

SAFETY DATA SHEET



QuikChange Multi Site-Directed Mutagenesis Kit, Part Number 200515

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

1.1 Product identifier

Product name	: QuikChange Multi Site-Directed Mutagenesis Kit, Part Number 200515
Part No. (Kit)	: 200515
Part No.	: QuikSolution 200516-51 QuikChange Multi 200515-51 Enzyme Blend 10X QuikChange Multi 200514-52 Reaction Buffer dNTP Mix 200519-52 Dpn I 200519-53 QuikChange Multi 200514-53 Control Template QuikChange Multi Ctl. 200514-54 Primer Mix XL10-Gold 200315-41 Ultracompetent cells XL10-Gold 200314-43 2-Mercaptoethanol pUC 18 DNA Control 200231-42 Plasmid

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

Identified uses	
Analytical reagent.	
QuikSolution	500 µl
QuikChange Multi Enzyme Blend	10 µl (25 U 2.5 U/µl)
10X QuikChange Multi Reaction Buffer	200 µl
dNTP Mix	10 µl
Dpn I	10 µl (100 U 10 U/µl)
QuikChange Multi Control Template	5 µl
QuikChange Multi Ctl. Primer Mix	5 µl
XL10-Gold Ultracompetent cells	540 µl
XL10-Gold 2-Mercaptoethanol	50 µl
pUC 18 DNA Control Plasmid	10 µl (0.1 ng/µl)

1.3 Details of the supplier of the safety data sheet

Agilent Technologies Manufacturing GmbH & Co. KG
Hewlett-Packard-Str. 8
76337 Waldbronn
Germany
0800 603 1000

e-mail address of person responsible for this SDS : pdl-msds_author@agilent.com

1.4 Emergency telephone number

Emergency telephone number (with hours of operation) : CHEMTREC®: +(44)-870-8200418

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition	:	QuikSolution	Mono-constituent substance
		QuikChange Multi Enzyme Blend	Mixture
		10X QuikChange Multi Reaction Buffer	Mixture
		dNTP Mix	Mixture
		Dpn I	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

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

10X QuikChange Multi

Reaction 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



Signal word

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

Hazard statements

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SECTION 2: Hazards identification

QuikSolution	No known significant effects or critical hazards.
QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
10X QuikChange Multi Reaction Buffer	GHS07 - Causes serious eye irritation.
dNTP Mix	No known significant effects or critical hazards.
Dpn I	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	GHS05 - Causes serious eye damage. GHS07 - 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 Multi Enzyme Blend	Not applicable.
10X QuikChange Multi Reaction Buffer	P280 - Wear eye or face protection. P264 - Wash hands thoroughly after handling.
dNTP Mix	Not applicable.
Dpn I	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. P273 - Avoid release to the environment.
pUC 18 DNA Control Plasmid	Not applicable.

Response

: QuikSolution	Not applicable.
QuikChange Multi Enzyme Blend	Not applicable.
10X QuikChange Multi Reaction Buffer	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
dNTP Mix	Not applicable.
Dpn I	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

Storage	:	QuikSolution	Not applicable.
		QuikChange Multi Enzyme Blend	Not applicable.
		10X QuikChange Multi Reaction Buffer	Not applicable.
		dNTP Mix	Not applicable.
		Dpn I	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.
Disposal	:	QuikSolution	Not applicable.
		QuikChange Multi Enzyme Blend	Not applicable.
		10X QuikChange Multi Reaction Buffer	Not applicable.
		dNTP Mix	Not applicable.
		Dpn I	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	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
		2-Mercaptoethanol	Not applicable.
		pUC 18 DNA Control Plasmid	Not applicable.
Hazardous ingredients	:	10X QuikChange Multi Reaction Buffer	Not applicable.
		Dpn I	Not applicable.
		XL10-Gold	- 2-Mercaptoethanol
		2-Mercaptoethanol	
Supplemental label elements	:	QuikSolution	Not applicable.
		QuikChange Multi Enzyme Blend	Not applicable.
		10X QuikChange Multi Reaction Buffer	Not applicable.
		dNTP Mix	Not applicable.
		Dpn I	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

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	QuikSolution	Not applicable.
	QuikChange Multi	Not applicable.
	Enzyme Blend	
	10X QuikChange Multi	Not applicable.
	Reaction Buffer	
	dNTP Mix	Not applicable.
	Dpn I	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

Tactile warning of danger	QuikSolution	Not applicable.
	QuikChange Multi	Not applicable.
	Enzyme Blend	
	10X QuikChange Multi	Not applicable.
	Reaction Buffer	
	dNTP Mix	Not applicable.
	Dpn I	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

Other hazards which do not result in classification	QuikSolution	None known.
	QuikChange Multi	None known.
	Enzyme Blend	
	10X QuikChange Multi	None known.
	Reaction Buffer	
	dNTP Mix	None known.
	Dpn I	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

3.2 Mixtures	:	QuikSolution	Mono-constituent substance
		QuikChange Multi Enzyme Blend	Mixture
		10X QuikChange Multi Reaction Buffer	Mixture
		dNTP Mix	Mixture
		Dpn I	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
QuikSolution Dimethyl sulfoxide	EC: 200-664-3 CAS: 67-68-5	100	Not classified.	[A]
QuikChange Multi Enzyme Blend Glycerol	EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
10X QuikChange Multi Reaction Buffer 2-Amino-2-(hydroxymethyl) propane-1,3-diol hydrochloride	EC: 214-684-5 CAS: 1185-53-1	≤5	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335	[1]
Polyoxyethylene octyl phenyl ether	CAS: 9002-93-1	≤2.3	Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 Aquatic Chronic 2, H411	[1] [5]
Dpn I Glycerol	EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤3	Eye Irrit. 2, H319	[1]
XL10-Gold Ultracompetent cells Glycerol	EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sucrose	EC: 200-334-9 CAS: 57-50-1	≤10	Not classified.	[2]
XL10-Gold 2-Mercaptoethanol Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≥10 - ≤25	Eye Irrit. 2, H319	[1]
2-Mercaptoethanol	EC: 200-464-6 CAS: 60-24-2	≤5	Acute Tox. 3, H301 Acute Tox. 2, H310 Acute Tox. 2, H330 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT SE 3, H335 Aquatic Chronic 2, H411	[1]
			See Section 16 for the full text of the H statements declared above.	

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.

SECTION 3: Composition/information on ingredientsType

- [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**

Eye contact	: QuikSolution	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	QuikChange Multi Enzyme Blend	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 Multi Reaction Buffer	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	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	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.
Inhalation	: QuikSolution	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	QuikChange Multi Enzyme Blend	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	10X QuikChange Multi Reaction Buffer	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed.

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		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		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.
Skin contact	:	
QuikSolution		Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
QuikChange Multi Enzyme Blend		Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
10X QuikChange Multi Reaction Buffer		Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
dNTP Mix		Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Dpn I		Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
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.
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

SECTION 4: First aid measures**Ingestion**

		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 Multi Enzyme Blend	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 Multi Reaction Buffer	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	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	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 personnel. Get medical attention if symptoms occur.
	XL10-Gold Ultracompetent cells	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

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XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
pUC 18 DNA Control Plasmid	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Protection of first-aiders :

QuikSolution	No action shall be taken involving any personal risk or without suitable training.
QuikChange Multi Enzyme Blend	No action shall be taken involving any personal risk or without suitable training.
10X QuikChange Multi Reaction Buffer	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
dNTP Mix	No action shall be taken involving any personal risk or without suitable training.
Dpn I	No action shall be taken involving any personal risk or without suitable training.
QuikChange Multi Control Template	No action shall be taken involving any personal risk or without suitable training.
QuikChange Multi Ctl. Primer Mix	No action shall be taken involving any personal risk or without suitable training.
XL10-Gold Ultracompetent cells	No action shall be taken involving any personal risk or without suitable training.
XL10-Gold 2-Mercaptoethanol	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.
pUC 18 DNA Control Plasmid	No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact

QuikSolution	No known significant effects or critical hazards.
QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
10X QuikChange Multi Reaction Buffer	Causes serious eye irritation.
dNTP Mix	No known significant effects or critical hazards.
Dpn I	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.

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	XL10-Gold	Causes serious eye damage.
	2-Mercaptoethanol	
	pUC 18 DNA Control	No known significant effects or critical hazards.
	Plasmid	
Inhalation	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Multi	No known significant effects or critical hazards.
	Enzyme Blend	
	10X QuikChange Multi	No known significant effects or critical hazards.
	Reaction Buffer	
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I	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	
Skin contact	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Multi	No known significant effects or critical hazards.
	Enzyme Blend	
	10X QuikChange Multi	No known significant effects or critical hazards.
	Reaction Buffer	
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I	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	
Ingestion	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Multi	No known significant effects or critical hazards.
	Enzyme Blend	
	10X QuikChange Multi	No known significant effects or critical hazards.
	Reaction Buffer	
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I	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	

Over-exposure signs/symptoms

Eye contact	: QuikSolution	No specific data.
	QuikChange Multi	No specific data.
	Enzyme Blend	
	10X QuikChange Multi	Adverse symptoms may include the following:
	Reaction Buffer	
		pain or irritation
		watering

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		dNTP Mix	redness
		Dpn I	No specific data.
		QuikChange Multi Control Template	No specific data.
		QuikChange Multi Ctl.	No specific data.
		Primer Mix	No specific data.
		XL10-Gold	No specific data.
		Ultracompetent cells	
		XL10-Gold	Adverse symptoms may include the following:
		2-Mercaptoethanol	pain
			watering
			redness
		pUC 18 DNA Control Plasmid	No specific data.
Inhalation	:	QuikSolution	No specific data.
		QuikChange Multi Enzyme Blend	No specific data.
		10X QuikChange Multi Reaction Buffer	No specific data.
		dNTP Mix	No specific data.
		Dpn I	No specific data.
		QuikChange Multi Control Template	No specific data.
		QuikChange Multi Ctl.	No specific data.
		Primer Mix	No specific data.
		XL10-Gold	No specific data.
		Ultracompetent cells	No specific data.
		XL10-Gold	No specific data.
		2-Mercaptoethanol	No specific data.
		pUC 18 DNA Control Plasmid	No specific data.
Skin contact	:	QuikSolution	No specific data.
		QuikChange Multi Enzyme Blend	No specific data.
		10X QuikChange Multi Reaction Buffer	No specific data.
		dNTP Mix	No specific data.
		Dpn I	No specific data.
		QuikChange Multi Control Template	No specific data.
		QuikChange Multi Ctl.	No specific data.
		Primer Mix	No specific data.
		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 Plasmid	No specific data.
Ingestion	:	QuikSolution	No specific data.
		QuikChange Multi Enzyme Blend	No specific data.
		10X QuikChange Multi Reaction Buffer	No specific data.
		dNTP Mix	No specific data.
		Dpn I	No specific data.
		QuikChange Multi Control Template	No specific data.
		QuikChange Multi Ctl.	No specific data.
		Primer Mix	No specific data.

SECTION 4: First aid measures

XL10-Gold Ultracompetent cells	No specific data.
XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: stomach pains
pUC 18 DNA Control Plasmid	No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	:	QuikSolution	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
		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	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	:	QuikSolution	No specific treatment.
		QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	QuikSolution	Use an extinguishing agent suitable for the surrounding fire.
		QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.

SECTION 5: Firefighting measures

	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.
Unsuitable extinguishing media	QuikSolution	None known.
	QuikChange Multi Enzyme Blend	None known.
	10X QuikChange Multi Reaction Buffer	None known.
	dNTP Mix	None known.
	Dpn I	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

Hazards from the substance or mixture	QuikSolution	In a fire or if heated, a pressure increase will occur and the container may burst.
	QuikChange Multi Enzyme Blend	In a fire or if heated, a pressure increase will occur and the container may burst.
	10X QuikChange Multi Reaction 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	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 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.
Hazardous combustion products	pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
	QuikSolution	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides
	QuikChange Multi Enzyme Blend	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	10X QuikChange Multi Reaction Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides halogenated compounds
	dNTP Mix	Decomposition products may include the following materials:

SECTION 5: Firefighting measures

	carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides
Dpn I	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. Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
XL10-Gold 2-Mercaptoethanol	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
pUC 18 DNA Control Plasmid	No specific data.

5.3 Advice for firefighters

Special precautions for fire-fighters

: QuikSolution	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
QuikChange Multi Enzyme Blend	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 Multi Reaction Buffer	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
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	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 Multi Control Template	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
QuikChange Multi Ctl. Primer Mix	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
XL10-Gold Ultracompetent cells	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
XL10-Gold 2-Mercaptoethanol	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
pUC 18 DNA Control Plasmid	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

SECTION 5: Firefighting measures

Special protective equipment for fire-fighters	: QuikSolution	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	QuikChange Multi Enzyme Blend	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	10X QuikChange Multi Reaction Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	dNTP Mix	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	Dpn I	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	QuikChange Multi Control Template	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	QuikChange Multi Ctl. Primer Mix	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	XL10-Gold Ultracompetent cells	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	XL10-Gold 2-Mercaptoethanol	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	pUC 18 DNA Control Plasmid	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	:	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 Multi Enzyme Blend	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 Multi Reaction Buffer	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through 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	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.
		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.
For emergency responders	:	QuikSolution	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
		QuikChange Multi Enzyme Blend	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".

SECTION 6: Accidental release measures

10X QuikChange Multi Reaction Buffer	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
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	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 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 Enzyme Blend	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
10X QuikChange Multi Reaction Buffer	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
dNTP Mix	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Dpn I	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 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

SECTION 6: Accidental release measures

XL10-Gold 2-Mercaptoethanol	(sewers, waterways, soil or air). 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 Multi Enzyme Blend	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 Multi Reaction Buffer	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
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	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, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
XL10-Gold 2-Mercaptoethanol	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
pUC 18 DNA Control Plasmid	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

SECTION 6: Accidental release measures

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures	: QuikSolution	Put on appropriate personal protective equipment (see Section 8).
	QuikChange Multi Enzyme Blend	Put on appropriate personal protective equipment (see Section 8).
	10X QuikChange Multi Reaction Buffer	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.
	dNTP Mix	Put on appropriate personal protective equipment (see Section 8).
	Dpn I	Put on appropriate personal protective equipment (see Section 8).
	QuikChange Multi Control Template	Put on appropriate personal protective equipment (see Section 8).
	QuikChange Multi Ctl. Primer Mix	Put on appropriate personal protective equipment (see Section 8).
	XL10-Gold Ultracompetent cells	Put on appropriate personal protective equipment (see Section 8).
	XL10-Gold 2-Mercaptoethanol	Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	pUC 18 DNA Control Plasmid	Put on appropriate personal protective equipment (see Section 8).
Advice on general occupational hygiene	: QuikSolution	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	QuikChange Multi Enzyme Blend	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	10X QuikChange Multi Reaction Buffer	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	dNTP Mix	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating,

SECTION 7: Handling and storage

Dpn I	drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
QuikChange Multi Control Template	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
QuikChange Multi Ctl. Primer Mix	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
XL10-Gold Ultracompetent cells	Potentially biohazardous material. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
XL10-Gold 2-Mercaptoethanol	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
pUC 18 DNA Control Plasmid	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

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

SECTION 7: Handling and storage

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

SECTION 7: Handling and storage

been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s)

Recommendations	: QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
Industrial sector specific solutions	: QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
QuikChange Multi Enzyme Blend Glycerol	EH40/2005 WELs (United Kingdom (UK), 12/2011). TWA: 10 mg/m ³ 8 hours. Form: Mist
Dpn I Glycerol	EH40/2005 WELs (United Kingdom (UK), 12/2011). TWA: 10 mg/m ³ 8 hours. Form: Mist
XL10-Gold Ultracompetent cells Glycerol	EH40/2005 WELs (United Kingdom (UK), 12/2011). TWA: 10 mg/m ³ 8 hours. Form: Mist
Sucrose	EH40/2005 WELs (United Kingdom (UK), 12/2011). STEL: 20 mg/m ³ 15 minutes. TWA: 10 mg/m ³ 8 hours.

SECTION 8: Exposure controls/personal protection

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

DNELs/DMELs

No DNELs/DMELs available.

PNECs

No PNECs available

8.2 Exposure controls

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

Individual protection measures

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

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

Skin protection

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

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

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

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

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties****Appearance**

Physical state	: QuikSolution	Liquid. [Clear.]
	QuikChange Multi	Liquid.
	Enzyme Blend	
	10X QuikChange Multi	Liquid.
	Reaction Buffer	
	dNTP Mix	Liquid.
	Dpn I	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 Plasmid	Liquid.
Colour	: QuikSolution	Colourless.
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	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 Plasmid	Not available.
Odour	: QuikSolution	Slight [Slight]
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	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 Plasmid	Not available.
Odour threshold	: QuikSolution	Not available.
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	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	
pH	: QuikSolution	Not available.
	QuikChange Multi	8.2
	Enzyme Blend	
	10X QuikChange Multi	8.8
	Reaction Buffer	
	dNTP Mix	7.5
	Dpn I	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	
Melting point/freezing point	: QuikSolution	18.4°C
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	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	
Initial boiling point and boiling range	: QuikSolution	188.8°C
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	Not available.
	QuikChange Multi	100°C
	Control Template	
	QuikChange Multi Ctl.	100°C
	Primer Mix	
	XL10-Gold	Not available.
	Ultracompetent cells	
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	pUC 18 DNA Control	100°C
	Plasmid	

SECTION 9: Physical and chemical properties

Flash point	:	QuikSolution	Closed cup: 85°C Open cup: 87°C		
		QuikChange Multi Enzyme Blend	Not available.		
		10X QuikChange Multi Reaction Buffer	Not available.		
		dNTP Mix	Not available.		
		Dpn I	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.		
		Evaporation rate	:	QuikSolution	0.026 (butyl acetate = 1)
				QuikChange Multi Enzyme Blend	Not available.
				10X QuikChange Multi Reaction Buffer	Not available.
dNTP Mix	Not available.				
Dpn I	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.				
Flammability (solid, gas)	:			QuikSolution	Not applicable.
				QuikChange Multi Enzyme Blend	Not applicable.
				10X QuikChange Multi Reaction Buffer	Not applicable.
		dNTP Mix	Not applicable.		
		Dpn I	Not applicable.		
		QuikChange Multi Control Template	Not applicable.		
		QuikChange Multi Ctl.	Not applicable.		
		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.		
		Upper/lower flammability or explosive limits	:	QuikSolution	Lower: 2.6% Upper: 42%
				QuikChange Multi Enzyme Blend	Not available.
				10X QuikChange Multi Reaction Buffer	Not available.
dNTP Mix	Not available.				
Dpn I	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	
Vapour pressure	: QuikSolution	0.056 kPa [room temperature]
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	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	
Vapour density	: QuikSolution	2.71 [Air = 1]
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	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	
Relative density	: QuikSolution	1.1
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	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

Solubility(ies)	: QuikSolution	Easily soluble in the following materials: cold water and hot water.	
	QuikChange Multi Enzyme Blend	Soluble in the following materials: cold water and hot water.	
	10X QuikChange Multi Reaction 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	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. Primer Mix	Easily soluble in the following materials: cold water and hot water.	
	XL10-Gold	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.	
	Partition coefficient: n-octanol/water	: QuikSolution	-2.029
		QuikChange Multi Enzyme Blend	Not available.
		10X QuikChange Multi Reaction Buffer	Not available.
dNTP Mix		Not available.	
Dpn I		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.	
Auto-ignition temperature		: QuikSolution	300 to 302°C
		QuikChange Multi Enzyme Blend	Not available.
		10X QuikChange Multi Reaction Buffer	Not available.
	dNTP Mix	Not available.	
	Dpn I	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.	
	Decomposition temperature	: QuikSolution	140 to 189°C
		QuikChange Multi Enzyme Blend	Not available.
		10X QuikChange Multi Reaction Buffer	Not available.
dNTP Mix		Not available.	
Dpn I		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	
Viscosity	: QuikSolution	Dynamic (room temperature): 2.14 mPa·s
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	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	
Explosive properties	: QuikSolution	Not available.
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	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	
Oxidising properties	: QuikSolution	Not available.
	QuikChange Multi	Not available.
	Enzyme Blend	
	10X QuikChange Multi	Not available.
	Reaction Buffer	
	dNTP Mix	Not available.
	Dpn I	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

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

SECTION 10: Stability and reactivity

10.4 Conditions to avoid	: QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I 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.
10.5 Incompatible materials	: QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I 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.
10.6 Hazardous decomposition products	: QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I 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.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
QuikSolution Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
Dpn I Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
XL10-Gold 2-Mercaptoethanol Sodium chloride 2-Mercaptoethanol	LD50 Oral LD50 Dermal LD50 Oral	Rat Rabbit Rat	3000 mg/kg 200 mg/kg 244 mg/kg	- - -

Acute toxicity estimates

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

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
QuikSolution 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	-
10X QuikChange Multi Reaction Buffer Polyoxyethylene octyl phenyl ether	Eyes - Moderate irritant	Rabbit	-	24 hours 10 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 microliters	-
Dpn I Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
XL10-Gold 2-Mercaptoethanol Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500	-

SECTION 11: Toxicological information

2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	milligrams 2 milligrams	-
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Sensitiser

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

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

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure

QuikSolution	Routes of entry anticipated: Oral, Dermal, Inhalation.
QuikChange Multi Enzyme Blend	Routes of entry anticipated: Oral, Dermal, Inhalation.
10X QuikChange Multi Reaction Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation.
dNTP Mix	Not available.
Dpn I	Routes of entry anticipated: Oral, Dermal, Inhalation.
QuikChange Multi Control Template	Not available.
QuikChange Multi Ctl. Primer Mix	Not available.
XL10-Gold Ultracompetent cells	Routes of entry anticipated: Oral, Dermal, Inhalation.
XL10-Gold 2-Mercaptoethanol	Routes of entry anticipated: Oral, Dermal, Inhalation.
pUC 18 DNA Control Plasmid	Not available.

Potential acute health effects

Inhalation

QuikSolution	No known significant effects or critical hazards.
QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
dNTP Mix	No known significant effects or critical hazards.
Dpn I	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	No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

SECTION 11: Toxicological information

Ingestion	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Multi	No known significant effects or critical hazards.
		Enzyme Blend	
		10X QuikChange Multi	No known significant effects or critical hazards.
		Reaction Buffer	
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I	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		
Skin contact	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Multi	No known significant effects or critical hazards.
		Enzyme Blend	
		10X QuikChange Multi	No known significant effects or critical hazards.
		Reaction Buffer	
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I	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		
Eye contact	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Multi	No known significant effects or critical hazards.
		Enzyme Blend	
		10X QuikChange Multi	Causes serious eye irritation.
		Reaction Buffer	
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I	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		

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	:	QuikSolution	No specific data.
		QuikChange Multi	No specific data.
		Enzyme Blend	
		10X QuikChange Multi	No specific data.
		Reaction Buffer	
		dNTP Mix	No specific data.
		Dpn I	No specific data.
		QuikChange Multi	No specific data.
		Control Template	
		QuikChange Multi Ctl.	No specific data.
		Primer Mix	

SECTION 11: Toxicological information

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

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	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

General	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
		10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I	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	Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Carcinogenicity	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
		10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I	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	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Mutagenicity	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
		10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
		dNTP Mix	No known significant effects or critical hazards.
		Dpn I	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.

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	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Teratogenicity	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
	10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I	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	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Developmental effects	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
	10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I	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	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Fertility effects	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
	10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I	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	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
QuikSolution Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 100 µl/L Marine water	Algae - Ulva lactuca	72 hours
10X QuikChange Multi Reaction Buffer Polyoxyethylene octyl phenyl ether	Acute LC50 5.85 mg/l Fresh water	Crustaceans - Ceriodaphnia rigaudi - Neonate	48 hours
	Acute LC50 11.2 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 4500 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Dpn I Sodium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute LC50 1661 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - Morone saxatilis - Larvae	96 hours
	Chronic LC10 781 mg/l Fresh water	Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 21 days 8 weeks
XL10-Gold 2-Mercaptoethanol Sodium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute LC50 1661 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - Morone saxatilis - Larvae	96 hours
	Chronic LC10 781 mg/l Fresh water	Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 21 days 8 weeks

12.2 Persistence and degradability

Not available.

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

12.3 Bioaccumulative potential

SECTION 12: Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
QuikSolution Dimethyl sulfoxide	-2.029	3.16	low
10X QuikChange Multi Reaction Buffer Polyoxyethylene octyl phenyl ether	4.86	-	high
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	-0.056	-	low

12.4 Mobility in soil

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

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

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
10X QuikChange Multi Reaction Buffer Polyoxyethylene octyl phenyl ether	Substance of equivalent concern for environment	Recommended	ED/169/2012	2/10/2014

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	QuikSolution	Not applicable.
	QuikChange Multi Enzyme Blend	Not applicable.
	10X QuikChange Multi Reaction Buffer	Not applicable.
	dNTP Mix	Not applicable.
	Dpn I	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)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

SECTION 15: Regulatory information

International lists

National inventory

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

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

SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

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

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

Classification	Justification
10X QuikChange Multi Reaction Buffer Eye Irrit. 2, H319	Calculation method
XL10-Gold 2-Mercaptoethanol Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	Calculation method Calculation method Calculation method

Full text of abbreviated H statements

10X QuikChange Multi Reaction Buffer H302 H315 H318 H319 H335 H411	Harmful if swallowed. Causes skin irritation. Causes serious eye damage. Causes serious eye irritation. May cause respiratory irritation. Toxic to aquatic life with long lasting effects.
Dpn I H319	Causes serious eye irritation.
XL10-Gold 2-Mercaptoethanol H301 H310 H315 H317 H318 H319 H330 H335	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.

Date of issue/Date of revision : 18/10/2016

SECTION 16: Other information

H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

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

<p>10X QuikChange Multi Reaction Buffer Acute Tox. 4, H302 Aquatic Chronic 2, H411 Eye Dam. 1, H318 Eye Irrit. 2, H319 Skin Irrit. 2, H315 STOT SE 3, H335</p> <p>Dpn I Eye Irrit. 2, H319</p> <p>XL10-Gold 2-Mercaptoethanol Acute Tox. 2, H310 Acute Tox. 2, H330 Acute Tox. 3, H301 Aquatic Chronic 2, H411 Aquatic Chronic 3, H412 Eye Dam. 1, H318 Eye Irrit. 2, H319 Skin Irrit. 2, H315 Skin Sens. 1, H317 STOT SE 3, H335</p>	<p>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 : 18/10/2016

Date of previous issue : No previous validation.

Version : 1

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