

SAFETY DATA SHEET



QuikChange Multi Site-Directed Mutagenesis Kit, Part Number 200515

Section 1. Identification

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

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

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)

Supplier/Manufacturer : Agilent Technologies Australia Pty Ltd
679 Springvale Road
Mulgrave
Victoria 3170, Australia
1800 802 402

Emergency telephone number (with hours of operation) : CHEMTREC®: (61)-290372994

Section 2. Hazard(s) identification

Classification of the substance or mixture

QuikSolution H227	FLAMMABLE LIQUIDS - Category 4
10X QuikChange Multi Reaction Buffer H319	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A
XL10-Gold 2-Mercaptoethanol H318 H317 H412	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SKIN SENSITISATION - Category 1 LONG-TERM AQUATIC HAZARD - Category 3
dNTP Mix	Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 5.7%
dNTP Mix	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 5.7%

Section 2. Hazard(s) identification

GHS label elements

Hazard pictograms



Signal word

QuikSolution	WARNING
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

QuikSolution	H227 - Combustible liquid.
QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
10X QuikChange Multi Reaction Buffer	H319 - 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	H318 - Causes serious eye damage.
	H317 - May cause an allergic skin reaction.
	H412 - Harmful to aquatic life with long lasting effects.
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

Precautionary statements

Prevention

QuikSolution	P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from flames and hot surfaces. - No smoking.
QuikChange Multi Enzyme Blend	Not applicable.
10X QuikChange Multi Reaction Buffer	P280 - Wear eye or face protection.
dNTP Mix	P264 - Wash hands thoroughly after handling.
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.

Section 2. Hazard(s) identification

		P261 - Avoid breathing vapour. P272 - Contaminated work clothing should not be allowed out of the workplace.	
Response	pUC 18 DNA Control Plasmid	Not applicable.	
	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. P337 + P313 - If eye irritation persists: Get medical attention.	
	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	P302 + P352 + P363 - IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. P333 + P313 - If skin irritation or rash occurs: Get medical attention. P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.	
	Storage	pUC 18 DNA Control Plasmid	Not applicable.
		QuikSolution	P403 - Store in a well-ventilated place. P235 - Keep cool.
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 2-Mercaptoethanol		Not applicable.	
Disposal		pUC 18 DNA Control Plasmid	Not applicable.
		QuikSolution	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	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.	

Section 2. Hazard(s) identification

	XL10-Gold	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	Not applicable.
Supplemental label elements	: <input checked="" type="checkbox"/> 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	
	pUC 18 DNA Control Plasmid	Not applicable.
Other hazards which do not result in classification	: <input checked="" type="checkbox"/> 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 Ultracompetent cells	None known.
	XL10-Gold	None known.
	2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	None known.

Section 3. Composition and ingredient information

Substance/mixture	: <input checked="" type="checkbox"/> QuikSolution	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	Mixture
	2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	Mixture

CAS number/other identifiers

Section 3. Composition and ingredient information

Ingredient name	% (w/w)	CAS number
QuikSolution Dimethyl sulfoxide	100	67-68-5
QuikChange Multi Enzyme Blend Glycerol	≥30 - ≤60	56-81-5
10X QuikChange Multi Reaction Buffer Polyoxyethylene octyl phenyl ether	≤2.3	9002-93-1
Dpn I Glycerol	≥30 - ≤60	56-81-5
XL10-Gold Ultracompetent cells Glycerol Sucrose	≥10 - ≤30 ≤10	56-81-5 57-50-1
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	≤5	60-24-2

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.

Occupational exposure limits, if available, are listed in Section 8.


Section 4. First aid measures

Description of necessary 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. Continue to rinse for at least 10 minutes. 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	Get medical attention immediately. Call a poison

Section 4. First aid measures

Inhalation

2-Mercaptoethanol	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.
:  QuikSolution	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.
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. 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

Section 4. First aid measures

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. Wash clothing before reuse. Clean shoes thoroughly before reuse.

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 gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

pUC 18 DNA Control Plasmid Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion

:  QuikSolution

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

Section 4. First aid measures

	medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
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.
XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Wash out mouth with water.

Section 4. First aid measures

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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact

: <input checked="" type="checkbox"/> 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.
XL10-Gold 2-Mercaptoethanol	Causes serious eye damage.
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

Inhalation

: <input checked="" type="checkbox"/> 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 4. First aid measures

Skin 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	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	May cause an allergic skin reaction.		
		2-Mercaptoethanol			
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.		
		Ingestion	:	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	No known significant effects or critical hazards.				
2-Mercaptoethanol					
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.				

Over-exposure signs/symptoms

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

Section 4. First aid measures

	Template	
	QuikChange Multi Ctl.	No specific data.
	Primer Mix	
	XL10-Gold Ultracompetent cells	No specific data.
	XL10-Gold	No specific data.
	2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	No specific data.
Skin contact	: <input checked="" type="checkbox"/> 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	
	XL10-Gold Ultracompetent cells	No specific data.
	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	: <input checked="" type="checkbox"/> 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	
	XL10-Gold Ultracompetent cells	No specific data.
	XL10-Gold	Adverse symptoms may include the following:
	2-Mercaptoethanol	stomach pains
	pUC 18 DNA Control Plasmid	No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

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

Section 4. First aid measures

	QuikChange Multi Control Template	ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	QuikChange Multi Ctl. Primer Mix	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XL10-Gold Ultracompetent cells	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XL10-Gold 2-Mercaptoethanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	pUC 18 DNA Control Plasmid	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: QuikSolution	No specific treatment.
	QuikChange Multi Enzyme Blend	No specific treatment.
	10X QuikChange Multi Reaction Buffer	No specific treatment.
	dNTP Mix	No specific treatment.
	Dpn I	No specific treatment.
	QuikChange Multi Control Template	No specific treatment.
	QuikChange Multi Ctl. Primer Mix	No specific treatment.
	XL10-Gold Ultracompetent cells	No specific treatment.
	XL10-Gold 2-Mercaptoethanol	No specific treatment.
	pUC 18 DNA Control Plasmid	No specific treatment.
Protection of first-aiders	: QuikSolution	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.
	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.

Section 4. First aid measures

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media

: QuikSolution	Use dry chemical, CO ₂ , water spray (fog) or foam.
QuikChange Multi Enzyme Blend	Use an extinguishing agent suitable for the surrounding fire.
10X QuikChange Multi Reaction Buffer	Use an extinguishing agent suitable for the surrounding fire.
dNTP Mix	Use an extinguishing agent suitable for the surrounding fire.
Dpn I	Use an extinguishing agent suitable for the surrounding fire.
QuikChange Multi Control Template	Use an extinguishing agent suitable for the surrounding fire.
QuikChange Multi Ctl. Primer Mix	Use an extinguishing agent suitable for the surrounding fire.
XL10-Gold Ultracompetent cells	Use an extinguishing agent suitable for the surrounding fire.
XL10-Gold 2-Mercaptoethanol	Use an extinguishing agent suitable for the surrounding fire.
pUC 18 DNA Control Plasmid	Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media


: QuikSolution	Do not use water jet.
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 Ultracompetent cells	None known.
XL10-Gold 2-Mercaptoethanol	None known.
pUC 18 DNA Control Plasmid	None known.

Specific hazards arising from the chemical

: QuikSolution	Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
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 Ultracompetent cells	In a fire or if heated, a pressure increase will occur and the container may burst.

Section 5. Firefighting measures

Hazardous thermal decomposition products

XL10-Gold 2-Mercaptoethanol	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
:  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: 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	No specific data.
QuikChange Multi Ctl. Primer Mix	No specific data.
XL10-Gold Ultracompetent cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
XL10-Gold 2-Mercaptoethanol	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
pUC 18 DNA Control Plasmid	No specific data.

Section 5. Firefighting measures

Special protective actions for fire-fighters

: QuikSolution

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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

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.

Special protective equipment for fire-fighters

: QuikSolution

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.

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.

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.

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.

QuikChange Multi Control

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Fire-fighters should wear appropriate protective

Section 5. Firefighting measures

Template	equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
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.
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.
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.
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.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

:  QuikSolution

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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 spilt 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 spilt 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 spilt material. Put on appropriate personal protective equipment.

Dpn I

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

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

Section 6. Accidental release measures

QuikChange Multi Ctl. Primer Mix	through spilt material. Put on appropriate personal protective equipment. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
XL10-Gold Ultracompetent cells	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
XL10-Gold 2-Mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
pUC 18 DNA Control Plasmid	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

For emergency responders :  QuikSolution

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". If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
10X QuikChange 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

Section 6. Accidental release measures

pUC 18 DNA Control Plasmid information in "For non-emergency personnel".
 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".

Environmental precautions :  QuikSolution

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 (sewers, waterways, soil or air).
XL10-Gold 2-Mercaptoethanol	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
pUC 18 DNA Control Plasmid	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and material for containment and cleaning up

Section 6. Accidental release measures

<p>Methods for cleaning up : QuikSolution</p>	<p>Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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.</p>
<p>QuikChange Multi Enzyme Blend</p>	<p>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.</p>
<p>10X QuikChange Multi Reaction Buffer</p>	<p>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.</p>
<p>dNTP Mix</p>	<p>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.</p>
<p>Dpn I</p>	<p>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.</p>
<p>QuikChange Multi Control Template</p>	<p>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.</p>
<p>QuikChange Multi Ctl. Primer Mix</p>	<p>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.</p>
<p>XL10-Gold Ultracompetent cells</p>	<p>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.</p>
<p>XL10-Gold 2-Mercaptoethanol</p>	<p>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.</p>
<p>pUC 18 DNA Control Plasmid</p>	<p>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.</p>

Section 7. Handling and storage

Precautions for safe handling

Protective measures :  QuikSolution

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.

QuikChange Multi Enzyme Blend
10X QuikChange Multi Reaction Buffer

Put on appropriate personal protective equipment (see Section 8).
Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

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.

Put on appropriate personal protective equipment (see Section 8).

Primer Mix

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

Section 7. Handling and storage

10X QuikChange Multi Reaction Buffer	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.
dNTP Mix	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
Dpn I	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.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : QuikSolution

Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidizing materials. 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 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.

Section 7. Handling and storage

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 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.

Section 8. Exposure controls and personal protection

[Control parameters](#)

[Occupational exposure limits](#)

Ingredient name	Exposure limits
QuikChange Multi Enzyme Blend Glycerol	Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours.
Dpn I Glycerol	Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours.
XL10-Gold Ultracompetent cells Glycerol	Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours.
Sucrose	Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours.

Section 8. Exposure controls and personal protection

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

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.

Section 9. Physical and chemical properties

Appearance

- Physical state** : QuikSolution Liquid. [Clear.]
 QuikChange Multi Enzyme Blend Liquid.
 10X QuikChange Multi Reaction Buffer Liquid.
 dNTP Mix Liquid.
 Dpn I Liquid.
 QuikChange Multi Control Template Liquid.
 QuikChange Multi Ctl. Liquid.
 Primer Mix
 XL10-Gold Ultracompetent cells Liquid.
 XL10-Gold Liquid.
 2-Mercaptoethanol
 pUC 18 DNA Control Plasmid Liquid.

Section 9. Physical and chemical properties

Colour	:	<input checked="" type="checkbox"/> QuikSolution	Colourless.		
		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 Ultracompetent cells	Not available.		
		XL10-Gold 2-Mercaptoethanol	Not available.		
		pUC 18 DNA Control Plasmid	Not available.		
		Odour	:	<input checked="" type="checkbox"/> QuikSolution	Slight [Slight]
				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 Ultracompetent cells	Not available.				
XL10-Gold 2-Mercaptoethanol	Not available.				
pUC 18 DNA Control Plasmid	Not available.				
Odour threshold	:			<input checked="" type="checkbox"/> QuikSolution	Not available.
				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 Ultracompetent cells	Not available.		
		XL10-Gold 2-Mercaptoethanol	Not available.		
		pUC 18 DNA Control Plasmid	Not available.		
		pH	:	<input checked="" type="checkbox"/> QuikSolution	Not available.
				QuikChange Multi Enzyme Blend	8.2
				10X QuikChange Multi Reaction Buffer	8.8
				dNTP Mix	7.5
				Dpn I	Not available.
QuikChange Multi Control Template	7.5				
QuikChange Multi Ctl. Primer Mix	7.5				
XL10-Gold Ultracompetent cells	6.4				
XL10-Gold 2-Mercaptoethanol	Not available.				

Section 9. Physical and chemical properties

		pUC 18 DNA Control Plasmid 7.5	
Melting point	:	<input checked="" type="checkbox"/> QuikSolution	18.4°C (65.1°F)
		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	0°C (32°F)
		QuikChange Multi Ctl. Primer Mix	0°C (32°F)
		XL10-Gold Ultracompetent cells	Not available.
		XL10-Gold 2-Mercaptoethanol	Not available.
		pUC 18 DNA Control Plasmid	0°C (32°F)
Boiling point	:	<input checked="" type="checkbox"/> QuikSolution	188.8°C (371.8°F)
		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	100°C (212°F)
		QuikChange Multi Ctl. Primer Mix	100°C (212°F)
		XL10-Gold Ultracompetent cells	Not available.
		XL10-Gold 2-Mercaptoethanol	Not available.
		pUC 18 DNA Control Plasmid	100°C (212°F)
Flash point	:	<input checked="" type="checkbox"/> QuikSolution	Closed cup: 85°C (185°F) Open cup: 87°C (188.6°F)
		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 Ultracompetent cells	Not available.
		XL10-Gold 2-Mercaptoethanol	Not available.
		pUC 18 DNA Control Plasmid	Not available.
Evaporation rate	:	<input checked="" type="checkbox"/> 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. Primer Mix	Not available.
		XL10-Gold Ultracompetent cells	Not available.

Section 9. Physical and chemical properties

		XL10-Gold	Not available.
		2-Mercaptoethanol	
		pUC 18 DNA Control Plasmid	Not available.
Flammability (solid, gas)	:	<input checked="" type="checkbox"/> 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	
		pUC 18 DNA Control Plasmid	Not applicable.
Lower and upper explosive (flammable) limits	:	<input checked="" type="checkbox"/> 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. Primer Mix	Not available.
		XL10-Gold Ultracompetent cells	Not available.
		XL10-Gold	Not available.
		2-Mercaptoethanol	
		pUC 18 DNA Control Plasmid	Not available.
Vapour pressure	:	<input checked="" type="checkbox"/> QuikSolution	0.056 kPa (0.42 mm Hg) [room temperature]
		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 Ultracompetent cells	Not available.
		XL10-Gold	Not available.
		2-Mercaptoethanol	
		pUC 18 DNA Control Plasmid	Not available.
Vapour density	:	<input checked="" type="checkbox"/> QuikSolution	2.71 [Air = 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. Primer Mix	Not available.

Section 9. Physical and chemical properties

		XL10-Gold Ultracompetent cells	Not available.
		XL10-Gold	Not available.
		2-Mercaptoethanol	
		pUC 18 DNA Control Plasmid	Not available.
Relative density	:	QuikSolution	1.1
		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. Primer Mix	Not available.
		XL10-Gold Ultracompetent cells	Not available.
		XL10-Gold	Not available.
		2-Mercaptoethanol	
		pUC 18 DNA Control Plasmid	Not available.
Solubility	:	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 Ultracompetent cells	Soluble in the following materials: cold water and hot water.
		XL10-Gold	Easily soluble in the following materials: cold water and hot water.
		2-Mercaptoethanol	
		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 Ultracompetent cells	Not available.
		XL10-Gold	Not available.
		2-Mercaptoethanol	
		pUC 18 DNA Control Plasmid	Not available.

Section 9. Physical and chemical properties

Auto-ignition temperature	: <input checked="" type="checkbox"/> QuikSolution	300 to 302°C (572 to 575.6°F)
	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 Ultracompetent cells	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.
Decomposition temperature	: <input checked="" type="checkbox"/> QuikSolution	140 to 189°C (284 to 372.2°F)
	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 Ultracompetent cells	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.
Viscosity	: <input checked="" type="checkbox"/> QuikSolution	Dynamic (room temperature): 2.14 mPa·s (2.14 cP)
	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 Ultracompetent cells	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.


Section 10. Stability and reactivity

Reactivity	: <input checked="" type="checkbox"/> QuikSolution	No specific test data related to reactivity available for this product or its ingredients.
	QuikChange Multi Enzyme Blend	No specific test data related to reactivity available for this product or its ingredients.
	10X QuikChange Multi Reaction Buffer	No specific test data related to reactivity available for this product or its ingredients.
	dNTP Mix	No specific test data related to reactivity available for this product or its ingredients.
	Dpn I	No specific test data related to reactivity available for this product or its ingredients.
	QuikChange Multi Control Template	No specific test data related to reactivity available for this product or its ingredients.


Section 10. Stability and reactivity

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


Chemical stability

:  QuikSolution	The product is stable.
QuikChange Multi Enzyme Blend	The product is stable.
10X QuikChange Multi Reaction Buffer	The product is stable.
dNTP Mix	The product is stable.
Dpn I	The product is stable.
QuikChange Multi Control Template	The product is stable.
QuikChange Multi Ctl. Primer Mix	The product is stable.
XL10-Gold Ultracompetent cells	The product is stable.
XL10-Gold	The product is stable.
2-Mercaptoethanol	The product is stable.
pUC 18 DNA Control Plasmid	The product is stable.

Possibility of hazardous reactions


:  QuikSolution	Under normal conditions of storage and use, hazardous reactions will not occur.
QuikChange Multi Enzyme Blend	Under normal conditions of storage and use, hazardous reactions will not occur.
10X QuikChange Multi Reaction Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
dNTP Mix	Under normal conditions of storage and use, hazardous reactions will not occur.
Dpn I	Under normal conditions of storage and use, hazardous reactions will not occur.
QuikChange Multi Control Template	Under normal conditions of storage and use, hazardous reactions will not occur.
QuikChange Multi Ctl. Primer Mix	Under normal conditions of storage and use, hazardous reactions will not occur.
XL10-Gold Ultracompetent cells	Under normal conditions of storage and use, hazardous reactions will not occur.
XL10-Gold	Under normal conditions of storage and use, hazardous reactions will not occur.
2-Mercaptoethanol	Under normal conditions of storage and use, hazardous reactions will not occur.
pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous reactions will not occur.


Conditions to avoid

:  QuikSolution	Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas.
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. Primer Mix	No specific data.

Section 10. Stability and reactivity

XL10-Gold Ultracompetent cells	No specific data.
XL10-Gold 2-Mercaptoethanol	No specific data.
pUC 18 DNA Control Plasmid	No specific data.

Incompatible materials	:  QuikSolution	Reactive or incompatible with the following materials: oxidizing materials
	QuikChange Multi Enzyme Blend	May react or be incompatible with oxidising materials.
	10X QuikChange Multi Reaction Buffer	May react or be incompatible with oxidising materials.
	dNTP Mix	May react or be incompatible with oxidising materials.
	Dpn I	May react or be incompatible with oxidising materials.
	QuikChange Multi Control Template	May react or be incompatible with oxidising materials.
	QuikChange Multi Ctl. Primer Mix	May react or be incompatible with oxidising materials.
	XL10-Gold Ultracompetent cells	May react or be incompatible with oxidising materials.
	XL10-Gold 2-Mercaptoethanol	May react or be incompatible with oxidising materials.
	pUC 18 DNA Control Plasmid	May react or be incompatible with oxidising materials.

Hazardous decomposition products	:  QuikSolution	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	QuikChange Multi Enzyme Blend	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10X QuikChange Multi Reaction Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	dNTP Mix	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Dpn I	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	QuikChange Multi Control Template	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	QuikChange Multi Ctl. Primer Mix	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	XL10-Gold Ultracompetent cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	XL10-Gold 2-Mercaptoethanol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

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	- -
QuikChange Multi Enzyme Blend Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Dpn I Glycerol	LD50 Oral	Rat	12600 mg/kg	-
XL10-Gold Ultracompetent cells Glycerol Sucrose	LD50 Oral LD50 Oral	Rat Rat	12600 mg/kg 29700 mg/kg	- -
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	LD50 Dermal LD50 Oral	Rabbit Rat	200 mg/kg 244 mg/kg	- -

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	-
QuikChange Multi Enzyme Blend Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 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 Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
XL10-Gold Ultracompetent cells Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500	-

Section 11. Toxicological information

XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	milligrams 2 milligrams	-
---	------------------------	--------	---	----------------------------	---

Sensitisation

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
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

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.	No known significant effects or critical hazards.

Section 11. Toxicological information

	Primer Mix	
	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	XL10-Gold	Causes serious eye damage.
	2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Inhalation	: <input checked="" type="checkbox"/> 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	No known significant effects or critical hazards.
	2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Skin contact	: <input checked="" type="checkbox"/> 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	May cause an allergic skin reaction.
	2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Ingestion	: <input checked="" type="checkbox"/> 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	No known significant effects or critical hazards.
	2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

[Symptoms related to the physical, chemical and toxicological characteristics](#)

Section 11. Toxicological information

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

Section 11. Toxicological information

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

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

Not available.

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.	

Section 11. Toxicological information

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.
 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.

Section 11. Toxicological information

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

Numerical measures of toxicity

Acute toxicity estimates

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

Section 12. Ecological information

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
QuikChange Multi Enzyme Blend Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 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 Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
XL10-Gold Ultracompetent cells Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

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

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
QuikSolution Dimethyl sulfoxide	-2.029	3.16	low
QuikChange Multi Enzyme Blend Glycerol	-1.76	-	low
10X QuikChange Multi Reaction Buffer Polyoxyethylene octyl phenyl ether	4.86	-	high
Dpn I Glycerol	-1.76	-	low
XL10-Gold Ultracompetent cells Glycerol Sucrose	-1.76 -3.7	- -	low low
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	-0.056	-	low

Mobility in soil

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

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. 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 spill material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Regulatory information

ADG / IMDG / IATA : Not regulated as Dangerous Goods according to the ADG Code .

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.

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

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons

6

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

Australia inventory (AICS) : Not determined.

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.

International lists

National inventory

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

Section 16. Any other relevant information

History

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

Date of previous issue : 27/10/2015.

Version : 4

Key to abbreviations

: ADG = Australian Dangerous Goods
 ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 NOHSC = National Occupational Health and Safety Commission
 SUSMP = Standard Uniform Schedule of Medicine and Poisons
 UN = United Nations

Section 16. Any other relevant information

Procedure used to derive the classification

Classification	Justification
QuikSolution Flam. Liq. 4, H227	On basis of test data
10X QuikChange Multi Reaction Buffer Eye Irrit. 2A, 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

References : Not available.

✔ Indicates information that has changed from previously issued version.

Notice to reader

Disclaimer: The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.