

SAFETY DATA SHEET



QuikChange Multi Site-Directed Mutagenesis Kit, Part Number 200514

Section 1. Identification

1.1 Product identifier

Product name : QuikChange Multi Site-Directed Mutagenesis Kit, Part Number 200514
Part No. (Chemical Kit) : 200514
Part No. : QuikSolution 200516-51
 QuikChange Multi Enzyme Blend 200514-51
 dNTP Mix 200518-56
 Dpn I 200518-52
 QuikChange Multi Ctl. Primer Mix 200514-54
 QuikChange Multi Control Template 200514-53
 10X QuikChange Multi Reaction Buffer 200514-52
 pUC 18 DNA Control Plasmid 200231-42
 XL10-Gold 2-Mercaptoethanol 200314-43
 XL10-Gold Ultracompetent cells 200315-41

Validation date : 10/18/2016

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

Material uses : Analytical reagent.
 QuikSolution 500 µl
 QuikChange Multi Enzyme Blend 32 µl (80 U 2.5 U/µl)
 dNTP Mix 30 µl
 Dpn I 30 µl (10 U/µl 300 U)
 QuikChange Multi Ctl. Primer Mix 5 µl
 QuikChange Multi Control Template 5 µl
 10X QuikChange Multi Reaction Buffer 200 µl
 pUC 18 DNA Control Plasmid 10 µl (0.1 ng/µl)
 XL10-Gold 2-Mercaptoethanol 2 x 50 µl
 XL10-Gold Ultracompetent cells 1350 µl

1.3 Details of the supplier of the safety data sheet

Supplier/Manufacturer : Agilent Technologies, Inc.
 5301 Stevens Creek Blvd
 Santa Clara, CA 95051, USA
 800-227-9770

1.4 Emergency telephone number

In case of emergency : CHEMTREC®: 1-800-424-9300

Section 2. Hazards identification

2.1 Classification of the substance or mixture

OSHA/HCS status : QuikSolution This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 QuikChange Multi Enzyme Blend This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 dNTP Mix While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Section 2. Hazards identification

Dpn I	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
QuikChange Multi Ctl. Primer Mix	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
QuikChange Multi Control Template	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

QuikSolution

H227 FLAMMABLE LIQUIDS - Category 4
H320 EYE IRRITATION - Category 2B

QuikChange Multi Enzyme Blend

H320 EYE IRRITATION - Category 2B

Dpn I

H319 EYE IRRITATION - Category 2A

10X QuikChange Multi Reaction Buffer

H319 EYE IRRITATION - Category 2A

XL10-Gold 2-Mercaptoethanol

H318 SERIOUS EYE DAMAGE - Category 1
H317 SKIN SENSITIZATION - Category 1

XL10-Gold Ultracompetent cells

H320 EYE IRRITATION - Category 2B

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

2.2 GHS label elements



Hazard pictograms



Section 2. Hazards identification

Signal word	: <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells	Warning Warning No signal word. Warning No signal word. No signal word. Warning No signal word. Danger Warning
Hazard statements	: <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells	H227 - Combustible liquid. H320 - Causes eye irritation. H320 - Causes eye irritation. No known significant effects or critical hazards. GHS SYMBOL - Exclamation mark - H319 - Causes serious eye irritation. No known significant effects or critical hazards. No known significant effects or critical hazards. GHS SYMBOL - Exclamation mark - H319 - Causes serious eye irritation. No known significant effects or critical hazards. GHS SYMBOL - Corrosion - Exclamation mark - H318 - Causes serious eye damage. H317 - May cause an allergic skin reaction. H320 - Causes eye irritation.
Precautionary statements		
Prevention	: <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells	P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from flames and hot surfaces. - No smoking. P264 - Wash hands thoroughly after handling. P264 - Wash hands thoroughly after handling. Not applicable. P280 - Wear eye or face protection. P264 - Wash hands thoroughly after handling. Not applicable. Not applicable. P280 - Wear eye or face protection. P264 - Wash hands thoroughly after handling. Not applicable. P280 - Wear protective gloves. Wear eye or face protection. P261 - Avoid breathing vapor. P272 (OSHA) - Contaminated work clothing must not be allowed out of the workplace. P264 - Wash hands thoroughly after handling.

Section 2. Hazards identification

Response	:  QuikSolution	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.
	QuikChange Multi Enzyme Blend	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 Dpn I	Not applicable. 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.
	QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer	Not applicable. Not applicable. 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.
	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Not applicable. 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.
	XL10-Gold Ultracompetent cells	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.
Storage	:  QuikSolution	P403 - Store in a well-ventilated place. P235 - Keep cool.
	QuikChange Multi Enzyme Blend	Not applicable.
	dNTP Mix	Not applicable.
	Dpn I	Not applicable.
	QuikChange Multi Ctl. Primer Mix	Not applicable.
	QuikChange Multi Control Template	Not applicable.
	10X QuikChange Multi Reaction Buffer	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
	XL10-Gold 2-Mercaptoethanol	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.

Disposal :

Section 2. Hazards identification

	☑ QuikSolution	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	QuikChange Multi Enzyme Blend	Not applicable.
	dNTP Mix	Not applicable.
	Dpn I	Not applicable.
	QuikChange Multi Ctl. Primer Mix	Not applicable.
	QuikChange Multi Control	Not applicable.
	Template	
	10X QuikChange Multi Reaction	Not applicable.
	Buffer	
	pUC 18 DNA Control Plasmid	Not applicable.
	XL10-Gold 2-Mercaptoethanol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	XL10-Gold Ultracompetent cells	Not applicable.
Supplemental label elements	: ☑ QuikSolution	None known.
	QuikChange Multi Enzyme Blend	None known.
	dNTP Mix	None known.
	Dpn I	None known.
	QuikChange Multi Ctl. Primer Mix	None known.
	QuikChange Multi Control	None known.
	Template	
	10X QuikChange Multi Reaction	None known.
	Buffer	
	pUC 18 DNA Control Plasmid	None known.
	XL10-Gold 2-Mercaptoethanol	None known.
	XL10-Gold Ultracompetent cells	None known.

2.3 Other hazards

Hazards not otherwise classified

	: ☑ QuikSolution	None known.
	QuikChange Multi Enzyme Blend	None known.
	dNTP Mix	None known.
	Dpn I	None known.
	QuikChange Multi Ctl. Primer Mix	None known.
	QuikChange Multi Control	None known.
	Template	
	10X QuikChange Multi Reaction	None known.
	Buffer	
	pUC 18 DNA Control Plasmid	None known.
	XL10-Gold 2-Mercaptoethanol	None known.
	XL10-Gold Ultracompetent cells	None known.

Section 3. Composition/information on ingredients

Substance/mixture	: ☑ QuikSolution	Substance
	QuikChange Multi Enzyme Blend	Mixture
	dNTP Mix	Mixture
	Dpn I	Mixture
	QuikChange Multi Ctl. Primer Mix	Mixture
	QuikChange Multi Control Template	Mixture
	10X QuikChange Multi Reaction	Mixture
	Buffer	
	pUC 18 DNA Control Plasmid	Mixture
	XL10-Gold 2-Mercaptoethanol	Mixture
	XL10-Gold Ultracompetent cells	Mixture

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
QuikSolution Dimethyl sulfoxide	100	67-68-5
QuikChange Multi Enzyme Blend Glycerol	≥50 - ≤75	56-81-5
dNTP Mix 2'-Deoxyguanosine 5'-(tetrahydrogen triphosphate)	≤3	2564-35-4
2'-Deoxyadenosine 5'-(tetrahydrogen triphosphate)	≤3	1927-31-7
Dpn I Glycerol	≥50 - ≤75	56-81-5
Sodium chloride	≤3	7647-14-5
10X QuikChange Multi Reaction Buffer 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	≤5	1185-53-1
Ammonium sulphate	≤3	7783-20-2
Polyoxyethylene octyl phenyl ether	≤2.3	9002-93-1
XL10-Gold 2-Mercaptoethanol Sodium chloride	≥10 - ≤25	7647-14-5
2-Mercaptoethanol	≤5	60-24-2
XL10-Gold Ultracompetent cells Glycerol	≥10 - ≤25	56-81-5
Dimethyl sulfoxide	≤10	67-68-5
Potassium chloride	≤3	7447-40-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

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

4.1 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. If irritation persists, get medical attention.
	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. Continue to rinse for at least 10 minutes. If irritation persists, 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. Continue to rinse for at least 10 minutes. Get medical attention.
	QuikChange Multi Ctl. Primer Mix	Immediately flush eyes with plenty of water,

Section 4. First aid measures

	<p>QuikChange Multi Control Template</p> <p>10X QuikChange Multi Reaction Buffer</p> <p>pUC 18 DNA Control Plasmid</p> <p>XL10-Gold 2-Mercaptoethanol</p> <p>XL10-Gold Ultracompetent cells</p>	<p>occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.</p> <p>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. If irritation persists, get medical attention.</p>
<p>Inhalation</p>	<p>:  QuikSolution</p> <p>QuikChange Multi Enzyme Blend</p> <p>dNTP Mix</p>	<p>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.</p> <p>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.</p> <p>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.</p>

Section 4. First aid measures

Dpn I	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 Ctl. Primer Mix	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.
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.
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.
XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
XL10-Gold Ultracompetent cells	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

Section 4. First aid measures

Skin contact

:  QuikSolution

QuikChange Multi Enzyme Blend

dNTP Mix

Dpn I

QuikChange Multi Ctl. Primer Mix

QuikChange Multi Control
Template

10X QuikChange Multi Reaction
Buffer

pUC 18 DNA Control Plasmid

XL10-Gold 2-Mercaptoethanol

XL10-Gold Ultracompetent cells

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.

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.

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.

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

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

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

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

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.

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

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.

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.

Section 4. First aid measures

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 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 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 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.

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

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QuikChange Multi Control
Template

quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is 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.

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.

XL10-Gold 2-Mercaptoethanol

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

XL10-Gold Ultracompetent cells

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

Section 4. First aid measures

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.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	<ul style="list-style-type: none"> ☑ QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells 	<ul style="list-style-type: none"> Causes eye irritation. Causes eye irritation. No known significant effects or critical hazards. Causes serious eye irritation. No known significant effects or critical hazards. No known significant effects or critical hazards. Causes serious eye irritation. No known significant effects or critical hazards. Causes serious eye damage. Causes eye irritation.
Inhalation	<ul style="list-style-type: none"> ☑ QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells 	<ul style="list-style-type: none"> No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	<ul style="list-style-type: none"> ☑ QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells 	<ul style="list-style-type: none"> No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. May cause an allergic skin reaction. No known significant effects or critical hazards.
Ingestion	<ul style="list-style-type: none"> ☑ QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<ul style="list-style-type: none"> No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

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	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
Over-exposure signs/symptoms		
Eye contact	: QuikSolution	Adverse symptoms may include the following: irritation watering redness
	QuikChange Multi Enzyme Blend	Adverse symptoms may include the following: irritation watering redness
	dNTP Mix Dpn I	No specific data. Adverse symptoms may include the following: pain or irritation watering redness
	QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template	No specific data. No specific data.
	10X QuikChange Multi Reaction Buffer	Adverse symptoms may include the following: pain or irritation watering redness
	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No specific data. Adverse symptoms may include the following: pain watering redness
	XL10-Gold Ultracompetent cells	Adverse symptoms may include the following: irritation watering redness
Inhalation	: QuikSolution	No specific data.
	QuikChange Multi Enzyme Blend	No specific data.
	dNTP Mix	No specific data.
	Dpn I	No specific data.
	QuikChange Multi Ctl. Primer Mix	No specific data.
	QuikChange Multi Control Template	No specific data.
	10X QuikChange Multi Reaction Buffer	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	XL10-Gold 2-Mercaptoethanol	No specific data.
	XL10-Gold Ultracompetent cells	No specific data.
Skin contact	: QuikSolution	No specific data.
	QuikChange Multi Enzyme Blend	No specific data.
	dNTP Mix	No specific data.
	Dpn I	No specific data.
	QuikChange Multi Ctl. Primer Mix	No specific data.
	QuikChange Multi Control Template	No specific data.
	10X QuikChange Multi Reaction Buffer	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness

Section 4. First aid measures

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

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

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

Section 4. First aid measures

Protection of first-aiders	: QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells	Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells No specific treatment. No specific treatment. No specific treatment. 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. 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. No action shall be taken involving any personal risk or without suitable training. 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. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. 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. No action shall be taken involving any personal risk or without suitable training. 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. 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. 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.
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See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	: QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction	Use dry chemical, CO ₂ , water spray (fog) or foam. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
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Section 5. Fire-fighting measures

	Buffer	surrounding fire.
	pUC 18 DNA Control Plasmid	Use an extinguishing agent suitable for the surrounding fire.
	XL10-Gold 2-Mercaptoethanol	Use an extinguishing agent suitable for the surrounding fire.
	XL10-Gold Ultracompetent cells	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: QuikSolution	Do not use water jet.
	QuikChange Multi Enzyme Blend	None known.
	dNTP Mix	None known.
	Dpn I	None known.
	QuikChange Multi Ctl. Primer Mix	None known.
	QuikChange Multi Control Template	None known.
	10X QuikChange Multi Reaction Buffer	None known.
	pUC 18 DNA Control Plasmid	None known.
	XL10-Gold 2-Mercaptoethanol	None known.
	XL10-Gold Ultracompetent cells	None known.

5.2 Special hazards arising from the substance or mixture


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 vapor/gas is heavier than air and will spread along the ground. Vapors 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.
	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 Ctl. Primer Mix	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.
	10X QuikChange Multi Reaction Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
	pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
	XL10-Gold 2-Mercaptoethanol	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.
	Hazardous thermal decomposition products	: QuikSolution
QuikChange Multi Enzyme Blend		Decomposition products may include the following materials: carbon dioxide carbon monoxide
dNTP Mix		Decomposition products may include the following

Section 5. Fire-fighting measures

Dpn I	materials: carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer	No specific data. No specific data. Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides halogenated compounds
pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No specific data. Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
XL10-Gold Ultracompetent cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides

5.3 Advice for firefighters

Special protective actions for fire-fighters

:  QuikSolution	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
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.
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 Ctl. Primer Mix	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No

Section 5. Fire-fighting measures

	QuikChange Multi Control Template	action shall be taken involving any personal risk or without suitable training.
	10X QuikChange Multi Reaction Buffer	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	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.
	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.
	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.
<p>Special protective equipment for fire-fighters</p>	: QuikSolution	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 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.
	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 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.
	QuikChange Multi Control Template	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	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.
	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.
	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.
	XL10-Gold Ultracompetent cells	Fire-fighters should wear appropriate protective

Section 5. Fire-fighting measures

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

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

:  QuikSolution

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

dNTP Mix

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

Dpn I

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

QuikChange Multi Ctl. Primer Mix

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


QuikChange Multi Control Template

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


10X QuikChange Multi Reaction Buffer

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate

Section 6. Accidental release measures

pUC 18 DNA Control Plasmid	ventilation. Wear appropriate respirator when ventilation is inadequate. 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 spilled material. Put on appropriate personal protective equipment.
XL10-Gold 2-Mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
XL10-Gold Ultracompetent cells	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders :  QuikSolution	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
QuikChange Multi Enzyme Blend	If specialized 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 specialized 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 specialized 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 specialized 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 specialized 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 specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
pUC 18 DNA Control Plasmid	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Section 6. Accidental release measures

	XL10-Gold 2-Mercaptoethanol	If specialized 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 specialized 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".
<p>6.2 Environmental precautions</p>	<p>:  QuikSolution</p>	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>
	QuikChange Multi Enzyme Blend	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>
	dNTP Mix	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>
	Dpn I	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>
	QuikChange Multi Ctl. Primer Mix	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>
	QuikChange Multi Control Template	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>
	10X QuikChange Multi Reaction Buffer	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>
	pUC 18 DNA Control Plasmid	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>
	XL10-Gold 2-Mercaptoethanol	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>
	XL10-Gold Ultracompetent cells	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>

Section 6. Accidental release measures

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up :  QuikSolution

QuikChange Multi Enzyme Blend	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.
dNTP Mix	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
Dpn I	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
QuikChange Multi Ctl. Primer Mix	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
QuikChange Multi Control Template	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
10X QuikChange Multi Reaction Buffer	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
pUC 18 DNA Control Plasmid	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
XL10-Gold 2-Mercaptoethanol	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
XL10-Gold Ultracompetent cells	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

7.1 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 vapor 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

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor 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). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor 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.

QuikChange Multi Ctl. Primer Mix

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

QuikChange Multi Control Template

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

10X QuikChange Multi Reaction Buffer

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor 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.

pUC 18 DNA Control Plasmid

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

Section 7. Handling and storage

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 vapor or mist. Do not ingest. 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.

XL10-Gold Ultracompetent cells

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor 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.

Advice on general occupational hygiene

:  QuikSolution

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

QuikChange Multi Enzyme Blend

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

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 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.

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

Section 7. Handling and storage

10X QuikChange Multi Reaction Buffer

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

pUC 18 DNA Control Plasmid

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

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.

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.

7.2 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 unlabeled 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 unlabeled 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

Section 7. Handling and storage

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

Section 7. Handling and storage

XL10-Gold Ultracompetent cells

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 unlabeled containers. Use appropriate containment to avoid environmental contamination. 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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s)

Recommendations

<ul style="list-style-type: none"> <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells 	<ul style="list-style-type: none"> Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
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Industrial sector specific solutions

<ul style="list-style-type: none"> <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells 	<ul style="list-style-type: none"> Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
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Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
<input checked="" type="checkbox"/> QuikSolution Dimethyl sulfoxide	AIHA WEEL (United States, 10/2011). TWA: 250 ppm 8 hours.
QuikChange Multi Enzyme Blend Glycerol	OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction

Section 8. Exposure controls/personal protection

<p>dNTP Mix 2'-Deoxyguanosine 5'-(tetrahydrogen triphosphate) 2'-Deoxyadenosine 5'-(tetrahydrogen triphosphate)</p>	<p>TWA: 10 mg/m³ 8 hours. Form: Total dust OSHA PEL (United States, 2/2013). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p>
<p>Dpn I Glycerol</p>	<p>None. None.</p>
<p>Sodium chloride</p>	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust OSHA PEL (United States, 2/2013). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p>
<p>10X QuikChange Multi Reaction Buffer 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride Ammonium sulphate Polyoxyethylene octyl phenyl ether</p>	<p>None. None. None.</p>
<p>XL10-Gold 2-Mercaptoethanol Sodium chloride 2-Mercaptoethanol</p>	<p>None. AIHA WEEL (United States, 10/2011). Absorbed through skin. TWA: 0.2 ppm 8 hours.</p>
<p>XL10-Gold Ultracompetent cells Glycerol</p>	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust OSHA PEL (United States, 2/2013). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p>
<p>Dimethyl sulfoxide</p>	<p>AIHA WEEL (United States, 10/2011). TWA: 250 ppm 8 hours.</p>
<p>Potassium chloride</p>	<p>None.</p>

8.2 Exposure controls

Appropriate engineering controls

: If user operations generate dust, fumes, gas, vapor 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

Section 8. Exposure controls/personal protection

- 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

9.1 Information on basic physical and chemical properties





Appearance

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





Section 9. Physical and chemical properties

Odor	:	XL10-Gold Ultracompetent cells	Not available.
	:	QuikSolution	Slight [Slight]
	:	QuikChange Multi Enzyme Blend	Not available.
	:	dNTP Mix	Not available.
	:	Dpn I	Not available.
	:	QuikChange Multi Ctl. Primer Mix	Not available.
	:	QuikChange Multi Control	Not available.
	:	Template	
	:	10X QuikChange Multi Reaction Buffer	Not available.
	:	pUC 18 DNA Control Plasmid	Not available.
	:	XL10-Gold 2-Mercaptoethanol	Not available.
Odor threshold	:	XL10-Gold Ultracompetent cells	Not available.
	:	QuikSolution	Not available.
	:	QuikChange Multi Enzyme Blend	Not available.
	:	dNTP Mix	Not available.
	:	Dpn I	Not available.
	:	QuikChange Multi Ctl. Primer Mix	Not available.
	:	QuikChange Multi Control	Not available.
	:	Template	
	:	10X QuikChange Multi Reaction Buffer	Not available.
	:	pUC 18 DNA Control Plasmid	Not available.
	:	XL10-Gold 2-Mercaptoethanol	Not available.
pH	:	XL10-Gold Ultracompetent cells	Not available.
	:	QuikSolution	Not available.
	:	QuikChange Multi Enzyme Blend	8.2
	:	dNTP Mix	7.5
	:	Dpn I	Not available.
	:	QuikChange Multi Ctl. Primer Mix	7.5
	:	QuikChange Multi Control	7.5
	:	Template	
	:	10X QuikChange Multi Reaction Buffer	8.8
	:	pUC 18 DNA Control Plasmid	7.5
	:	XL10-Gold 2-Mercaptoethanol	Not available.
Melting point	:	XL10-Gold Ultracompetent cells	6.4
	:	QuikSolution	18.4°C (65.1°F)
	:	QuikChange Multi Enzyme Blend	Not available.
	:	dNTP Mix	Not available.
	:	Dpn I	Not available.
	:	QuikChange Multi Ctl. Primer Mix	0°C (32°F)
	:	QuikChange Multi Control	0°C (32°F)
	:	Template	
	:	10X QuikChange Multi Reaction Buffer	Not available.
	:	pUC 18 DNA Control Plasmid	0°C (32°F)
	:	XL10-Gold 2-Mercaptoethanol	Not available.
Boiling point	:	XL10-Gold Ultracompetent cells	Not available.
	:	QuikSolution	188.8°C (371.8°F)
	:	QuikChange Multi Enzyme Blend	Not available.
	:	dNTP Mix	Not available.
	:	Dpn I	Not available.
	:	QuikChange Multi Ctl. Primer Mix	100°C (212°F)
	:	QuikChange Multi Control	100°C (212°F)
	:	Template	
	:	10X QuikChange Multi Reaction Buffer	Not available.
	:		
	:		

Section 9. Physical and chemical properties

	pUC 18 DNA Control Plasmid	100°C (212°F)
	XL10-Gold 2-Mercaptoethanol	Not available.
	XL10-Gold Ultracompetent cells	Not available.
Flash point	:  QuikSolution	Closed cup: 85°C (185°F) Open cup: 87°C (188.6°F)
	QuikChange Multi Enzyme Blend	Not available.
	dNTP Mix	Not available.
	Dpn I	Not available.
	QuikChange Multi Ctl. Primer Mix	Not available.
	QuikChange Multi Control	Not available.
	Template	
	10X QuikChange Multi Reaction	Not available.
	Buffer	
	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	XL10-Gold Ultracompetent cells	Not available.
Evaporation rate	:  QuikSolution	0.026 (butyl acetate = 1)
	QuikChange Multi Enzyme Blend	Not available.
	dNTP Mix	Not available.
	Dpn I	Not available.
	QuikChange Multi Ctl. Primer Mix	Not available.
	QuikChange Multi Control	Not available.
	Template	
	10X QuikChange Multi Reaction	Not available.
	Buffer	
	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	XL10-Gold Ultracompetent cells	Not available.
Flammability (solid, gas)	:  QuikSolution	Not applicable.
	QuikChange Multi Enzyme Blend	Not applicable.
	dNTP Mix	Not applicable.
	Dpn I	Not applicable.
	QuikChange Multi Ctl. Primer Mix	Not applicable.
	QuikChange Multi Control	Not applicable.
	Template	
	10X QuikChange Multi Reaction	Not applicable.
	Buffer	
	pUC 18 DNA Control Plasmid	Not applicable.
	XL10-Gold 2-Mercaptoethanol	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
Lower and upper explosive (flammable) limits	:  QuikSolution	Lower: 2.6% Upper: 42%
	QuikChange Multi Enzyme Blend	Not available.
	dNTP Mix	Not available.
	Dpn I	Not available.
	QuikChange Multi Ctl. Primer Mix	Not available.
	QuikChange Multi Control	Not available.
	Template	
	10X QuikChange Multi Reaction	Not available.
	Buffer	
	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	XL10-Gold Ultracompetent cells	Not available.


Section 9. Physical and chemical properties

Vapor pressure	:  QuikSolution	0.056 kPa (0.42 mm Hg) [room temperature]
	QuikChange Multi Enzyme Blend	Not available.
	dNTP Mix	Not available.
	Dpn I	Not available.
	QuikChange Multi Ctl. Primer Mix	Not available.
	QuikChange Multi Control	Not available.
	Template	
	10X QuikChange Multi Reaction	Not available.
	Buffer	
	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	XL10-Gold Ultracompetent cells	Not available.
Vapor density	:  QuikSolution	2.71 [Air = 1]
	QuikChange Multi Enzyme Blend	Not available.
	dNTP Mix	Not available.
	Dpn I	Not available.
	QuikChange Multi Ctl. Primer Mix	Not available.
	QuikChange Multi Control	Not available.
	Template	
	10X QuikChange Multi Reaction	Not available.
	Buffer	
	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	XL10-Gold Ultracompetent cells	Not available.
Relative density	:  QuikSolution	1.1
	QuikChange Multi Enzyme Blend	Not available.
	dNTP Mix	Not available.
	Dpn I	Not available.
	QuikChange Multi Ctl. Primer Mix	Not available.
	QuikChange Multi Control	Not available.
	Template	
	10X QuikChange Multi Reaction	Not available.
	Buffer	
	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	XL10-Gold Ultracompetent cells	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.
	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 Ctl. Primer Mix	Easily soluble in the following materials: cold water and hot water.
	QuikChange Multi Control	Easily soluble in the following materials: cold water and hot water.
	Template	Easily soluble in the following materials: cold water and hot water.
	10X QuikChange Multi Reaction	Easily soluble in the following materials: cold water and hot water.
	Buffer	Easily soluble in the following materials: cold water and hot water.
	pUC 18 DNA Control Plasmid	Easily soluble in the following materials: cold water and hot water.
	XL10-Gold 2-Mercaptoethanol	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.


Section 10. Stability and reactivity

QuikChange Multi Ctl. Primer Mix	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.
10X QuikChange Multi Reaction Buffer	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.
XL10-Gold 2-Mercaptoethanol	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.


10.2 Chemical stability

<p> QuikSolution</p> <p>QuikChange Multi Enzyme Blend</p> <p>dNTP Mix</p> <p>Dpn I</p> <p>QuikChange Multi Ctl. Primer Mix</p> <p>QuikChange Multi Control Template</p> <p>10X QuikChange Multi Reaction Buffer</p> <p>pUC 18 DNA Control Plasmid</p> <p>XL10-Gold 2-Mercaptoethanol</p> <p>XL10-Gold Ultracompetent cells</p>	<p>The product is stable.</p> <p>The product is stable.</p> <p>The product is stable.</p> <p>The product is stable.</p> <p>The product is stable.</p> <p>The product is stable.</p> <p>The product is stable.</p> <p>The product is stable.</p> <p>The product is stable.</p> <p>The product is stable.</p> <p>The product is stable.</p>
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10.3 Possibility of hazardous reactions


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


<p> QuikSolution</p> <p>QuikChange Multi Enzyme Blend</p> <p>dNTP Mix</p> <p>Dpn I</p> <p>QuikChange Multi Ctl. Primer Mix</p> <p>QuikChange Multi Control Template</p>	<p>Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.</p> <p>No specific data.</p> <p>No specific data.</p> <p>No specific data.</p> <p>No specific data.</p> <p>No specific data.</p>
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Section 10. Stability and reactivity

10X QuikChange Multi Reaction Buffer	No specific data.
pUC 18 DNA Control Plasmid	No specific data.
XL10-Gold 2-Mercaptoethanol	No specific data.
XL10-Gold Ultracompetent cells	No specific data.

10.5 Incompatible materials :  QuikSolution

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

10.6 Hazardous decomposition products :  QuikSolution

QuikChange Multi Enzyme Blend	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 Ctl. Primer Mix	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.
10X QuikChange Multi Reaction Buffer	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.
XL10-Gold 2-Mercaptoethanol	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.

Section 11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
QuikSolution Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
QuikChange Multi Enzyme Blend Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Dpn I Glycerol Sodium chloride	LD50 Oral LD50 Oral	Rat Rat	12600 mg/kg 3000 mg/kg	- -
10X QuikChange Multi Reaction Buffer Ammonium sulphate	LD50 Oral	Rat	2840 mg/kg	-
XL10-Gold 2-Mercaptoethanol Sodium chloride 2-Mercaptoethanol	LD50 Oral LD50 Dermal LD50 Oral	Rat Rabbit Rat	3000 mg/kg 200 mg/kg 244 mg/kg	- - -
XL10-Gold Ultracompetent cells Glycerol Dimethyl sulfoxide Potassium chloride	LD50 Oral LD50 Dermal LD50 Oral LD50 Oral	Rat Rat Rat Rat	12600 mg/kg 40000 mg/kg 14500 mg/kg 2600 mg/kg	- - - -

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
QuikSolution Dimethyl sulfoxide	Eyes - Mild irritant Eyes - Mild irritant Skin - Mild irritant Skin - Mild irritant	Rabbit Rabbit Rabbit Rabbit	- - - -	24 hours 500 milligrams 100 milligrams 24 hours 500 milligrams 100 milligrams	- - - -
QuikChange Multi Enzyme Blend Glycerol	Eyes - Mild irritant Skin - Mild irritant	Rabbit Rabbit	- -	24 hours 500 milligrams 24 hours 500 milligrams	- -
Dpn I Glycerol	Eyes - Mild irritant Skin - Mild irritant	Rabbit Rabbit	- -	24 hours 500 milligrams 24 hours 500 milligrams	- -

Section 11. Toxicological information

Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 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	-
XL10-Gold 2-Mercaptoethanol Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 milligrams	-
XL10-Gold Ultracompetent cells Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
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	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Section 11. Toxicological information

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

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure

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

Potential acute health effects

Eye contact

QuikSolution	Causes eye irritation.
QuikChange Multi Enzyme Blend	Causes eye irritation.
dNTP Mix	No known significant effects or critical hazards.
Dpn I	Causes serious eye irritation.
QuikChange Multi Ctl. Primer Mix	No known significant effects or critical hazards.
QuikChange Multi Control Template	No known significant effects or critical hazards.
10X QuikChange Multi Reaction Buffer	Causes serious eye irritation.
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
XL10-Gold 2-Mercaptoethanol	Causes serious eye damage.
XL10-Gold Ultracompetent cells	Causes eye irritation.

Inhalation

QuikSolution	No known significant effects or critical hazards.
QuikChange Multi Enzyme Blend	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 Ctl. Primer Mix	No known significant effects or critical hazards.
QuikChange Multi Control Template	No known significant effects or critical hazards.
10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

Section 11. Toxicological information

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

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Section 11. Toxicological information

General	<ul style="list-style-type: none"> : <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<ul style="list-style-type: none"> No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity	<ul style="list-style-type: none"> XL10-Gold Ultracompetent cells : <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells 	<ul style="list-style-type: none"> No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Mutagenicity	<ul style="list-style-type: none"> : <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells 	<ul style="list-style-type: none"> No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Teratogenicity	<ul style="list-style-type: none"> : <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells 	<ul style="list-style-type: none"> No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Developmental effects	<ul style="list-style-type: none"> : <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend dNTP Mix Dpn I QuikChange Multi Ctl. Primer Mix QuikChange Multi Control Template 10X QuikChange Multi Reaction 	<ul style="list-style-type: none"> No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Section 11. Toxicological information

Fertility effects	Buffer	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards.
	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	: <input checked="" type="checkbox"/> QuikSolution	No known significant effects or critical hazards.
	QuikChange Multi Enzyme Blend	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 Ctl. Primer Mix	No known significant effects or critical hazards.
	QuikChange Multi Control	No known significant effects or critical hazards.
	Template	No known significant effects or critical hazards.
	10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.	
XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards.	
XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.	

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
<input checked="" type="checkbox"/> Dpn I Oral	130435.3 mg/kg
10X QuikChange Multi Reaction Buffer Oral	40687.7 mg/kg
XL10-Gold 2-Mercaptoethanol Oral	4615.5 mg/kg
Dermal	4545.5 mg/kg
Inhalation (vapors)	45.45 mg/l
XL10-Gold Ultracompetent cells Oral	136842.1 mg/kg

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<input checked="" type="checkbox"/> 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 ul/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
Dpn I Glycerol Sodium chloride	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours

Section 12. Ecological information

10X QuikChange Multi Reaction Buffer Ammonium sulphate	Acute LC50 1661 mg/l Fresh water Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water	Daphnia - Daphnia magna Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	48 hours 96 hours 3 weeks
	Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 21 days 8 weeks
Polyoxyethylene octyl phenyl ether	Acute LC50 2.6 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Young	48 hours
	Acute LC50 14000 to 15000 µg/l Fresh water Acute LC50 68 µg/l Fresh water	Daphnia - Daphnia magna - Young Fish - Oncorhynchus gorbuscha - Alevin	48 hours 96 hours
	Chronic NOEC 7.5 mg/l Marine water	Algae - Phaeodactylum tricornutum - Exponential growth phase	96 hours
	Chronic NOEC 143 µg/l Marine water Acute LC50 5.85 mg/l Fresh water	Fish - Salmo salar - Post-smolt Crustaceans - Ceriodaphnia rigaudi - Neonate	5 weeks 48 hours
XL10-Gold 2-Mercaptoethanol Sodium chloride	Acute LC50 11.2 mg/l Fresh water Acute LC50 4500 µg/l Fresh water	Daphnia - Daphnia magna - Neonate Fish - Pimephales promelas	48 hours 96 hours
	Acute EC50 2430000 µg/l Fresh water Acute EC50 519.6 mg/l Fresh water Acute IC50 6.87 g/L Fresh water Acute LC50 1661 mg/l Fresh water Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water	Algae - Navicula seminulum Crustaceans - Cypris subglobosa Aquatic plants - Lemna minor Daphnia - Daphnia magna Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	96 hours 48 hours 96 hours 48 hours 96 hours 3 weeks
XL10-Gold Ultracompetent cells Glycerol Dimethyl sulfoxide	Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 21 days 8 weeks
	Acute LC50 54000 mg/l Fresh water Acute LC50 25000 ppm Fresh water	Fish - Oncorhynchus mykiss Daphnia - Daphnia magna - Neonate	96 hours 48 hours
Potassium chloride	Acute LC50 34000000 µg/l Fresh water Chronic NOEC 100 µl/L Marine water Acute EC50 1337000 µg/l Fresh water Acute EC50 9.24 g/L Fresh water	Fish - Pimephales promelas Algae - Ulva lactuca Algae - Navicula seminulum Algae - Desmodesmus subspicatus	96 hours 72 hours 96 hours 72 hours
	Acute EC50 141460 µg/l Fresh water Acute LC50 12.77 mg/l Fresh water	Daphnia - Daphnia magna Crustaceans - Pseudosida ramosa - Neonate	48 hours 48 hours
	Acute LC50 880000 µg/l Fresh water	Fish - Pimephales promelas	96 hours

12.2 Persistence and degradability

Section 12. Ecological information

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

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
QuikSolution Dimethyl sulfoxide	-2.029	3.16	low
QuikChange Multi Enzyme Blend Glycerol	-1.76	-	low
Dpn I Glycerol	-1.76	-	low
10X QuikChange Multi Reaction Buffer Ammonium sulphate Polyoxyethylene octyl phenyl ether	-5.1 4.86	- -	low high
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	-0.056	-	low
XL10-Gold Ultracompetent cells Glycerol Dimethyl sulfoxide Potassium chloride	-1.76 -1.35 -0.46	- 3.16 -	low low low

12.4 Mobility in soil

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

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

Section 13. Disposal considerations

13.1 Waste treatment methods

Disposal methods : The generation of waste should be avoided or minimized 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.

Section 13. Disposal considerations

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

Regulatory information

DOT / IMDG / IATA : Not regulated.

Section 15. Regulatory information

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

U.S. Federal regulations : **TSCA 8(a) PAIR**: Poly(oxy-1,2-ethanediyl), .alpha.-[[1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-; Polyoxyethylene octyl phenyl ether
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 311: Edetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

Composition/information on ingredients

Section 15. Regulatory information

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
QuikSolution Dimethyl sulfoxide	100	Yes.	No.	No.	Yes.	No.
QuikChange Multi Enzyme Blend Glycerol	≥50 - ≤75	No.	No.	No.	Yes.	No.
dNTP Mix 2'-Deoxyguanosine 5'-(tetrahydrogen triphosphate)	≤3	No.	No.	No.	Yes.	No.
2'-Deoxyadenosine 5'-(tetrahydrogen triphosphate)	≤3	No.	No.	No.	Yes.	No.
Dpn I Glycerol	≥50 - ≤75	No.	No.	No.	Yes.	No.
Sodium chloride	≤3	No.	No.	No.	Yes.	No.
10X QuikChange Multi Reaction Buffer 2-Amino-2-(hydroxymethyl)propane-1, 3-diol hydrochloride	≤5	No.	No.	No.	Yes.	No.
Ammonium sulphate	≤3	No.	No.	No.	Yes.	No.
Polyoxyethylene octyl phenyl ether	≤2.3	No.	No.	No.	Yes.	No.
XL10-Gold 2-Mercaptoethanol Sodium chloride	≥10 - ≤25	No.	No.	No.	Yes.	No.
2-Mercaptoethanol	≤5	Yes.	No.	No.	Yes.	No.
XL10-Gold Ultracompetent cells Glycerol	≥10 - ≤25	No.	No.	No.	Yes.	No.
Dimethyl sulfoxide	≤10	Yes.	No.	No.	Yes.	No.
Potassium chloride	≤3	No.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	10X QuikChange Multi Reaction Buffer Ammonium sulphate	7783-20-2	≤3
Supplier notification	10X QuikChange Multi Reaction Buffer Ammonium sulphate	7783-20-2	≤3

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

- Massachusetts** : The following components are listed: GLYCERINE MIST
- New York** : None of the components are listed.
- New Jersey** : The following components are listed: DIMETHYL SULFOXIDE; METHANE, SULFINYLBIS-; GLYCERIN; 1,2,3-PROPANETRIOL
- Pennsylvania** : The following components are listed: 1,2,3-PROPANETRIOL
- California Prop. 65**

No products were found.

International regulations

Section 15. Regulatory information

[Chemical Weapon Convention List Schedules I, II & III Chemicals](#)

Not listed.

[Montreal Protocol \(Annexes A, B, C, E\)](#)

Not listed.

[Stockholm Convention on Persistent Organic Pollutants](#)

Not listed.

[Rotterdam Convention on Prior Informed Consent \(PIC\)](#)

Not listed.

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

Not listed.

[Inventory list](#)

Australia	: Not determined.
Canada inventory	: All components are listed or exempted.
China	: Not determined.
Europe	: All components are listed or exempted.
Japan	: <input checked="" type="checkbox"/> 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	: <input checked="" type="checkbox"/> Not determined.

Section 16. Other information

[History](#)

Date of issue	: 10/18/2016
Date of previous issue	: 10/27/2015.
Version	: 4

Indicates information that has changed from previously issued version.

[Notice to reader](#)

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