable.
	10X QuikChange Lightning Buffer	Not applicable.
	QuikChange XL dNTP Mix	Not applicable.
	Dpn I Enzyme	Not applicable.
	pWS4.5 Control	Not applicable.

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**SECTION 2: Hazards identification**

	Template	
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
	XL10-Gold	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	2-Mercaptoethanol	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
<b>Hazardous ingredients</b>	: 10X QuikChange Lightning Buffer	Not applicable.
	Dpn I Enzyme	Not applicable.
	XL10-Gold	- 2-Mercaptoethanol
	2-Mercaptoethanol	
<b>Supplemental label elements</b>	: QuikSolution	Not applicable.
	QuikChange Lightning Enzyme	Not applicable.
	10X QuikChange Lightning Buffer	Safety data sheet available on request.
	QuikChange XL dNTP Mix	Not applicable.
	Dpn I Enzyme	Safety data sheet available on request.
	pWS4.5 Control Template	Not applicable.
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	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.
<b>Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles</b>	: QuikSolution	Not applicable.
	QuikChange Lightning Enzyme	Not applicable.
	10X QuikChange Lightning Buffer	Not applicable.
	QuikChange XL dNTP Mix	Not applicable.
	Dpn I Enzyme	Not applicable.
	pWS4.5 Control Template	Not applicable.
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	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**

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**SECTION 2: Hazards identification**

<b>Tactile warning of danger</b>	:	<input checked="" type="checkbox"/> QuikSolution	Not applicable.
		QuikChange Lightning Enzyme	Not applicable.
		10X QuikChange Lightning Buffer	Not applicable.
		QuikChange XL dNTP Mix	Not applicable.
		Dpn I Enzyme	Not applicable.
		pWS4.5 Control Template	Not applicable.
		Control Primer 1 (34-mer)	Not applicable.
		Control Primer 2 (34-mer)	Not applicable.
		XL10-Gold Ultracompetent cells	Not applicable.
		XL10-Gold	Not applicable.
		2-Mercaptoethanol	Not applicable.
		pUC 18 DNA Control Plasmid	Not applicable.

**2.3 Other hazards**

<b>Other hazards which do not result in classification</b>	:	<input checked="" type="checkbox"/> QuikSolution	None known.
		QuikChange Lightning Enzyme	None known.
		10X QuikChange Lightning Buffer	None known.
		QuikChange XL dNTP Mix	None known.
		Dpn I Enzyme	None known.
		pWS4.5 Control Template	None known.
		Control Primer 1 (34-mer)	None known.
		Control Primer 2 (34-mer)	None known.
		XL10-Gold Ultracompetent cells	None known.
		XL10-Gold	None known.
		2-Mercaptoethanol	None known.
		pUC 18 DNA Control Plasmid	None known.

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

<b>3.1 Substances</b>	:	<input checked="" type="checkbox"/> QuikSolution	Mono-constituent substance
		QuikChange Lightning Enzyme	Mixture
		10X QuikChange Lightning Buffer	Mixture
		QuikChange XL dNTP Mix	Mixture
		Dpn I Enzyme	Mixture
		pWS4.5 Control Template	Mixture
		Control Primer 1 (34-mer)	Mixture
		Control Primer 2 (34-mer)	Mixture
		XL10-Gold Ultracompetent cells	Mixture
		XL10-Gold 2-Mercaptoethanol	Mixture
		pUC 18 DNA Control Plasmid	Mixture

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

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
<b>QuikSolution</b> Dimethyl sulfoxide	EC: 200-664-3 CAS: 67-68-5	100	Not classified.	[A]
<b>QuikChange Lightning Enzyme</b> Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
<b>10X QuikChange Lightning Buffer</b> 2-Amino-2-(hydroxymethyl) propane-1,3-diol hydrochloride	EC: 214-684-5 CAS: 1185-53-1	≤5	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335	[1]
Dodecyltrimethyl (3-sulphonatopropyl)ammonium	EC: 239-002-3 CAS: 14933-08-5	≤3	Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335	[1]
Ammonium sulphate	EC: 231-984-1 CAS: 7783-20-2	<2.5	Aquatic Acute 1, H400 (M=10) Aquatic Chronic 3, H412	[1]
<b>Dpn I Enzyme</b> Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤3	Eye Irrit. 2, H319	[1]
<b>XL10-Gold Ultracompetent cells</b> Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sucrose	REACH #: Annex IV EC: 200-334-9 CAS: 57-50-1	≤10	Not classified.	[2]
<b>XL10-Gold 2-Mercaptoethanol</b> 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  <b>See Section 16 for the full text of the H statements declared above.</b>	[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



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

- [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**

: <input checked="" type="checkbox"/> 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.
QuikChange Lightning Enzyme	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 QuikChange Lightning 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.
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.
Dpn I Enzyme	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.
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.
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**

: <input checked="" type="checkbox"/> QuikSolution	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
QuikChange Lightning Enzyme	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
10X QuikChange Lightning 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.
QuikChange XL dNTP	Remove victim to fresh air and keep at rest in a position



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Mix	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 Enzyme	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.
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.
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 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.
pUC 18 DNA Control Plasmid	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.


**Skin contact**

: QuikSolution	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
QuikChange Lightning Enzyme	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
10X QuikChange Lightning Buffer	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.
Dpn I Enzyme	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.
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.
XL10-Gold Ultracompetent cells	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

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**SECTION 4: First aid measures**

**Ingestion**

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.
:  QuikSolution	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 Lightning Enzyme	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
10X QuikChange Lightning 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.
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.
Dpn I Enzyme	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.
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.
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

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<p>XL10-Gold 2-Mercaptoethanol</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. 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.</p>
<p>pUC 18 DNA Control Plasmid</p>	<p>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.</p>
<p><b>Protection of first-aiders</b> : QuikSolution</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>QuikChange Lightning Enzyme</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>10X QuikChange Lightning Buffer</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>QuikChange XL dNTP Mix</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>Dpn I Enzyme</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>pWS4.5 Control Template</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>Control Primer 1 (34-mer)</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>Control Primer 2 (34-mer)</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>XL10-Gold Ultracompetent cells</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>XL10-Gold 2-Mercaptoethanol</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>pUC 18 DNA Control Plasmid</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>

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

Potential acute health effects

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**SECTION 4: First aid measures**

<b>Eye contact</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	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. Causes serious eye damage. No known significant effects or critical hazards.
<b>Inhalation</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	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.
<b>Skin contact</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	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. May cause an allergic skin reaction. No known significant effects or critical hazards.

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**SECTION 4: First aid measures**

<b>Ingestion</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	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.
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Over-exposure signs/symptoms

<b>Eye contact</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol  pUC 18 DNA Control Plasmid	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. Adverse symptoms may include the following: pain watering redness No specific data.
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<b>Inhalation</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) XL10-Gold Ultracompetent cells XL10-Gold	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
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**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 4: First aid measures**

	2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	No specific data.
<b>Skin contact</b>	: <input checked="" type="checkbox"/> QuikSolution	No specific data.
	QuikChange Lightning Enzyme	No specific data.
	10X QuikChange Lightning Buffer	No specific data.
	QuikChange XL dNTP Mix	No specific data.
	Dpn I Enzyme	No specific data.
	pWS4.5 Control Template	No specific data.
	Control Primer 1 (34-mer)	No specific data.
	Control Primer 2 (34-mer)	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.
<b>Ingestion</b>	: <input checked="" type="checkbox"/> QuikSolution	No specific data.
	QuikChange Lightning Enzyme	No specific data.
	10X QuikChange Lightning Buffer	No specific data.
	QuikChange XL dNTP Mix	No specific data.
	Dpn I Enzyme	No specific data.
	pWS4.5 Control Template	No specific data.
	Control Primer 1 (34-mer)	No specific data.
	Control Primer 2 (34-mer)	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**

<b>Notes to physician</b>	: <input checked="" type="checkbox"/> QuikSolution	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	QuikChange Lightning Enzyme	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	10X QuikChange Lightning Buffer	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	QuikChange XL dNTP Mix	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	Dpn I Enzyme	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.



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**SECTION 4: First aid measures**

	pWS4.5 Control Template	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Control Primer 1 (34-mer)	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Control Primer 2 (34-mer)	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XL10-Gold Ultracompetent cells	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XL10-Gold 2-Mercaptoethanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	pUC 18 DNA Control Plasmid	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
<b>Specific treatments</b>	: QuikSolution	No specific treatment.
	QuikChange Lightning Enzyme	No specific treatment.
	10X QuikChange Lightning Buffer	No specific treatment.
	QuikChange XL dNTP Mix	No specific treatment.
	Dpn I Enzyme	No specific treatment.
	pWS4.5 Control Template	No specific treatment.
	Control Primer 1 (34-mer)	No specific treatment.
	Control Primer 2 (34-mer)	No specific treatment.
	XL10-Gold Ultracompetent cells	No specific treatment.
	XL10-Gold 2-Mercaptoethanol	No specific treatment.
	pUC 18 DNA Control Plasmid	No specific treatment.

**SECTION 5: Firefighting measures**

**5.1 Extinguishing media**

<b>Suitable extinguishing media</b>	: QuikSolution	Use an extinguishing agent suitable for the surrounding fire.
	QuikChange Lightning Enzyme	Use an extinguishing agent suitable for the surrounding fire.
	10X QuikChange Lightning Buffer	Use an extinguishing agent suitable for the surrounding fire.
	QuikChange XL dNTP Mix	Use an extinguishing agent suitable for the surrounding fire.
	Dpn I Enzyme	Use an extinguishing agent suitable for the surrounding fire.
	pWS4.5 Control Template	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.
	XL10-Gold Ultracompetent cells	Use an extinguishing agent suitable for the surrounding fire.
	XL10-Gold 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.



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**SECTION 5: Firefighting measures**

<b>Unsuitable extinguishing media</b>	<input checked="" type="checkbox"/> QuikSolution	None known.
	QuikChange Lightning Enzyme	None known.
	10X QuikChange Lightning Buffer	None known.
	QuikChange XL dNTP Mix	None known.
	Dpn I Enzyme	None known.
	pWS4.5 Control Template	None known.
	Control Primer 1 (34-mer)	None known.
	Control Primer 2 (34-mer)	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**

<b>Hazards from the substance or mixture</b>	<input checked="" type="checkbox"/> QuikSolution	In a fire or if heated, a pressure increase will occur and the container may burst.
	QuikChange Lightning Enzyme	In a fire or if heated, a pressure increase will occur and the container may burst.
	10X QuikChange Lightning Buffer	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.
	Dpn I Enzyme	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.
	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.
	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. 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.
	2-Mercaptoethanol	In a fire or if heated, a pressure increase will occur and the container may burst.
	pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.

<b>Hazardous combustion products</b>	<input checked="" type="checkbox"/> QuikSolution	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides
	QuikChange Lightning Enzyme	Decomposition products may include the following materials:  carbon dioxide carbon monoxide
	10X QuikChange Lightning Buffer	Decomposition products may include the following materials:  carbon dioxide carbon monoxide nitrogen oxides sulfur oxides

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**SECTION 5: Firefighting measures**

QuikChange XL dNTP Mix	halogenated compounds metal oxide/oxides Decomposition products may include the following materials:  carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides
Dpn I Enzyme	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
pWS4.5 Control Template	No specific data.
Control Primer 1 (34-mer)	No specific data.
Control Primer 2 (34-mer)	No specific data.
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**


**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.
QuikChange Lightning Enzyme	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 QuikChange Lightning 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.
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.
Dpn I Enzyme	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.
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.

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**SECTION 5: Firefighting measures**

**Special protective equipment for fire-fighters**

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.
:  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.
QuikChange Lightning Enzyme	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 QuikChange Lightning 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.
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.
Dpn I Enzyme	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.
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) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
Control Primer 2 (34-mer)	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
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)

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**SECTION 5: Firefighting measures**

XL10-Gold  
2-Mercaptoethanol

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.

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**

: 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.

QuikChange Lightning Enzyme

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

10X QuikChange Lightning 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.

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.

Dpn I Enzyme

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through 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.

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.


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

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**SECTION 6: Accidental release measures**

**For emergency responders**

XL10-Gold 2-Mercaptoethanol	appropriate personal protective equipment. 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.
:  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".
QuikChange Lightning Enzyme	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 QuikChange Lightning 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".
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".
Dpn I Enzyme	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
pWS4.5 Control Template	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
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".
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".




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**SECTION 6: Accidental release measures**

<b>6.2 Environmental precautions</b>	:  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).
	QuikChange Lightning Enzyme	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 QuikChange Lightning 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).
	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).
	Dpn I Enzyme	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).
	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).
	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 quantities.
	pUC 18 DNA Control Plasmid	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

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

<b>Methods for cleaning up</b>	:  QuikSolution	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 Lightning Enzyme	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
	10X QuikChange Lightning 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

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**SECTION 6: Accidental release measures**

	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.
Dpn I Enzyme	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
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.
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.
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 of via a licensed waste disposal contractor.

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

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling**

<b>Protective measures</b>	:	QuikSolution	Put on appropriate personal protective equipment (see Section 8).
		QuikChange Lightning Enzyme	Put on appropriate personal protective equipment (see Section 8).
		10X QuikChange Lightning Buffer	Put on appropriate personal protective equipment (see Section 8).
		QuikChange XL dNTP Mix	Put on appropriate personal protective equipment (see Section 8).
		Dpn I Enzyme	Put on appropriate personal protective equipment (see Section 8).
		pWS4.5 Control Template	Put on appropriate personal protective equipment (see Section 8).



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**SECTION 7: Handling and storage**

**Advice on general occupational hygiene**

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).
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).
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.
QuikChange Lightning Enzyme	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 QuikChange Lightning 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.
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.
Dpn I Enzyme	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.
Control Primer 1 (34-mer)	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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

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

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pUC 18 DNA Control Plasmid

resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.  
Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. 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.
- QuikChange Lightning Enzyme Industrial applications, Professional applications.
- 10X QuikChange Lightning Buffer Industrial applications, Professional applications.
- QuikChange XL dNTP Mix Industrial applications, Professional applications.
- Dpn I Enzyme Industrial applications, Professional applications.
- pWS4.5 Control Template Industrial applications, Professional applications.
- Control Primer 1 (34-mer) Industrial applications, Professional applications.
- Control Primer 2 (34-mer) 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.

**Industrial sector specific solutions**

- :  QuikSolution Not applicable.
- QuikChange Lightning Enzyme Not applicable.
- 10X QuikChange Lightning Buffer Not applicable.
- QuikChange XL dNTP Mix Not applicable.
- Dpn I Enzyme Not applicable.
- pWS4.5 Control Template Not applicable.
- Control Primer 1 (34-mer) Not applicable.
- Control Primer 2 (34-mer) Not applicable.
- XL10-Gold Ultracompetent cells Not applicable.
- XL10-Gold 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
<b>QuikChange Lightning Enzyme</b> Glycerol	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Mist
<b>Dpn I Enzyme</b> Glycerol	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Mist
<b>XL10-Gold Ultracompetent cells</b> Glycerol	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Mist
Sucrose	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> STEL: 20 mg/m <sup>3</sup> 15 minutes. TWA: 10 mg/m <sup>3</sup> 8 hours.

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

#### DNELs/DMELs

No DNELs/DMELs available.

#### PNECs

No PNECs available

### 8.2 Exposure controls

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

#### Individual protection measures

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

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

#### Skin protection

**Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

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

- 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**

<b>Physical state</b>	:	☑ QuikSolution	Liquid. [Clear.]
		QuikChange Lightning Enzyme	Liquid.
		10X QuikChange Lightning Buffer	Liquid.
		QuikChange XL dNTP Mix	Liquid.
		Dpn I Enzyme	Liquid.
		pWS4.5 Control Template	Liquid.
		Control Primer 1 (34-mer)	Liquid.
		Control Primer 2 (34-mer)	Liquid.
		XL10-Gold Ultracompetent cells	Liquid.
		XL10-Gold 2-Mercaptoethanol	Liquid.
		pUC 18 DNA Control Plasmid	Liquid.
<b>Colour</b>	:	☑ QuikSolution	Colourless.
		QuikChange Lightning Enzyme	Not available.
		10X QuikChange Lightning Buffer	Not available.
		QuikChange XL dNTP Mix	Not available.
		Dpn I Enzyme	Not available.
		pWS4.5 Control Template	Not available.
		Control Primer 1 (34-mer)	Not available.
		Control Primer 2 (34-mer)	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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**SECTION 9: Physical and chemical properties**

<b>Melting point/freezing point</b>	:	<input checked="" type="checkbox"/> QuikSolution	18.4°C		
		QuikChange Lightning Enzyme	Not available.		
		10X QuikChange Lightning Buffer	Not available.		
		QuikChange XL dNTP Mix	Not available.		
		Dpn I Enzyme	Not available.		
		pWS4.5 Control Template	0°C		
		Control Primer 1 (34-mer)	0°C		
		Control Primer 2 (34-mer)	0°C		
		XL10-Gold Ultracompetent cells	Not available.		
		XL10-Gold	Not available.		
		2-Mercaptoethanol			
		pUC 18 DNA Control Plasmid	0°C		
		<b>Initial boiling point and boiling range</b>	:	<input checked="" type="checkbox"/> QuikSolution	188.8°C
				QuikChange Lightning Enzyme	Not available.
				10X QuikChange Lightning Buffer	Not available.
				QuikChange XL dNTP Mix	Not available.
				Dpn I Enzyme	Not available.
				pWS4.5 Control Template	100°C
				Control Primer 1 (34-mer)	100°C
Control Primer 2 (34-mer)	100°C				
XL10-Gold Ultracompetent cells	Not available.				
XL10-Gold	Not available.				
2-Mercaptoethanol					
pUC 18 DNA Control Plasmid	100°C				
<b>Flash point</b>	:			<input checked="" type="checkbox"/> QuikSolution	Closed cup: 85°C
				QuikChange Lightning Enzyme	Not available.
				10X QuikChange Lightning Buffer	Not available.
				QuikChange XL dNTP Mix	Not available.
				Dpn I Enzyme	Not available.
				pWS4.5 Control Template	Not available.
				Control Primer 1 (34-mer)	Not available.
		Control Primer 2 (34-mer)	Not available.		
		XL10-Gold Ultracompetent cells	Not available.		
		XL10-Gold	Not available.		
		2-Mercaptoethanol			
		pUC 18 DNA Control Plasmid	Not available.		

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**SECTION 9: Physical and chemical properties**

<b>Evaporation rate</b>	: <input checked="" type="checkbox"/>	QuikSolution 0.026 (butyl acetate = 1) QuikChange Lightning Enzyme Not available. 10X QuikChange Lightning Buffer Not available. QuikChange XL dNTP Mix Not available. Dpn I Enzyme Not available. pWS4.5 Control Template Not available. Control Primer 1 (34-mer) Not available. Control Primer 2 (34-mer) Not available. XL10-Gold Ultracompetent cells Not available. XL10-Gold 2-Mercaptoethanol Not available. pUC 18 DNA Control Plasmid Not available.
<b>Flammability (solid, gas)</b>	: <input checked="" type="checkbox"/>	QuikSolution Not applicable. QuikChange Lightning Enzyme Not applicable. 10X QuikChange Lightning Buffer Not applicable. QuikChange XL dNTP Mix Not applicable. Dpn I Enzyme Not applicable. pWS4.5 Control Template Not applicable. Control Primer 1 (34-mer) Not applicable. Control Primer 2 (34-mer) Not applicable. XL10-Gold Ultracompetent cells Not applicable. XL10-Gold 2-Mercaptoethanol Not applicable. pUC 18 DNA Control Plasmid Not applicable.
<b>Upper/lower flammability or explosive limits</b>	: <input checked="" type="checkbox"/>	QuikSolution Lower: 2.6% Upper: 42% QuikChange Lightning Enzyme Not available. 10X QuikChange Lightning Buffer Not available. QuikChange XL dNTP Mix Not available. Dpn I Enzyme Not available. pWS4.5 Control Template Not available. Control Primer 1 (34-mer) Not available. Control Primer 2 (34-mer) 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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**SECTION 9: Physical and chemical properties**

<b>Vapour pressure</b>	: <input checked="" type="checkbox"/>	QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) 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. Not available. Not available.
<b>Vapour density</b>	: <input checked="" type="checkbox"/>	QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) 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. Not available. Not available.
<b>Relative density</b>	: <input checked="" type="checkbox"/>	QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	1.1 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. Not available. Not available.

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**SECTION 9: Physical and chemical properties**

<b>Solubility(ies)</b>	: <input checked="" type="checkbox"/> QuikSolution	Easily soluble in the following materials: cold water and hot water.
	QuikChange Lightning Enzyme	Soluble in the following materials: cold water and hot water.
	10X QuikChange Lightning Buffer	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.
	Dpn I Enzyme	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.
	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.
	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.
<b>Partition coefficient: n-octanol/water</b>	: <input checked="" type="checkbox"/> QuikSolution	-2.029
	QuikChange Lightning Enzyme	Not available.
	10X QuikChange Lightning Buffer	Not available.
	QuikChange XL dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	pWS4.5 Control Template	Not available.
	Control Primer 1 (34-mer)	Not available.
	Control Primer 2 (34-mer)	Not available.
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.
<b>Auto-ignition temperature</b>	: <input checked="" type="checkbox"/> QuikSolution	300 to 302°C
	QuikChange Lightning Enzyme	Not available.
	10X QuikChange Lightning Buffer	Not available.
	QuikChange XL dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	pWS4.5 Control Template	Not available.
	Control Primer 1 (34-mer)	Not available.
	Control Primer 2 (34-mer)	Not available.
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	Not available.
	pUC 18 DNA Control	Not available.

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**SECTION 9: Physical and chemical properties**

	Plasmid		
<b>Decomposition temperature</b>	: <input checked="" type="checkbox"/> QuikSolution	140 to 189°C	
	QuikChange Lightning Enzyme	Not available.	
	10X QuikChange Lightning Buffer	Not available.	
	QuikChange XL dNTP Mix	Not available.	
	Dpn I Enzyme	Not available.	
	pWS4.5 Control Template	Not available.	
	Control Primer 1 (34-mer)	Not available.	
	Control Primer 2 (34-mer)	Not available.	
	XL10-Gold Ultracompetent cells	Not available.	
	XL10-Gold 2-Mercaptoethanol	Not available.	
	pUC 18 DNA Control Plasmid	Not available.	
	<b>Viscosity</b>	: <input checked="" type="checkbox"/> QuikSolution	Dynamic (room temperature): 2.14 mPa·s
		QuikChange Lightning Enzyme	Not available.
		10X QuikChange Lightning Buffer	Not available.
		QuikChange XL dNTP Mix	Not available.
		Dpn I Enzyme	Not available.
		pWS4.5 Control Template	Not available.
		Control Primer 1 (34-mer)	Not available.
		Control Primer 2 (34-mer)	Not available.
		XL10-Gold Ultracompetent cells	Not available.
XL10-Gold 2-Mercaptoethanol		Not available.	
pUC 18 DNA Control Plasmid		Not available.	
<b>Explosive properties</b>		: <input checked="" type="checkbox"/> QuikSolution	Not available.
		QuikChange Lightning Enzyme	Not available.
		10X QuikChange Lightning Buffer	Not available.
		QuikChange XL dNTP Mix	Not available.
		Dpn I Enzyme	Not available.
		pWS4.5 Control Template	Not available.
		Control Primer 1 (34-mer)	Not available.
		Control Primer 2 (34-mer)	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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**SECTION 9: Physical and chemical properties**

<b>Oxidising properties</b>	: <input checked="" type="checkbox"/> QuikSolution	Not available.
	QuikChange Lightning Enzyme	Not available.
	10X QuikChange Lightning Buffer	Not available.
	QuikChange XL dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	pWS4.5 Control Template	Not available.
	Control Primer 1 (34-mer)	Not available.
	Control Primer 2 (34-mer)	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**

<b>10.1 Reactivity</b>	: <input checked="" type="checkbox"/> QuikSolution	No specific test data related to reactivity available for this product or its ingredients.
	QuikChange Lightning Enzyme	No specific test data related to reactivity available for this product or its ingredients.
	10X QuikChange Lightning Buffer	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.
	Dpn I Enzyme	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.
	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.
	XL10-Gold Ultracompetent cells	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.
	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.
<b>10.2 Chemical stability</b>	: <input checked="" type="checkbox"/> QuikSolution	The product is stable.
	QuikChange Lightning Enzyme	The product is stable.
	10X QuikChange Lightning Buffer	The product is stable.
	QuikChange XL dNTP Mix	The product is stable.
	Dpn I Enzyme	The product is stable.
	pWS4.5 Control Template	The product is stable.
	Control Primer 1 (34-mer)	The product is stable.

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**SECTION 10: Stability and reactivity**

Control Primer 2 (34-mer)	The product is stable.
XL10-Gold	The product is stable.
Ultracompetent cells XL10-Gold	The product is stable.
2-Mercaptoethanol pUC 18 DNA Control Plasmid	The product is stable.

**10.3 Possibility of hazardous reactions**

<input checked="" type="checkbox"/> QuikSolution	Under normal conditions of storage and use, hazardous reactions will not occur.
QuikChange Lightning Enzyme	Under normal conditions of storage and use, hazardous reactions will not occur.
10X QuikChange Lightning Buffer	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.
Dpn I Enzyme	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.
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.
XL10-Gold	Under normal conditions of storage and use, hazardous reactions will not occur.
Ultracompetent cells XL10-Gold	Under normal conditions of storage and use, hazardous reactions will not occur.
2-Mercaptoethanol pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous reactions will not occur.

**10.4 Conditions to avoid**

<input checked="" type="checkbox"/> QuikSolution	No specific data.
QuikChange Lightning Enzyme	No specific data.
10X QuikChange Lightning Buffer	No specific data.
QuikChange XL dNTP Mix	No specific data.
Dpn I Enzyme	No specific data.
pWS4.5 Control Template	No specific data.
Control Primer 1 (34-mer)	No specific data.
Control Primer 2 (34-mer)	No specific data.
XL10-Gold	No specific data.
Ultracompetent cells XL10-Gold	No specific data.
2-Mercaptoethanol pUC 18 DNA Control Plasmid	No specific data.

**10.5 Incompatible materials**

<input checked="" type="checkbox"/> QuikSolution	May react or be incompatible with oxidising materials.
QuikChange Lightning Enzyme	May react or be incompatible with oxidising materials.
10X QuikChange Lightning Buffer	May react or be incompatible with oxidising materials.
QuikChange XL dNTP Mix	May react or be incompatible with oxidising materials.
Dpn I Enzyme	May react or be incompatible with oxidising materials.



**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 10: Stability and reactivity**

pWS4.5 Control Template	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.
XL10-Gold Ultracompetent cells	May react or be incompatible with oxidising materials.
XL10-Gold 2-Mercaptoethanol	May react or be incompatible with oxidising materials.
pUC 18 DNA Control Plasmid	May react or be incompatible with oxidising materials.

**10.6 Hazardous decomposition products**

<p><b>QuikSolution</b></p> <p>QuikChange Lightning Enzyme</p> <p>10X QuikChange Lightning Buffer</p> <p>QuikChange XL dNTP Mix</p> <p>Dpn I Enzyme</p> <p>pWS4.5 Control Template</p> <p>Control Primer 1 (34-mer)</p> <p>Control Primer 2 (34-mer)</p> <p>XL10-Gold Ultracompetent cells</p> <p>XL10-Gold 2-Mercaptoethanol</p> <p>pUC 18 DNA Control Plasmid</p>	<p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p> <p>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</p>
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**SECTION 11: Toxicological information**

**11.1 Information on toxicological effects**

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<b>QuikSolution</b> Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
<b>10X QuikChange Lightning Buffer</b> Ammonium sulphate	LD50 Oral	Rat	2840 mg/kg	-
<b>Dpn I Enzyme</b> Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
<b>XL10-Gold 2-Mercaptoethanol</b> Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
	LD50 Dermal	Rabbit	167.1 mg/kg	-
	LD50 Oral	Rat	244 mg/kg	-

Acute toxicity estimates

**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 11: Toxicological information**

Route	ATE value
<b>10X QuikChange Lightning Buffer</b> Oral Dermal Inhalation (vapours)	25000 mg/kg 55000 mg/kg 550 mg/l
<b>XL10-Gold Ultracompetent cells</b> Oral	31250 mg/kg
<b>XL10-Gold 2-Mercaptoethanol</b> Oral Dermal Inhalation (vapours)	5545.5 mg/kg 3383.8 mg/kg 40.5 mg/l

**Irritation/Corrosion**

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>QuikSolution</b> Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 milligrams	-
<b>Dpn I Enzyme</b> Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
<b>XL10-Gold 2-Mercaptoethanol</b> Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
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)**

**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 11: Toxicological information**

Product/ingredient name	Category	Route of exposure	Target organs
<b>10X QuikChange Lightning Buffer</b> 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	Category 3	Not applicable.	Respiratory tract irritation
Dodecyldimethyl(3-sulphonatopropyl)ammonium	Category 3	Not applicable.	Respiratory tract irritation
<b>XL10-Gold 2-Mercaptoethanol</b> 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.
QuikChange Lightning Enzyme	Routes of entry anticipated: Oral, Dermal, Inhalation.
10X QuikChange Lightning Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation.
QuikChange XL dNTP Mix	Not available.
Dpn I Enzyme	Routes of entry anticipated: Oral, Dermal, Inhalation.
pWS4.5 Control Template	Not available.
Control Primer 1 (34-mer)	Not available.
Control Primer 2 (34-mer)	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.
QuikChange Lightning Enzyme	No known significant effects or critical hazards.
10X QuikChange Lightning Buffer	No known significant effects or critical hazards.
QuikChange XL dNTP Mix	No known significant effects or critical hazards.
Dpn I Enzyme	No known significant effects or critical hazards.
pWS4.5 Control Template	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.
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.

**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 11: Toxicological information**

<b>Ingestion</b>	:	<input checked="" type="checkbox"/> QuikSolution	No known significant effects or critical hazards.		
		QuikChange Lightning Enzyme	No known significant effects or critical hazards.		
		10X QuikChange Lightning Buffer	No known significant effects or critical hazards.		
		QuikChange XL dNTP Mix	No known significant effects or critical hazards.		
		Dpn I Enzyme	No known significant effects or critical hazards.		
		pWS4.5 Control Template	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.		
		XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.		
		XL10-Gold	No known significant effects or critical hazards.		
		2-Mercaptoethanol	No known significant effects or critical hazards.		
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.		
		<b>Skin contact</b>	:	<input checked="" type="checkbox"/> QuikSolution	No known significant effects or critical hazards.
				QuikChange Lightning Enzyme	No known significant effects or critical hazards.
				10X QuikChange Lightning Buffer	No known significant effects or critical hazards.
				QuikChange XL dNTP Mix	No known significant effects or critical hazards.
Dpn I Enzyme	No known significant effects or critical hazards.				
pWS4.5 Control Template	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.				
XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.				
XL10-Gold	May cause an allergic skin reaction.				
2-Mercaptoethanol	No known significant effects or critical hazards.				
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.				
<b>Eye contact</b>	:			<input checked="" type="checkbox"/> QuikSolution	No known significant effects or critical hazards.
				QuikChange Lightning Enzyme	No known significant effects or critical hazards.
				10X QuikChange Lightning Buffer	No known significant effects or critical hazards.
				QuikChange XL dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.		
		pWS4.5 Control Template	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.		
		XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.		
		XL10-Gold	Causes serious eye damage.		
		2-Mercaptoethanol	No known significant effects or critical hazards.		
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.		

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

**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 11: Toxicological information**

<b>Inhalation</b>	: <input checked="" type="checkbox"/>	<p>QuikSolution No specific data.</p> <p>QuikChange Lightning Enzyme No specific data.</p> <p>10X QuikChange Lightning Buffer No specific data.</p> <p>QuikChange XL dNTP Mix No specific data.</p> <p>Dpn I Enzyme No specific data.</p> <p>pWS4.5 Control Template No specific data.</p> <p>Control Primer 1 (34-mer) No specific data.</p> <p>Control Primer 2 (34-mer) No specific data.</p> <p>XL10-Gold Ultracompetent cells No specific data.</p> <p>XL10-Gold 2-Mercaptoethanol No specific data.</p> <p>pUC 18 DNA Control Plasmid No specific data.</p>
<b>Ingestion</b>	: <input checked="" type="checkbox"/>	<p>QuikSolution No specific data.</p> <p>QuikChange Lightning Enzyme No specific data.</p> <p>10X QuikChange Lightning Buffer No specific data.</p> <p>QuikChange XL dNTP Mix No specific data.</p> <p>Dpn I Enzyme No specific data.</p> <p>pWS4.5 Control Template No specific data.</p> <p>Control Primer 1 (34-mer) No specific data.</p> <p>Control Primer 2 (34-mer) No specific data.</p> <p>XL10-Gold Ultracompetent cells No specific data.</p> <p>XL10-Gold 2-Mercaptoethanol Adverse symptoms may include the following: stomach pains</p> <p>pUC 18 DNA Control Plasmid No specific data.</p>
<b>Skin contact</b>	: <input checked="" type="checkbox"/>	<p>QuikSolution No specific data.</p> <p>QuikChange Lightning Enzyme No specific data.</p> <p>10X QuikChange Lightning Buffer No specific data.</p> <p>QuikChange XL dNTP Mix No specific data.</p> <p>Dpn I Enzyme No specific data.</p> <p>pWS4.5 Control Template No specific data.</p> <p>Control Primer 1 (34-mer) No specific data.</p> <p>Control Primer 2 (34-mer) No specific data.</p> <p>XL10-Gold Ultracompetent cells No specific data.</p> <p>XL10-Gold 2-Mercaptoethanol Adverse symptoms may include the following: pain or irritation redness blistering may occur</p>

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**SECTION 11: Toxicological information**

<b>Eye contact</b>	:	pUC 18 DNA Control Plasmid	No specific data.
	:	<input checked="" type="checkbox"/> QuikSolution	No specific data.
	:	QuikChange Lightning Enzyme	No specific data.
	:	10X QuikChange Lightning Buffer	No specific data.
	:	QuikChange XL dNTP Mix	No specific data.
	:	Dpn I Enzyme	No specific data.
	:	pWS4.5 Control Template	No specific data.
	:	Control Primer 1 (34-mer)	No specific data.
	:	Control Primer 2 (34-mer)	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**

<b>General</b>	:	<input checked="" type="checkbox"/> QuikSolution	No known significant effects or critical hazards.
	:	QuikChange Lightning Enzyme	No known significant effects or critical hazards.
	:	10X QuikChange Lightning Buffer	No known significant effects or critical hazards.
	:	QuikChange XL dNTP Mix	No known significant effects or critical hazards.
	:	Dpn I Enzyme	No known significant effects or critical hazards.
	:	pWS4.5 Control Template	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.
	:	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	:	XL10-Gold 2-Mercaptoethanol	Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.



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**SECTION 11: Toxicological information**

<b>Carcinogenicity</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	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.
<b>Mutagenicity</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	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.
<b>Teratogenicity</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Lightning Enzyme 10X QuikChange Lightning Buffer QuikChange XL dNTP Mix Dpn I Enzyme pWS4.5 Control Template Control Primer 1 (34-mer) Control Primer 2 (34-mer) XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	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.

**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 11: Toxicological information**

<b>Developmental effects</b>	:	<input checked="" type="checkbox"/> QuikSolution	No known significant effects or critical hazards.		
		QuikChange Lightning Enzyme	No known significant effects or critical hazards.		
		10X QuikChange Lightning Buffer	No known significant effects or critical hazards.		
		QuikChange XL dNTP Mix	No known significant effects or critical hazards.		
		Dpn I Enzyme	No known significant effects or critical hazards.		
		pWS4.5 Control Template	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.		
		XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.		
		XL10-Gold	No known significant effects or critical hazards.		
		2-Mercaptoethanol	No known significant effects or critical hazards.		
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.		
		<b>Fertility effects</b>	:	<input checked="" type="checkbox"/> QuikSolution	No known significant effects or critical hazards.
				QuikChange Lightning Enzyme	No known significant effects or critical hazards.
				10X QuikChange Lightning Buffer	No known significant effects or critical hazards.
				QuikChange XL dNTP Mix	No known significant effects or critical hazards.
Dpn I Enzyme	No known significant effects or critical hazards.				
pWS4.5 Control Template	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.				
XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.				
XL10-Gold	No known significant effects or critical hazards.				
2-Mercaptoethanol	No known significant effects or critical hazards.				
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.				

**SECTION 12: Ecological information**

**12.1 Toxicity**

Product/ingredient name	Result	Species	Exposure
<input checked="" type="checkbox"/> <b>QuikSolution</b> 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 100 µl/L Marine water	Algae - Ulva lactuca	72 hours
<b>10X QuikChange Lightning Buffer</b> 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	96 hours

**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 12: Ecological information**

<b>Dpn I Enzyme</b> Sodium chloride	Chronic NOEC 143 µg/l Marine water	phase Fish - Salmo salar - Post-smolt	5 weeks
	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 402600 µg/l Fresh water Acute IC50 6.87 g/L Fresh water	Daphnia - Daphnia magna Aquatic plants - Lemna minor	48 hours 96 hours
	Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water	Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	96 hours 3 weeks
<b>XL10-Gold 2-Mercaptoethanol</b> Sodium chloride	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
	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 402600 µg/l Fresh water Acute IC50 6.87 g/L Fresh water	Daphnia - Daphnia magna Aquatic plants - Lemna minor	48 hours 96 hours
	Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water	Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	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
<b>XL10-Gold 2-Mercaptoethanol</b> 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
<b>10X QuikChange Lightning Buffer</b> Ammonium sulphate	-	-	Readily

**12.3 Bioaccumulative potential**

**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 12: Ecological information**

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>QuikSolution</b> Dimethyl sulfoxide	-2.029	3.16	low
<b>10X QuikChange Lightning Buffer</b> Ammonium sulphate	-5.1	-	low
<b>XL10-Gold 2-Mercaptoethanol</b> 2-Mercaptoethanol	-0.056	-	low

**12.4 Mobility in soil**

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

**Mobility** : Not available.

**12.5 Results of PBT and vPvB assessment**

**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** : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 2008/98/EC.

**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. 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

None of the components are listed.

###### Substances of very high concern

None of the components are listed.

<b>Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles</b>	<input checked="" type="checkbox"/> QuikSolution	Not applicable.
	QuikChange Lightning	Not applicable.
	Enzyme	
	10X QuikChange Lightning Buffer	Not applicable.
	QuikChange XL dNTP Mix	Not applicable.
	Dpn I Enzyme	Not applicable.
	pWS4.5 Control Template	Not applicable.
	Control Primer 1 (34-mer)	Not applicable.
	Control Primer 2 (34-mer)	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
	XL10-Gold	Not applicable.
	2-Mercaptoethanol	
	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

<b>Australia</b>	: Not determined.
<b>Canada</b>	: Not determined.
<b>China</b>	: Not determined.
<b>Europe</b>	: Not determined.

**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 15: Regulatory information**

<b>Japan</b>	: <input checked="" type="checkbox"/> <b>Japan inventory (ENCS):</b> Not determined. <b>Japan inventory (ISHL):</b> Not determined.
<b>Malaysia</b>	: Not determined.
<b>New Zealand</b>	: Not determined.
<b>Philippines</b>	: Not determined.
<b>Republic of Korea</b>	: Not determined.
<b>Taiwan</b>	: All components are listed or exempted.
<b>Thailand</b>	: <input checked="" type="checkbox"/> Not determined.
<b>Turkey</b>	: Not determined.
<b>United States</b>	: Not determined.
<b>Viet Nam</b>	: <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
<b>XL10-Gold 2-Mercaptoethanol</b> 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"/> <b>10X QuikChange Lightning Buffer</b> H302 H312 H315 H319 H332 H335 H400 H412	Harmful if swallowed. Harmful in contact with skin. Causes skin irritation. Causes serious eye irritation. Harmful if inhaled. May cause respiratory irritation. Very toxic to aquatic life. Harmful to aquatic life with long lasting effects.
<b>Dpn I Enzyme</b> H319	Causes serious eye irritation.
<b>XL10-Gold 2-Mercaptoethanol</b> H301 H310 H315 H317 H318 H319 H330 H335 H411 H412	Toxic if swallowed. Fatal in contact with skin. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Causes serious eye irritation. Fatal if inhaled. May cause respiratory irritation. Toxic to aquatic life with long lasting effects. Harmful to aquatic life with long lasting effects.



**QuikChange Lightning Site-Directed Mutagenesis Kit, Part Number 210519**

**SECTION 16: Other information**

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

<p><b>10X QuikChange Lightning Buffer</b>                  Acute Tox. 4, H302                  Acute Tox. 4, H312                  Acute Tox. 4, H332                  Aquatic Acute 1, H400                  Aquatic Chronic 3, H412                  Eye Irrit. 2, H319                  Skin Irrit. 2, H315                  STOT SE 3, H335</p> <p><b>Dpn I Enzyme</b>                  Eye Irrit. 2, H319</p> <p><b>XL10-Gold 2-Mercaptoethanol</b>                  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>ACUTE TOXICITY (oral) - Category 4                  ACUTE TOXICITY (dermal) - Category 4                  ACUTE TOXICITY (inhalation) - Category 4                  SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1                  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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**Notice to reader**

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