

# SAFETY DATA SHEET



QuikChange Lightning Multi Site-Directed Mutagenesis Kit, Part Number 210515

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

### 1.1 Product identifier

<b>Product name</b>	: QuikChange Lightning Multi Site-Directed Mutagenesis Kit, Part Number 210515
<b>Part No. (Kit)</b>	: 210515
<b>Part No.</b>	: QuikSolution 200516-51 QuikChange Lightning Multi Enzyme 210515-51 10X QuikChange Lightning Multi Buffer 210513-52 dNTP Mix 200519-52 Dpn I Enzyme 210518-52 QuikChange Multi Control Template 200514-53 QuikChange Multi Ctl. Primer Mix 200514-54 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

Identified uses	
Analytical reagent.	
QuikSolution	0.5 mL
QuikChange Lightning Multi Enzyme	0.01 mL (10 reactions)
10X QuikChange Lightning Multi Buffer	0.2 mL
dNTP Mix	0.01 mL
Dpn I Enzyme	0.01 mL (10 reactions)
QuikChange Multi Control Template	0.005 mL (250 ng 50 ng/μl)
QuikChange Multi Ctl. Primer Mix	0.005 mL (100 ng/μl ea.)
XL10-Gold Ultracompetent cells	0.54 mL
XL10-Gold 2-Mercaptoethanol	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>	: QuikSolution	Mono-constituent substance
	QuikChange Lightning	Mixture
	Multi Enzyme	
	10X QuikChange	Mixture
	Lightning Multi Buffer	
	dNTP Mix	Mixture
	Dpn I Enzyme	Mixture
	QuikChange Multi	Mixture
	Control Template	
	QuikChange Multi Ctl.	Mixture
	Primer Mix	
	XL10-Gold	Mixture
	Ultracompetent cells	
	XL10-Gold	Mixture
	2-Mercaptoethanol	
	pUC 18 DNA Control	Mixture
Plasmid		

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

##### 10X QuikChange Lightning

##### Multi Buffer

H319 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2

##### XL10-Gold 2-Mercaptoethanol

H318 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1

H317 SKIN SENSITISATION - Category 1

H412 LONG-TERM AQUATIC HAZARD - Category 3

**Ingredients of unknown toxicity** : dNTP Mix Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 5.7%

**Ingredients of unknown ecotoxicity** : dNTP Mix Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 5.7%

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

### 2.2 Label elements

**Hazard pictograms** :



<b>Signal word</b>	: QuikSolution	No signal word.
	QuikChange Lightning	No signal word.
	Multi Enzyme	
	10X QuikChange	Warning
	Lightning Multi Buffer	
	dNTP Mix	No signal word.
	Dpn I Enzyme	No signal word.
	QuikChange Multi	No signal word.
	Control Template	
	QuikChange Multi Ctl.	No signal word.
	Primer Mix	
	XL10-Gold	No signal word.
	Ultracompetent cells	
	XL10-Gold	Danger
	2-Mercaptoethanol	
	pUC 18 DNA Control	No signal word.
Plasmid		

**Hazard statements** :

**SECTION 2: Hazards identification**

QuikSolution	No known significant effects or critical hazards.
QuikChange Lightning Multi Enzyme	No known significant effects or critical hazards.
10X QuikChange Lightning Multi Buffer	<b>GHS07 -</b> Causes serious eye irritation.
dNTP Mix	No known significant effects or critical hazards.
Dpn I Enzyme	No known significant effects or critical hazards.
QuikChange Multi Control Template	No known significant effects or critical hazards.
QuikChange Multi Ctl. Primer Mix	No known significant effects or critical hazards.
XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
XL10-Gold 2-Mercaptoethanol	<b>GHS05 -</b> Causes serious eye damage. <b>GHS07 -</b> May cause an allergic skin reaction.
pUC 18 DNA Control Plasmid	Harmful to aquatic life with long lasting effects. No known significant effects or critical hazards.

**Precautionary statements**

**Prevention**

: QuikSolution	Not applicable.
QuikChange Lightning Multi Enzyme	Not applicable.
10X QuikChange Lightning Multi Buffer	P280 - Wear eye or face protection.
dNTP Mix	P264 - Wash hands thoroughly after handling.
Dpn I Enzyme	Not applicable.
QuikChange Multi Control Template	Not applicable.
QuikChange Multi Ctl. Primer Mix	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. Not applicable.

**Response**

: QuikSolution	Not applicable.
QuikChange Lightning Multi Enzyme	Not applicable.
10X QuikChange Lightning Multi Buffer	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
dNTP Mix	Not applicable.
Dpn I Enzyme	Not applicable.
QuikChange Multi Control Template	Not applicable.
QuikChange Multi Ctl. Primer Mix	Not applicable.
XL10-Gold Ultracompetent cells	Not applicable.
XL10-Gold 2-Mercaptoethanol	P305 + P351 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Immediately call a POISON CENTER or physician.
pUC 18 DNA Control Plasmid	Not applicable.

**SECTION 2: Hazards identification**

<b>Storage</b>	:	QuikSolution	Not applicable.
		QuikChange Lightning Multi Enzyme	Not applicable.
		10X QuikChange Lightning Multi Buffer	Not applicable.
		dNTP Mix	Not applicable.
		Dpn I Enzyme	Not applicable.
		QuikChange Multi Control Template	Not applicable.
		QuikChange Multi Ctl. Primer Mix	Not applicable.
		XL10-Gold	Not applicable.
		Ultracompetent cells	Not applicable.
		XL10-Gold	Not applicable.
		2-Mercaptoethanol	Not applicable.
		pUC 18 DNA Control Plasmid	Not applicable.
<b>Disposal</b>	:	QuikSolution	Not applicable.
		QuikChange Lightning Multi Enzyme	Not applicable.
		10X QuikChange Lightning Multi Buffer	Not applicable.
		dNTP Mix	Not applicable.
		Dpn I Enzyme	Not applicable.
		QuikChange Multi Control Template	Not applicable.
		QuikChange Multi Ctl. Primer Mix	Not applicable.
		XL10-Gold	Not applicable.
		Ultracompetent cells	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
		XL10-Gold	Not applicable.
		2-Mercaptoethanol	Not applicable.
		pUC 18 DNA Control Plasmid	Not applicable.
<b>Hazardous ingredients</b>	:	10X QuikChange Lightning Multi Buffer	Not applicable.
		Dpn I Enzyme	Not applicable.
		XL10-Gold	- 2-Mercaptoethanol
		2-Mercaptoethanol	
<b>Supplemental label elements</b>	:	QuikSolution	Not applicable.
		QuikChange Lightning Multi Enzyme	Not applicable.
		10X QuikChange Lightning Multi Buffer	Not applicable.
		dNTP Mix	Not applicable.
		Dpn I Enzyme	Safety data sheet available on request.
		QuikChange Multi Control Template	Not applicable.
		QuikChange Multi Ctl. Primer Mix	Not applicable.
		XL10-Gold	Not applicable.
		Ultracompetent cells	Not applicable.
		XL10-Gold	Not applicable.
		2-Mercaptoethanol	Not applicable.
		pUC 18 DNA Control Plasmid	Not applicable.

## SECTION 2: Hazards identification

<b>Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles</b>	<b>:</b> QuikSolution	Not applicable.
	QuikChange Lightning	Not applicable.
	Multi Enzyme	
	10X QuikChange	Not applicable.
	Lightning Multi Buffer	
	dNTP Mix	Not applicable.
	Dpn I Enzyme	Not applicable.
	QuikChange Multi	Not applicable.
	Control Template	
	QuikChange Multi Ctl.	Not applicable.
	Primer Mix	
	XL10-Gold	Not applicable.
	Ultracompetent cells	
	XL10-Gold	Not applicable.
	2-Mercaptoethanol	
pUC 18 DNA Control	Not applicable.	
Plasmid		

### Special packaging requirements

<b>Tactile warning of danger</b>	<b>:</b> QuikSolution	Not applicable.
	QuikChange Lightning	Not applicable.
	Multi Enzyme	
	10X QuikChange	Not applicable.
	Lightning Multi Buffer	
	dNTP Mix	Not applicable.
	Dpn I Enzyme	Not applicable.
	QuikChange Multi	Not applicable.
	Control Template	
	QuikChange Multi Ctl.	Not applicable.
	Primer Mix	
	XL10-Gold	Not applicable.
	Ultracompetent cells	
	XL10-Gold	Not applicable.
	2-Mercaptoethanol	
pUC 18 DNA Control	Not applicable.	
Plasmid		

### 2.3 Other hazards

<b>Other hazards which do not result in classification</b>	<b>:</b> QuikSolution	None known.
	QuikChange Lightning	None known.
	Multi Enzyme	
	10X QuikChange	None known.
	Lightning Multi Buffer	
	dNTP Mix	None known.
	Dpn I Enzyme	None known.
	QuikChange Multi	None known.
	Control Template	
	QuikChange Multi Ctl.	None known.
	Primer Mix	
	XL10-Gold	None known.
	Ultracompetent cells	
	XL10-Gold	None known.
	2-Mercaptoethanol	
pUC 18 DNA Control	None known.	
Plasmid		

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

<b>3.2 Mixtures</b>	:	QuikSolution	Mono-constituent substance
		QuikChange Lightning Multi Enzyme	Mixture
		10X QuikChange Lightning Multi Buffer	Mixture
		dNTP Mix	Mixture
		Dpn I Enzyme	Mixture
		QuikChange Multi Control Template	Mixture
		QuikChange Multi Ctl. Primer Mix	Mixture
		XL10-Gold Ultracompetent cells	Mixture
		XL10-Gold 2-Mercaptoethanol	Mixture
		pUC 18 DNA Control Plasmid	Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
<b>QuikSolution</b> Dimethyl sulfoxide	EC: 200-664-3 CAS: 67-68-5	100	Not classified.	[A]
<b>QuikChange Lightning Multi Enzyme</b> Glycerol	EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
Poly(oxy-1,2-ethanediyl), .alpha.-[ (1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	CAS: 9036-19-5	≤0.3	Skin Irrit. 2, H315 Eye Dam. 1, H318 Aquatic Chronic 2, H411	[1] [5]
<b>10X QuikChange Lightning Multi Buffer</b> 2-Amino-2-(hydroxymethyl) propane-1,3-diol hydrochloride	EC: 214-684-5 CAS: 1185-53-1	≤5	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335	[1]
Polyoxyethylene octyl phenyl ether	CAS: 9002-93-1	≤2.3	Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 Aquatic Chronic 2, H411	[1] [5]
<b>Dpn I Enzyme</b> Glycerol	EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤3	Eye Irrit. 2, H319	[1]
<b>XL10-Gold Ultracompetent cells</b> Glycerol	EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sucrose	EC: 200-334-9 CAS: 57-50-1	≤10	Not classified.	[2]
<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	[1]

### SECTION 3: Composition/information on ingredients

			See Section 16 for the full text of the H statements declared above.	
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There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

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

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

<b>Eye contact</b>	: 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 Multi 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 Multi Buffer	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	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.
	QuikChange Multi Control Template	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	QuikChange Multi Ctl. Primer Mix	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	XL10-Gold Ultracompetent cells	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
	pUC 18 DNA Control Plasmid	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
<b>Inhalation</b>	: QuikSolution	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	QuikChange Lightning Multi 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 Multi Buffer	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be

**SECTION 4: First aid measures**

		dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	dNTP Mix	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	Dpn I Enzyme	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	QuikChange Multi Control Template	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	QuikChange Multi Ctl. Primer Mix	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.
<b>Skin contact</b>	: QuikSolution	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	QuikChange Lightning Multi Enzyme	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10X QuikChange Lightning Multi Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	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.
	QuikChange Multi Control Template	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	QuikChange Multi Ctl. Primer Mix	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.



**SECTION 4: First aid measures**

**Ingestion**

XL10-Gold Ultracompetent cells	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
pUC 18 DNA Control Plasmid	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
: 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 Multi 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 Multi Buffer	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
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.
QuikChange Multi Control Template	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
QuikChange Multi Ctl. Primer 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

**SECTION 4: First aid measures**

<p>XL10-Gold Ultracompetent cells</p>	<p>personnel. Get medical attention if symptoms occur. Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.</p>
<p>XL10-Gold 2-Mercaptoethanol</p>	<p>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>

**Protection of first-aiders**

<p>: QuikSolution</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>QuikChange Lightning Multi Enzyme</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>10X QuikChange Lightning Multi Buffer</p>	<p>No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.</p>
<p>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>QuikChange Multi Control Template</p>	<p>No action shall be taken involving any personal risk or without suitable training.</p>
<p>QuikChange Multi Ctl. Primer Mix</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

**SECTION 4: First aid measures**

<b>Eye contact</b>	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Lightning	No known significant effects or critical hazards.
		Multi Enzyme	
		10X QuikChange	Causes serious eye irritation.
		Lightning Multi Buffer	
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.
		QuikChange Multi	No known significant effects or critical hazards.
		Control Template	
		QuikChange Multi Ctl.	No known significant effects or critical hazards.
		Primer Mix	
		XL10-Gold	No known significant effects or critical hazards.
		Ultracompetent cells	
		XL10-Gold	Causes serious eye damage.
2-Mercaptoethanol			
pUC 18 DNA Control	No known significant effects or critical hazards.		
Plasmid			
<b>Inhalation</b>	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Lightning	No known significant effects or critical hazards.
		Multi Enzyme	
		10X QuikChange	No known significant effects or critical hazards.
		Lightning Multi Buffer	
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.
		QuikChange Multi	No known significant effects or critical hazards.
		Control Template	
		QuikChange Multi Ctl.	No known significant effects or critical hazards.
		Primer Mix	
		XL10-Gold	No known significant effects or critical hazards.
		Ultracompetent cells	
		XL10-Gold	No known significant effects or critical hazards.
2-Mercaptoethanol			
pUC 18 DNA Control	No known significant effects or critical hazards.		
Plasmid			
<b>Skin contact</b>	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Lightning	No known significant effects or critical hazards.
		Multi Enzyme	
		10X QuikChange	No known significant effects or critical hazards.
		Lightning Multi Buffer	
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.
		QuikChange Multi	No known significant effects or critical hazards.
		Control Template	
		QuikChange Multi Ctl.	No known significant effects or critical hazards.
		Primer Mix	
		XL10-Gold	No known significant effects or critical hazards.
		Ultracompetent cells	
		XL10-Gold	May cause an allergic skin reaction.
2-Mercaptoethanol			
pUC 18 DNA Control	No known significant effects or critical hazards.		
Plasmid			
<b>Ingestion</b>	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Lightning	No known significant effects or critical hazards.
		Multi Enzyme	
		10X QuikChange	No known significant effects or critical hazards.
		Lightning Multi Buffer	
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.
		QuikChange Multi	No known significant effects or critical hazards.
		Control Template	
		QuikChange Multi Ctl.	No known significant effects or critical hazards.
		Primer Mix	
		XL10-Gold	No known significant effects or critical hazards.
		Ultracompetent cells	

**SECTION 4: First aid measures**

XL10-Gold No known significant effects or critical hazards.  
 2-Mercaptoethanol  
 pUC 18 DNA Control No known significant effects or critical hazards.  
 Plasmid

**Over-exposure signs/symptoms**

**Eye contact**

: QuikSolution No specific data.  
 QuikChange Lightning No specific data.  
 Multi Enzyme  
 10X QuikChange Adverse symptoms may include the following:  
 Lightning Multi Buffer  
 pain or irritation  
 watering  
 redness  
 dNTP Mix No specific data.  
 Dpn I Enzyme No specific data.  
 QuikChange Multi No specific data.  
 Control Template  
 QuikChange Multi Ctl. No specific data.  
 Primer Mix  
 XL10-Gold No specific data.  
 Ultracompetent cells  
 XL10-Gold Adverse symptoms may include the following:  
 2-Mercaptoethanol  
 pain  
 watering  
 redness

**Inhalation**

: pUC 18 DNA Control No specific data.  
 Plasmid  
 QuikSolution No specific data.  
 QuikChange Lightning No specific data.  
 Multi Enzyme  
 10X QuikChange No specific data.  
 Lightning Multi Buffer  
 dNTP Mix No specific data.  
 Dpn I Enzyme No specific data.  
 QuikChange Multi No specific data.  
 Control Template  
 QuikChange Multi Ctl. No specific data.  
 Primer Mix  
 XL10-Gold No specific data.  
 Ultracompetent cells  
 XL10-Gold No specific data.  
 2-Mercaptoethanol  
 pUC 18 DNA Control No specific data.  
 Plasmid

**Skin contact**

: QuikSolution No specific data.  
 QuikChange Lightning No specific data.  
 Multi Enzyme  
 10X QuikChange No specific data.  
 Lightning Multi Buffer  
 dNTP Mix No specific data.  
 Dpn I Enzyme No specific data.  
 QuikChange Multi No specific data.  
 Control Template  
 QuikChange Multi Ctl. No specific data.  
 Primer Mix  
 XL10-Gold No specific data.  
 Ultracompetent cells  
 XL10-Gold Adverse symptoms may include the following:  
 2-Mercaptoethanol  
 pain or irritation  
 redness  
 blistering may occur  
 pUC 18 DNA Control No specific data.

**SECTION 4: First aid measures**

	Plasmid	
<b>Ingestion</b>	: QuikSolution	No specific data.
	QuikChange Lightning Multi Enzyme	No specific data.
	10X QuikChange Lightning Multi Buffer	No specific data.
	dNTP Mix	No specific data.
	Dpn I Enzyme	No specific data.
	QuikChange Multi Control Template	No specific data.
	QuikChange Multi Ctl. Primer Mix	No specific data.
	XL10-Gold	No specific data.
	Ultracompetent cells	Adverse symptoms may include the following:
	XL10-Gold	
	2-Mercaptoethanol	stomach pains
	pUC 18 DNA Control	No specific data.
	Plasmid	

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

<b>Notes to physician</b>	: QuikSolution	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	QuikChange Lightning Multi Enzyme	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	10X QuikChange Lightning Multi 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.
	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.
	QuikChange Multi Control Template	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	QuikChange Multi Ctl. Primer Mix	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XL10-Gold	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Ultracompetent cells	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XL10-Gold	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	2-Mercaptoethanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	pUC 18 DNA Control	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	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 Multi Enzyme	No specific treatment.
	10X QuikChange Lightning Multi Buffer	No specific treatment.
	dNTP Mix	No specific treatment.
	Dpn I Enzyme	No specific treatment.
	QuikChange Multi Control Template	No specific treatment.
	QuikChange Multi Ctl. Primer Mix	No specific treatment.
	XL10-Gold	No specific treatment.
	Ultracompetent cells	No specific treatment.
	XL10-Gold	No specific treatment.
	2-Mercaptoethanol	No specific treatment.
	pUC 18 DNA Control	No specific treatment.
	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 Multi Enzyme	Use an extinguishing agent suitable for the surrounding fire.	
	10X QuikChange Lightning Multi Buffer	Use an extinguishing agent suitable for the surrounding fire.	
	dNTP Mix	Use an extinguishing agent suitable for the surrounding fire.	
	Dpn I Enzyme	Use an extinguishing agent suitable for the surrounding fire.	
	QuikChange Multi Control Template	Use an extinguishing agent suitable for the surrounding fire.	
	QuikChange Multi Ctl. Primer Mix	Use an extinguishing agent suitable for the surrounding fire.	
	XL10-Gold	Use an extinguishing agent suitable for the surrounding fire.	
	Ultracompetent cells		
	XL10-Gold	Use an extinguishing agent suitable for the surrounding fire.	
	2-Mercaptoethanol		
	pUC 18 DNA Control Plasmid	Use an extinguishing agent suitable for the surrounding fire.	
	<b>Unsuitable extinguishing media</b>	: QuikSolution	None known.
		QuikChange Lightning Multi Enzyme	None known.
10X QuikChange Lightning Multi Buffer		None known.	
dNTP Mix		None known.	
Dpn I Enzyme		None known.	
QuikChange Multi Control Template		None known.	
QuikChange Multi Ctl. Primer Mix		None known.	
XL10-Gold		None known.	
Ultracompetent cells			
XL10-Gold		None known.	
2-Mercaptoethanol			
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>	: QuikSolution	In a fire or if heated, a pressure increase will occur and the container may burst.
	QuikChange Lightning Multi Enzyme	In a fire or if heated, a pressure increase will occur and the container may burst.
	10X QuikChange Lightning Multi Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
	dNTP Mix	In a fire or if heated, a pressure increase will occur and the container may burst.
	Dpn I Enzyme	In a fire or if heated, a pressure increase will occur and the container may burst.
	QuikChange Multi Control Template	In a fire or if heated, a pressure increase will occur and the container may burst.
	QuikChange Multi Ctl. Primer Mix	In a fire or if heated, a pressure increase will occur and the container may burst.
	XL10-Gold	In a fire or if heated, a pressure increase will occur and the container may burst.
	Ultracompetent cells	In a fire or if heated, a pressure increase will occur and the container may burst.
	XL10-Gold	In a fire or if heated, a pressure increase will occur and the container may burst.
	2-Mercaptoethanol	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.
	pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.

## SECTION 5: Firefighting measures

<b>Hazardous combustion products</b>	: QuikSolution	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides
	QuikChange Lightning Multi Enzyme	Decomposition products may include the following materials:  carbon dioxide carbon monoxide
	10X QuikChange Lightning Multi Buffer	Decomposition products may include the following materials:  carbon dioxide carbon monoxide nitrogen oxides sulfur oxides halogenated compounds metal oxide/oxides
	dNTP Mix	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
	QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells	No specific data.  No specific data.  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

<b>Special precautions for fire-fighters</b>	: 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 Multi 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 Multi 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.
	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.

**SECTION 5: Firefighting measures**

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

2-Mercaptoethanol	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 spilled material. Put on appropriate personal protective equipment.
QuikChange Lightning Multi Enzyme	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
10X QuikChange Lightning Multi 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 spilled material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
dNTP Mix	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled 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 spilled material. Put on appropriate personal protective equipment.
QuikChange Multi 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 spilled material. Put on appropriate personal protective equipment.
QuikChange Multi Ctl. Primer Mix	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. 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 spilled material. Put on appropriate personal protective equipment.
XL10-Gold 2-Mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

**SECTION 6: Accidental release measures**

**For emergency responders**

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

**6.2 Environmental precautions**

: QuikSolution		Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
QuikChange Lightning Multi Enzyme		Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
10X QuikChange Lightning Multi Buffer		Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
dNTP Mix		Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Dpn I Enzyme		Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant

**SECTION 6: Accidental release measures**

	authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
QuikChange Multi Control Template	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
QuikChange Multi Ctl. Primer Mix	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
XL10-Gold Ultracompetent cells	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
XL10-Gold 2-Mercaptoethanol	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large 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**

**Methods for cleaning up** : 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 Multi 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 Multi Buffer	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
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.
QuikChange Multi Control Template	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
QuikChange Multi Ctl. Primer Mix	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
XL10-Gold Ultracompetent cells	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively,

## SECTION 6: Accidental release measures

XL10-Gold 2-Mercaptoethanol	or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
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  QuikChange Lightning Multi Enzyme 10X QuikChange Lightning Multi Buffer  dNTP Mix  Dpn I Enzyme  QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol  pUC 18 DNA Control Plasmid	Put on appropriate personal protective equipment (see Section 8). Put on appropriate personal protective equipment (see Section 8). Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Put on appropriate personal protective equipment (see Section 8). Put on appropriate personal protective equipment (see Section 8). Put on appropriate personal protective equipment (see Section 8). Put on appropriate personal protective equipment (see Section 8). Put on appropriate personal protective equipment (see Section 8). 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. Put on appropriate personal protective equipment (see Section 8).
<b>Advice on general occupational hygiene</b>	: QuikSolution  QuikChange Lightning Multi 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. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

**SECTION 7: Handling and storage**

10X QuikChange Lightning Multi Buffer	Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.
dNTP Mix	Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.
Dpn I Enzyme	Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.
QuikChange Multi Control Template	Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.
QuikChange Multi Ctl. Primer Mix	Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.
XL10-Gold Ultracompetent cells	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. 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.
XL10-Gold 2-Mercaptoethanol	Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
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**

<b>Storage</b>	: 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.
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**SECTION 7: Handling and storage**

QuikChange Lightning Multi 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.
10X QuikChange Lightning Multi 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.
dNTP Mix	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
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.
QuikChange Multi 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.
QuikChange Multi Ctl. Primer Mix	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
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.
XL10-Gold	Store in accordance with local regulations. Store in original

## SECTION 7: Handling and storage

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

### 7.3 Specific end use(s)

#### Recommendations

: QuikSolution	Industrial applications, Professional applications.
QuikChange Lightning Multi Enzyme	Industrial applications, Professional applications.
10X QuikChange Lightning Multi Buffer	Industrial applications, Professional applications.
dNTP Mix	Industrial applications, Professional applications.
Dpn I Enzyme	Industrial applications, Professional applications.
QuikChange Multi Control Template	Industrial applications, Professional applications.
QuikChange Multi Ctl. Primer Mix	Industrial applications, Professional applications.
XL10-Gold Ultracompetent cells	Industrial applications, Professional applications.
XL10-Gold	Industrial applications, Professional applications.
2-Mercaptoethanol	Industrial applications, Professional applications.
pUC 18 DNA Control Plasmid	Industrial applications, Professional applications.

#### Industrial sector specific solutions

: QuikSolution	Not applicable.
QuikChange Lightning Multi Enzyme	Not applicable.
10X QuikChange Lightning Multi Buffer	Not applicable.
dNTP Mix	Not applicable.
Dpn I Enzyme	Not applicable.
QuikChange Multi Control Template	Not applicable.
QuikChange Multi Ctl. Primer Mix	Not applicable.
XL10-Gold Ultracompetent cells	Not applicable.
XL10-Gold	Not applicable.
2-Mercaptoethanol	Not applicable.
pUC 18 DNA Control Plasmid	Not applicable.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limits

## SECTION 8: Exposure controls/personal protection

Product/ingredient name	Exposure limit values
<b>QuikChange Lightning Multi 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** : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

### Individual protection measures

**Hygiene measures** : Handle as biohazard material (Biosafety level 1). Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

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

### Skin protection

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



**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**

- Physical state** : QuikSolution Liquid. [Clear.]  
 QuikChange Lightning Liquid.  
 Multi Enzyme  
 10X QuikChange Liquid.  
 Lightning Multi Buffer  
 dNTP Mix Liquid.  
 Dpn I Enzyme Liquid.  
 QuikChange Multi Liquid.  
 Control Template  
 QuikChange Multi Ctl. Liquid.  
 Primer Mix  
 XL10-Gold Liquid.  
 Ultracompetent cells  
 XL10-Gold Liquid.  
 2-Mercaptoethanol  
 pUC 18 DNA Control Liquid.  
 Plasmid
- Colour** : QuikSolution Colourless.  
 QuikChange Lightning Not available.  
 Multi Enzyme  
 10X QuikChange Not available.  
 Lightning Multi Buffer  
 dNTP Mix Not available.  
 Dpn I Enzyme Not available.  
 QuikChange Multi Not available.  
 Control Template  
 QuikChange Multi Ctl. Not available.  
 Primer Mix  
 XL10-Gold Not available.  
 Ultracompetent cells  
 XL10-Gold Not available.  
 2-Mercaptoethanol  
 pUC 18 DNA Control Not available.  
 Plasmid
- Odour** : QuikSolution Slight [Slight]  
 QuikChange Lightning Not available.  
 Multi Enzyme  
 10X QuikChange Not available.  
 Lightning Multi Buffer  
 dNTP Mix Not available.  
 Dpn I Enzyme Not available.  
 QuikChange Multi Not available.  
 Control Template  
 QuikChange Multi Ctl. Not available.

**SECTION 9: Physical and chemical properties**

	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	Not available.
	Plasmid	
<b>Odour threshold</b>	: QuikSolution	Not available.
	QuikChange Lightning	Not available.
	Multi Enzyme	
	10X QuikChange	Not available.
	Lightning Multi Buffer	
	dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	QuikChange Multi	Not available.
	Control Template	
	QuikChange Multi Ctl.	Not available.
	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	Not available.
	Plasmid	
<b>pH</b>	: QuikSolution	Not available.
	QuikChange Lightning	8.2
	Multi Enzyme	
	10X QuikChange	8.8
	Lightning Multi Buffer	
	dNTP Mix	7.5
	Dpn I Enzyme	Not available.
	QuikChange Multi	7.5
	Control Template	
	QuikChange Multi Ctl.	7.5
	Primer Mix	
	XL10-Gold	6.4
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	7.5
	Plasmid	
<b>Melting point/freezing point</b>	: QuikSolution	18.4°C
	QuikChange Lightning	Not available.
	Multi Enzyme	
	10X QuikChange	Not available.
	Lightning Multi Buffer	
	dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	QuikChange Multi	0°C
	Control Template	
	QuikChange Multi Ctl.	0°C
	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	0°C
	Plasmid	

**SECTION 9: Physical and chemical properties**

<b>Initial boiling point and boiling range</b>	: QuikSolution	188.8°C	
	QuikChange Lightning Multi Enzyme	Not available.	
	10X QuikChange Lightning Multi Buffer	Not available.	
	dNTP Mix	Not available.	
	Dpn I Enzyme	Not available.	
	QuikChange Multi Control Template	100°C	
	QuikChange Multi Ctl. Primer Mix	100°C	
	XL10-Gold	Not available.	
	Ultracompetent cells	Not available.	
	XL10-Gold	Not available.	
	2-Mercaptoethanol	Not available.	
	pUC 18 DNA Control Plasmid	100°C	
	<b>Flash point</b>	: QuikSolution	Closed cup: 85°C Open cup: 87°C
		QuikChange Lightning Multi Enzyme	Not available.
		10X QuikChange Lightning Multi Buffer	Not available.
		dNTP Mix	Not available.
Dpn I Enzyme		Not available.	
QuikChange Multi Control Template		Not available.	
QuikChange Multi Ctl. Primer Mix		Not available.	
XL10-Gold		Not available.	
Ultracompetent cells		Not available.	
XL10-Gold		Not available.	
2-Mercaptoethanol		Not available.	
pUC 18 DNA Control Plasmid		Not available.	
<b>Evaporation rate</b>		: QuikSolution	0.026 (butyl acetate = 1)
		QuikChange Lightning Multi Enzyme	Not available.
		10X QuikChange Lightning Multi Buffer	Not available.
		dNTP Mix	Not available.
	Dpn I Enzyme	Not available.	
	QuikChange Multi Control Template	Not available.	
	QuikChange Multi Ctl. Primer Mix	Not available.	
	XL10-Gold	Not available.	
	Ultracompetent cells	Not available.	
	XL10-Gold	Not available.	
	2-Mercaptoethanol	Not available.	
	pUC 18 DNA Control Plasmid	Not available.	
	<b>Flammability (solid, gas)</b>	: QuikSolution	Not applicable.
		QuikChange Lightning Multi Enzyme	Not applicable.
		10X QuikChange Lightning Multi Buffer	Not applicable.
		dNTP Mix	Not applicable.
Dpn I Enzyme		Not applicable.	
QuikChange Multi Control Template		Not applicable.	
QuikChange Multi Ctl. Primer Mix		Not applicable.	

**SECTION 9: Physical and chemical properties**

	XL10-Gold	Not applicable.
	Ultracompetent cells	
	XL10-Gold	Not applicable.
	2-Mercaptoethanol	
	pUC 18 DNA Control	Not applicable.
	Plasmid	
<b>Upper/lower flammability or explosive limits</b>	: QuikSolution	Lower: 2.6% Upper: 42%
	QuikChange Lightning Multi Enzyme	Not available.
	10X QuikChange	Not available.
	Lightning Multi Buffer	
	dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	QuikChange Multi Control Template	Not available.
	QuikChange Multi Ctl.	Not available.
	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	Not available.
	Plasmid	
<b>Vapour pressure</b>	: QuikSolution	0.056 kPa [room temperature]
	QuikChange Lightning Multi Enzyme	Not available.
	10X QuikChange	Not available.
	Lightning Multi Buffer	
	dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	QuikChange Multi Control Template	Not available.
	QuikChange Multi Ctl.	Not available.
	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	Not available.
	Plasmid	
<b>Vapour density</b>	: QuikSolution	2.71 [Air = 1]
	QuikChange Lightning Multi Enzyme	Not available.
	10X QuikChange	Not available.
	Lightning Multi Buffer	
	dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	QuikChange Multi Control Template	Not available.
	QuikChange Multi Ctl.	Not available.
	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	Not available.
	Plasmid	

**SECTION 9: Physical and chemical properties**

<b>Relative density</b>	: QuikSolution	1.1	
	QuikChange Lightning Multi Enzyme	Not available.	
	10X QuikChange Lightning Multi Buffer	Not available.	
	dNTP Mix	Not available.	
	Dpn I Enzyme	Not available.	
	QuikChange Multi Control Template	Not available.	
	QuikChange Multi Ctl.	Not available.	
	Primer Mix	Not available.	
	XL10-Gold	Not available.	
	Ultracompetent cells	Not available.	
	XL10-Gold	Not available.	
	2-Mercaptoethanol	Not available.	
	pUC 18 DNA Control Plasmid	Not available.	
	<b>Solubility(ies)</b>	: QuikSolution	Easily soluble in the following materials: cold water and hot water.
		QuikChange Lightning Multi Enzyme	Soluble in the following materials: cold water and hot water.
10X QuikChange Lightning Multi Buffer		Easily soluble in the following materials: cold water and hot water.	
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.	
QuikChange Multi Control Template		Easily soluble in the following materials: cold water and hot water.	
QuikChange Multi Ctl.		Easily soluble in the following materials: cold water and hot water.	
Primer Mix		Soluble in the following materials: cold water and hot water.	
XL10-Gold		Easily soluble in the following materials: cold water and hot water.	
Ultracompetent cells		Easily 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>		: QuikSolution	-2.029
		QuikChange Lightning Multi Enzyme	Not available.
	10X QuikChange Lightning Multi Buffer	Not available.	
	dNTP Mix	Not available.	
	Dpn I Enzyme	Not available.	
	QuikChange Multi Control Template	Not available.	
	QuikChange Multi Ctl.	Not available.	
	Primer Mix	Not available.	
	XL10-Gold	Not available.	
	Ultracompetent cells	Not available.	
	XL10-Gold	Not available.	
	2-Mercaptoethanol	Not available.	
	pUC 18 DNA Control Plasmid	Not available.	
	<b>Auto-ignition temperature</b>	: QuikSolution	300 to 302°C
		QuikChange Lightning Multi Enzyme	Not available.
10X QuikChange Lightning Multi Buffer		Not available.	
dNTP Mix		Not available.	
Dpn I Enzyme		Not available.	
QuikChange Multi Control Template		Not available.	
QuikChange Multi Ctl.		Not available.	

**SECTION 9: Physical and chemical properties**

	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	Not available.
	Plasmid	
<b>Decomposition temperature</b>	: QuikSolution	140 to 189°C
	QuikChange Lightning	Not available.
	Multi Enzyme	
	10X QuikChange	Not available.
	Lightning Multi Buffer	
	dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	QuikChange Multi	Not available.
	Control Template	
	QuikChange Multi Ctl.	Not available.
	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	Not available.
	Plasmid	
<b>Viscosity</b>	: QuikSolution	Dynamic (room temperature): 2.14 mPa·s
	QuikChange Lightning	Not available.
	Multi Enzyme	
	10X QuikChange	Not available.
	Lightning Multi Buffer	
	dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	QuikChange Multi	Not available.
	Control Template	
	QuikChange Multi Ctl.	Not available.
	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	Not available.
	Plasmid	
<b>Explosive properties</b>	: QuikSolution	Not available.
	QuikChange Lightning	Not available.
	Multi Enzyme	
	10X QuikChange	Not available.
	Lightning Multi Buffer	
	dNTP Mix	Not available.
	Dpn I Enzyme	Not available.
	QuikChange Multi	Not available.
	Control Template	
	QuikChange Multi Ctl.	Not available.
	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	Not available.
	Plasmid	

**SECTION 9: Physical and chemical properties**

<b>Oxidising properties</b>	:	QuikSolution	Not available.
		QuikChange Lightning	Not available.
		Multi Enzyme	
		10X QuikChange	Not available.
		Lightning Multi Buffer	
		dNTP Mix	Not available.
		Dpn I Enzyme	Not available.
		QuikChange Multi	Not available.
		Control Template	
		QuikChange Multi Ctl.	Not available.
		Primer Mix	
		XL10-Gold	Not available.
		Ultracompetent cells	
		XL10-Gold	Not available.
		2-Mercaptoethanol	
		pUC 18 DNA Control	Not available.
		Plasmid	

**9.2 Other information**

No additional information.

**SECTION 10: Stability and reactivity**

<b>10.1 Reactivity</b>	:	QuikSolution	No specific test data related to reactivity available for this product or its ingredients.
		QuikChange Lightning	No specific test data related to reactivity available for this product or its ingredients.
		Multi Enzyme	No specific test data related to reactivity available for this product or its ingredients.
		10X QuikChange	No specific test data related to reactivity available for this product or its ingredients.
		Lightning Multi Buffer	No specific test data related to reactivity available for this product or its ingredients.
		dNTP Mix	No specific test data related to reactivity available for this product or its ingredients.
		Dpn I Enzyme	No specific test data related to reactivity available for this product or its ingredients.
		QuikChange Multi	No specific test data related to reactivity available for this product or its ingredients.
		Control Template	No specific test data related to reactivity available for this product or its ingredients.
		QuikChange Multi Ctl.	No specific test data related to reactivity available for this product or its ingredients.
		Primer Mix	No specific test data related to reactivity available for this product or its ingredients.
		XL10-Gold	No specific test data related to reactivity available for this product or its ingredients.
		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	No specific test data related to reactivity available for this product or its ingredients.
		Plasmid	No specific test data related to reactivity available for this product or its ingredients.
<b>10.2 Chemical stability</b>	:	QuikSolution	The product is stable.
		QuikChange Lightning	The product is stable.
		Multi Enzyme	
		10X QuikChange	The product is stable.
		Lightning Multi Buffer	
		dNTP Mix	The product is stable.
		Dpn I Enzyme	The product is stable.
		QuikChange Multi	The product is stable.
		Control Template	
		QuikChange Multi Ctl.	The product is stable.
		Primer Mix	
		XL10-Gold	The product is stable.
		Ultracompetent cells	
		XL10-Gold	The product is stable.
		2-Mercaptoethanol	
		pUC 18 DNA Control	The product is stable.
		Plasmid	

## SECTION 10: Stability and reactivity

<b>10.3 Possibility of hazardous reactions</b>	: QuikSolution  QuikChange Lightning Multi Enzyme 10X QuikChange Lightning Multi Buffer dNTP Mix  Dpn I Enzyme  QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
<b>10.4 Conditions to avoid</b>	: QuikSolution QuikChange Lightning Multi Enzyme 10X QuikChange Lightning Multi Buffer dNTP Mix Dpn I Enzyme QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix 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. No specific data. No specific data.
<b>10.5 Incompatible materials</b>	: QuikSolution QuikChange Lightning Multi Enzyme 10X QuikChange Lightning Multi Buffer dNTP Mix Dpn I Enzyme QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.  May react or be incompatible with oxidising materials.  May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.  May react or be incompatible with oxidising materials.  May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.



## SECTION 10: Stability and reactivity

<b>10.6 Hazardous decomposition products</b>	: QuikSolution  QuikChange Lightning Multi Enzyme 10X QuikChange Lightning Multi Buffer dNTP Mix  Dpn I Enzyme  QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.
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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 LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
<b>QuikChange Lightning Multi Enzyme</b> Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	LD50 Oral	Rat	2800 mg/kg	-
<b>Dpn I Enzyme</b> Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
<b>XL10-Gold 2-Mercaptoethanol</b> Sodium chloride 2-Mercaptoethanol	LD50 Oral LD50 Dermal LD50 Oral	Rat Rabbit Rat	3000 mg/kg 200 mg/kg 244 mg/kg	- - -

#### Acute toxicity estimates

Route	ATE value
<b>10X QuikChange Lightning Multi Buffer</b> Oral	50000 mg/kg
<b>XL10-Gold Ultracompetent cells</b> Oral	31250 mg/kg
<b>XL10-Gold 2-Mercaptoethanol</b> Oral Dermal Inhalation (vapours)	5545.5 mg/kg 4545.5 mg/kg 45.45 mg/l

#### Irritation/Corrosion

## SECTION 11: Toxicological information

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>QuikChange Lightning Multi Enzyme</b> Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	Eyes - Severe irritant	Rabbit	-	1 Percent	-
<b>10X QuikChange Lightning Multi Buffer</b> Polyoxyethylene octyl phenyl ether	Eyes - Moderate irritant	Rabbit	-	24 hours 10 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 microliters	-
<b>Dpn I 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.

### Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
<b>10X QuikChange Lightning Multi Buffer</b> 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	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.

**SECTION 11: Toxicological information**

<b>Information on likely routes of exposure</b>	:	QuikSolution	Routes of entry anticipated: Oral, Dermal, Inhalation.
		QuikChange Lightning Multi Enzyme	Routes of entry anticipated: Oral, Dermal, Inhalation.
		10X QuikChange Lightning Multi Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation.
		dNTP Mix	Not available.
		Dpn I Enzyme	Routes of entry anticipated: Oral, Dermal, Inhalation.
		QuikChange Multi Control Template	Not available.
		QuikChange Multi Ctl. Primer Mix	Not available.
		XL10-Gold	Routes of entry anticipated: Oral, Dermal, Inhalation.
		Ultracompetent cells	
		XL10-Gold	Routes of entry anticipated: Oral, Dermal, Inhalation.
		2-Mercaptoethanol	
		pUC 18 DNA Control Plasmid	Not available.

**Potential acute health effects**

<b>Inhalation</b>	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Lightning Multi Enzyme	No known significant effects or critical hazards.
		10X QuikChange Lightning Multi Buffer	No known significant effects or critical hazards.
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.
		QuikChange Multi Control Template	No known significant effects or critical hazards.
		QuikChange Multi Ctl. Primer Mix	No known significant effects or critical hazards.
		XL10-Gold	No known significant effects or critical hazards.
		Ultracompetent cells	
		XL10-Gold	No known significant effects or critical hazards.
		2-Mercaptoethanol	
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
	<b>Ingestion</b>	:	QuikSolution
		QuikChange Lightning Multi Enzyme	No known significant effects or critical hazards.
		10X QuikChange Lightning Multi Buffer	No known significant effects or critical hazards.
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.
		QuikChange Multi Control Template	No known significant effects or critical hazards.
		QuikChange Multi Ctl. Primer Mix	No known significant effects or critical hazards.
		XL10-Gold	No known significant effects or critical hazards.
		Ultracompetent cells	
		XL10-Gold	No known significant effects or critical hazards.
		2-Mercaptoethanol	
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
<b>Skin contact</b>		:	QuikSolution
		QuikChange Lightning Multi Enzyme	No known significant effects or critical hazards.
		10X QuikChange Lightning Multi Buffer	No known significant effects or critical hazards.
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.
		QuikChange Multi Control Template	No known significant effects or critical hazards.
		QuikChange Multi Ctl. Primer Mix	No known significant effects or critical hazards.

**SECTION 11: Toxicological information**

	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	May cause an allergic skin reaction.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
<b>Eye contact</b>	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Lightning Multi Enzyme	No known significant effects or critical hazards.
	10X QuikChange Lightning Multi Buffer	Causes serious eye irritation.
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I Enzyme	No known significant effects or critical hazards.
	QuikChange Multi Control Template	No known significant effects or critical hazards.
	QuikChange Multi Ctl. Primer Mix	No known significant effects or critical hazards.
	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	Causes serious eye damage.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

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

<b>Inhalation</b>	: QuikSolution	No specific data.
	QuikChange Lightning Multi Enzyme	No specific data.
	10X QuikChange Lightning Multi Buffer	No specific data.
	dNTP Mix	No specific data.
	Dpn I Enzyme	No specific data.
	QuikChange Multi Control Template	No specific data.
	QuikChange Multi Ctl. Primer Mix	No specific data.
	XL10-Gold Ultracompetent cells	No specific data.
	XL10-Gold 2-Mercaptoethanol	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
<b>Ingestion</b>	: QuikSolution	No specific data.
	QuikChange Lightning Multi Enzyme	No specific data.
	10X QuikChange Lightning Multi Buffer	No specific data.
	dNTP Mix	No specific data.
	Dpn I Enzyme	No specific data.
	QuikChange Multi Control Template	No specific data.
	QuikChange Multi Ctl. Primer Mix	No specific data.
	XL10-Gold Ultracompetent cells	No specific data.
	XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following:
		stomach pains
	pUC 18 DNA Control Plasmid	No specific data.

## SECTION 11: Toxicological information

<b>Skin contact</b>	:	QuikSolution	No specific data.	
		QuikChange Lightning Multi Enzyme	No specific data.	
		10X QuikChange Lightning Multi Buffer	No specific data.	
		dNTP Mix	No specific data.	
		Dpn I Enzyme	No specific data.	
		QuikChange Multi Control Template	No specific data.	
		QuikChange Multi Ctl. Primer Mix	No specific data.	
		XL10-Gold Ultracompetent cells	No specific data.	
		XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur	
		pUC 18 DNA Control Plasmid	No specific data.	
	<b>Eye contact</b>	:	QuikSolution	No specific data.
			QuikChange Lightning Multi Enzyme	No specific data.
		10X QuikChange Lightning Multi Buffer	Adverse symptoms may include the following: pain or irritation watering redness	
		dNTP Mix	No specific data.	
		Dpn I Enzyme	No specific data.	
		QuikChange Multi Control Template	No specific data.	
		QuikChange Multi Ctl. Primer Mix	No specific data.	
		XL10-Gold Ultracompetent cells	No specific data.	
		XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain watering redness	
		pUC 18 DNA Control Plasmid	No specific data.	

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

#### Short term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

### Potential chronic health effects

**SECTION 11: Toxicological information**

<b>General</b>	:	QuikSolution	No known significant effects or critical hazards.	
		QuikChange Lightning Multi Enzyme	No known significant effects or critical hazards.	
		10X QuikChange Lightning Multi Buffer	No known significant effects or critical hazards.	
		dNTP Mix	No known significant effects or critical hazards.	
		Dpn I Enzyme	No known significant effects or critical hazards.	
		QuikChange Multi Control Template	No known significant effects or critical hazards.	
		QuikChange Multi Ctl. Primer Mix	No known significant effects or critical hazards.	
		XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.	
		XL10-Gold	Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.	
		2-Mercaptoethanol	subsequently exposed to very low levels.	
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.	
	<b>Carcinogenicity</b>	:	QuikSolution	No known significant effects or critical hazards.
			QuikChange Lightning Multi Enzyme	No known significant effects or critical hazards.
			10X QuikChange Lightning Multi Buffer	No known significant effects or critical hazards.
			dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.	
		QuikChange Multi Control Template	No known significant effects or critical hazards.	
		QuikChange Multi Ctl. Primer Mix	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>Mutagenicity</b>		:	QuikSolution	No known significant effects or critical hazards.
			QuikChange Lightning Multi Enzyme	No known significant effects or critical hazards.
			10X QuikChange Lightning Multi Buffer	No known significant effects or critical hazards.
			dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.	
		QuikChange Multi Control Template	No known significant effects or critical hazards.	
		QuikChange Multi Ctl. Primer Mix	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>Teratogenicity</b>	:	QuikSolution	No known significant effects or critical hazards.
			QuikChange Lightning Multi Enzyme	No known significant effects or critical hazards.
			10X QuikChange Lightning Multi Buffer	No known significant effects or critical hazards.
			dNTP Mix	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.	
		QuikChange Multi Control Template	No known significant effects or critical hazards.	
		QuikChange Multi Ctl. Primer Mix	No known significant effects or critical hazards.	
		XL10-Gold	No known significant effects or critical hazards.	

## SECTION 11: Toxicological information

	Ultracompetent cells	
	XL10-Gold	No known significant effects or critical hazards.
	2-Mercaptoethanol	
	pUC 18 DNA Control	No known significant effects or critical hazards.
	Plasmid	
<b>Developmental effects</b>	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Lightning	No known significant effects or critical hazards.
	Multi Enzyme	
	10X QuikChange	No known significant effects or critical hazards.
	Lightning Multi Buffer	
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I Enzyme	No known significant effects or critical hazards.
	QuikChange Multi	No known significant effects or critical hazards.
	Control Template	
	QuikChange Multi Ctl.	No known significant effects or critical hazards.
	Primer Mix	
	XL10-Gold	No known significant effects or critical hazards.
	Ultracompetent cells	
	XL10-Gold	No known significant effects or critical hazards.
	2-Mercaptoethanol	
	pUC 18 DNA Control	No known significant effects or critical hazards.
	Plasmid	
<b>Fertility effects</b>	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Lightning	No known significant effects or critical hazards.
	Multi Enzyme	
	10X QuikChange	No known significant effects or critical hazards.
	Lightning Multi Buffer	
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I Enzyme	No known significant effects or critical hazards.
	QuikChange Multi	No known significant effects or critical hazards.
	Control Template	
	QuikChange Multi Ctl.	No known significant effects or critical hazards.
	Primer Mix	
	XL10-Gold	No known significant effects or critical hazards.
	Ultracompetent cells	
	XL10-Gold	No known significant effects or critical hazards.
	2-Mercaptoethanol	
	pUC 18 DNA Control	No known significant effects or critical hazards.
	Plasmid	

## SECTION 12: Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<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>QuikChange Lightning Multi Enzyme</b> Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	Acute EC50 210 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute LC50 10800 µg/l Marine water	Crustaceans - Pandalus montagui - Adult	48 hours
	Acute LC50 8600 to 9800 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 7200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
<b>10X QuikChange Lightning</b>			

## SECTION 12: Ecological information

<b>Multi Buffer</b> Polyoxyethylene octyl phenyl ether	Acute LC50 5.85 mg/l Fresh water	Crustaceans - Ceriodaphnia rigaudi - Neonate	48 hours
	Acute LC50 11.2 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 4500 µg/l Fresh water	Fish - Pimephales promelas	96 hours
<b>Dpn I Enzyme</b> Sodium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute LC50 1661 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - Morone saxatilis - Larvae	96 hours
<b>XL10-Gold 2-Mercaptoethanol</b> Sodium chloride	Chronic LC10 781 mg/l Fresh water	Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Chronic NOEC 0.314 g/L Fresh water	Daphnia - Daphnia pulex	21 days
	Chronic NOEC 100 mg/l Fresh water	Fish - Gambusia holbrooki - Adult	8 weeks
	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute LC50 1661 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - Morone saxatilis - Larvae	96 hours
	Chronic LC10 781 mg/l Fresh water	Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Chronic NOEC 0.314 g/L Fresh water	Daphnia - Daphnia pulex	21 days
	Chronic NOEC 100 mg/l Fresh water	Fish - Gambusia holbrooki - Adult	8 weeks

### 12.2 Persistence and degradability

Not available.

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

### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>QuikSolution</b> Dimethyl sulfoxide	-2.029	3.16	low
<b>QuikChange Lightning Multi Enzyme</b> Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-. omega.-hydroxy-	3.77	78.67	low
<b>10X QuikChange Lightning Multi Buffer</b>			



## SECTION 12: Ecological information

Polyoxyethylene octyl phenyl ether	4.86	-	high
<b>XL10-Gold</b> 2-Mercaptoethanol			
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** : The classification of the product may meet the criteria for a hazardous waste.

#### Packaging

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

**Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

## SECTION 14: Transport information

### Regulatory information

**ADR/RID / IMDG / IATA** : Not regulated.

**14.6 Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** : Not available.

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### EU Regulation (EC) No. 1907/2006 (REACH)

##### Annex XIV - List of substances subject to authorisation

###### Annex XIV

None of the components are listed.

##### Substances of very high concern

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

<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 Multi Enzyme	Not applicable.
	: 10X QuikChange Lightning Multi Buffer	Not applicable.
	: dNTP Mix	Not applicable.
	: Dpn I Enzyme	Not applicable.
	: QuikChange Multi Control Template	Not applicable.
	: QuikChange Multi Ctl. Primer Mix	Not applicable.
	: XL10-Gold Ultracompetent cells	Not applicable.
	: XL10-Gold	Not applicable.
	: 2-Mercaptoethanol	Not applicable.
	: pUC 18 DNA Control Plasmid	Not applicable.

#### Other EU regulations

**Europe inventory** : All components are listed or exempted.

**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)

## SECTION 15: Regulatory information

Not listed.

### [UNECE Aarhus Protocol on POPs and Heavy Metals](#)

Not listed.


### [International lists](#)

#### [National inventory](#)

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

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

## SECTION 16: Other information

 Indicates information that has changed from previously issued version.

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

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

Classification	Justification
<b>10X QuikChange Lightning Multi Buffer</b> Eye Irrit. 2, H319	Calculation method
<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](#)

<b>QuikChange Lightning Multi Enzyme</b> H315 H318 H411	Causes skin irritation. Causes serious eye damage. Toxic to aquatic life with long lasting effects.
<b>10X QuikChange Lightning Multi Buffer</b> H302 H315 H318 H319 H335 H411	Harmful if swallowed. Causes skin irritation. Causes serious eye damage. Causes serious eye irritation. May cause respiratory irritation. Toxic to aquatic life with long lasting effects.
<b>Dpn I Enzyme</b> H319	Causes serious eye irritation.

**Date of issue/Date of revision** : 19/10/2016

**SECTION 16: Other information**

<p><b>XL10-Gold 2-Mercaptoethanol</b>                  H301                  H310                  H315                  H317                  H318                  H319                  H330                  H335                  H411                  H412</p>	<p>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.</p>
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[Full text of classifications \[CLP/GHS\]](#)

<p><b>QuikChange Lightning Multi Enzyme</b>                  Aquatic Chronic 2, H411                  Eye Dam. 1, H318                  Skin Irrit. 2, H315</p> <p><b>10X QuikChange Lightning Multi Buffer</b>                  Acute Tox. 4, H302                  Aquatic Chronic 2, H411                  Eye Dam. 1, H318                  Eye Irrit. 2, H319                  Skin Irrit. 2, H315                  STOT SE 3, H335</p> <p><b>Dpn I 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>LONG-TERM AQUATIC HAZARD - Category 2                  SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1                  SKIN CORROSION/IRRITATION - Category 2</p> <p>ACUTE TOXICITY (oral) - Category 4                  LONG-TERM AQUATIC HAZARD - Category 2                  SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1                  SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2                  SKIN CORROSION/IRRITATION - Category 2                  SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE                  (Respiratory tract irritation) - Category 3</p> <p>SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2</p> <p>ACUTE TOXICITY (dermal) - Category 2                  ACUTE TOXICITY (inhalation) - Category 2                  ACUTE TOXICITY (oral) - Category 3                  LONG-TERM AQUATIC HAZARD - Category 2                  LONG-TERM 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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**Date of issue/ Date of revision** : 19/10/2016

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

**Version** : 1

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