

SAFETY DATA SHEET



QuikChange Multi Site-Directed Mutagenesis Kit, Part Number 200513

Section 1. Identification

1.1 Product identifier

Product name : QuikChange Multi Site-Directed Mutagenesis Kit, Part Number 200513

Part no. (chemical kit) : 200513

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 : 11/23/2022

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

Identified uses : Analytical reagent.

<input checked="" type="checkbox"/> QuikSolution	0.5 ml
QuikChange Multi Enzyme Blend	0.032 ml (80 U 2.5 U/μl)
dNTP Mix	0.03 ml
Dpn I	0.03 ml (10 U/μl 300 U)
QuikChange Multi Ctl. Primer Mix	0.005 ml (5 μl 100 ng/μl ea.)
QuikChange Multi Control Template	0.005 ml (250 ng 50 ng/μl)
10X QuikChange Multi Reaction Buffer	0.2 ml
pUC 18 DNA Control Plasmid	0.01 ml (0.1 ng / μl)
XL10-Gold 2-Mercaptoethanol	2 x 0.05 ml
XL10-Gold Ultracompetent cells	1.35 ml

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.
Dpn I	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Section 2. Hazards identification

<p>QuikChange Multi Ctl. Primer Mix</p>	<p>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.</p>
<p>QuikChange Multi Control Template</p>	<p>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.</p>
<p>10X QuikChange Multi Reaction Buffer pUC 18 DNA Control Plasmid</p>	<p>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.</p>
<p>XL10-Gold 2-Mercaptoethanol XL10-Gold Ultracompetent cells</p>	<p>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).</p>

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

H320 EYE IRRITATION - Category 2B

10X QuikChange Multi Reaction Buffer

H319 EYE IRRITATION - Category 2A
H412 AQUATIC HAZARD (LONG-TERM) - Category 3

XL10-Gold 2-Mercaptoethanol

H318 SERIOUS EYE DAMAGE - Category 1
H317 SKIN SENSITIZATION - Category 1
H361 TOXIC TO REPRODUCTION - Category 2
H373 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
H412 AQUATIC HAZARD (LONG-TERM) - Category 3



XL10-Gold Ultracompetent cells

H320 EYE IRRITATION - Category 2B

XL10-Gold Ultracompetent cells Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 5%

2.2 GHS label elements

Section 2. Hazards identification

Hazard pictograms	: 10X QuikChange Multi Reaction Buffer	
	XL10-Gold 2-Mercaptoethanol	
Signal word	: 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	: 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. H320 - Causes eye irritation. No known significant effects or critical hazards. No known significant effects or critical hazards. H319 - Causes serious eye irritation. H412 - Harmful to aquatic life with long lasting effects. No known significant effects or critical hazards. H317 - May cause an allergic skin reaction. H318 - Causes serious eye damage. H361 - Suspected of damaging fertility or the unborn child. H373 - May cause damage to organs through prolonged or repeated exposure. H412 - Harmful to aquatic life with long lasting effects. H320 - Causes eye irritation.
<u>Precautionary statements</u>		
Prevention	: 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	P210 - Keep away from flames and hot surfaces. No smoking. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. P280 - Wear eye or face protection. P273 - Avoid release to the environment. Not applicable. P201 - Obtain special instructions before use. P280 - Wear protective gloves, protective clothing

Section 2. Hazards identification

Response

XL10-Gold Ultracompetent cells
: QuikSolution

and eye or face protection.
P273 - Avoid release to the environment.
P260 - Do not breathe vapor.
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 advice or 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 advice or 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 advice or 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 advice or attention.

pUC 18 DNA Control Plasmid
XL10-Gold 2-Mercaptoethanol

Not applicable.
P308 + P313 - IF exposed or concerned: Get medical advice or attention.
P363 - Wash contaminated clothing before reuse.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P333 + P313 - If skin irritation or rash occurs: Get medical advice or 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 doctor.

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 advice or attention.

Storage

: QuikSolution

P403 + P235 - Store in a well-ventilated place.
Keep cool.

QuikChange Multi Enzyme Blend
dNTP Mix
Dpn I
QuikChange Multi Ctl. Primer Mix
QuikChange Multi Control
Template
10X QuikChange Multi Reaction

Not applicable.
Not applicable.
Not applicable.
Not applicable.
Not applicable.
Not applicable.

Section 2. Hazards identification

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

Section 3. Composition/information on ingredients

XL10-Gold Ultracompetent cells Mixture

Ingredient name	%	CAS number
QuikSolution		
Dimethyl sulfoxide	100	67-68-5
QuikChange Multi Enzyme Blend		
Glycerol	≥50 - ≤75	56-81-5
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	<0.1	9036-19-5
Dpn I		
Glycerol	≥50 - ≤75	56-81-5
10X QuikChange Multi Reaction Buffer		
Ammonium sulphate	≤3	7783-20-2
Polyoxyethylene octyl phenyl ether	<2.5	9002-93-1
XL10-Gold 2-Mercaptoethanol		
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 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,

Section 4. First aid measures

		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. If irritation persists, get medical attention.
	QuikChange Multi Ctl. Primer Mix	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	QuikChange Multi Control Template	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	10X QuikChange Multi Reaction Buffer	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	pUC 18 DNA Control Plasmid	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
	XL10-Gold Ultracompetent cells	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
Inhalation	: QuikSolution	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	QuikChange Multi Enzyme Blend	Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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

Section 4. First aid measures

dNTP Mix	collar, tie, belt or waistband. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
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

Section 4. First aid measures

Skin contact

: QuikSolution

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.

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

QuikChange Multi Enzyme Blend

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

dNTP Mix

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

Dpn I

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

QuikChange Multi Ctl. Primer Mix

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

QuikChange Multi Control Template

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

10X QuikChange Multi Reaction Buffer

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

pUC 18 DNA Control Plasmid

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

XL10-Gold 2-Mercaptoethanol

Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

XL10-Gold Ultracompetent cells

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. 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. 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. 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. 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. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

QuikChange Multi Control Template

Wash out mouth with water. 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.

Section 4. First aid measures

10X QuikChange Multi Reaction Buffer	Wash out mouth with water. Remove dentures if any. 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. 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. 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. 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.

4.2 Most important symptoms/effects, acute and delayed


Potential acute health effects

Eye 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	Causes eye irritation. Causes eye irritation. No known significant effects or critical hazards. Causes eye irritation. No known significant effects or critical hazards. No known significant effects or critical hazards. Causes serious eye irritation.
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Section 4. First aid measures

	Buffer	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	Causes serious eye damage.
	XL10-Gold 2-Mercaptoethanol	Causes eye irritation.
	XL10-Gold Ultracompetent cells	
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	No known significant effects or critical hazards.
	Template	
	10X QuikChange Multi Reaction	No known significant effects or critical hazards.
	Buffer	
	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.
Skin contact	: 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	
	10X QuikChange Multi Reaction	No known significant effects or critical hazards.
	Buffer	
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	May cause an allergic skin reaction.
	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
Ingestion	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
	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	
	10X QuikChange Multi Reaction	No known significant effects or critical hazards.
	Buffer	
	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.

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	No specific data.
	Dpn I	Adverse symptoms may include the following: irritation watering redness
	QuikChange Multi Ctl. Primer Mix	No specific data.
	QuikChange Multi Control	No specific data.
	Template	
	10X QuikChange Multi Reaction	Adverse symptoms may include the following:
	Buffer	

Section 4. First aid measures

			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 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	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: reduced fetal weight increase in fetal deaths skeletal malformations
Skin contact	:	XL10-Gold Ultracompetent cells 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	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 reduced fetal weight increase in fetal deaths skeletal malformations
Ingestion	:	XL10-Gold Ultracompetent cells 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	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations

Section 4. First aid measures

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	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
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 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	No specific treatment.
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 Template	No specific treatment.
10X QuikChange Multi Reaction Buffer	No specific treatment.
pUC 18 DNA Control Plasmid	No specific treatment.
XL10-Gold 2-Mercaptoethanol	No specific treatment.
XL10-Gold Ultracompetent cells	No specific treatment.

Protection of first-aiders

: QuikSolution	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
QuikChange Multi Enzyme Blend	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
dNTP Mix	No action shall be taken involving any personal risk or without suitable training.
Dpn I	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth

Section 4. First aid measures

QuikChange Multi Ctl. Primer Mix	resuscitation. No action shall be taken involving any personal risk or without suitable training.
QuikChange Multi Control Template	No action shall be taken involving any personal risk or without suitable training.
10X QuikChange Multi Reaction Buffer	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
pUC 18 DNA Control Plasmid	No action shall be taken involving any personal risk or without suitable training.
XL10-Gold 2-Mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
XL10-Gold Ultracompetent cells	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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

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

Section 5. Fire-fighting measures

XL10-Gold Ultracompetent cells None known.

5.2 Special hazards arising from the substance or mixture

<p>Specific hazards arising from the chemical</p>	<p>: QuikSolution</p>	<p>Combustible liquid. Runoff to sewer may create fire or explosion hazard. 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.</p>
<p>QuikChange Multi Enzyme Blend</p>		<p>In a fire or if heated, a pressure increase will occur and the container may burst.</p>
<p>dNTP Mix</p>		<p>In a fire or if heated, a pressure increase will occur and the container may burst.</p>
<p>Dpn I</p>		<p>In a fire or if heated, a pressure increase will occur and the container may burst.</p>
<p>QuikChange Multi Ctl. Primer Mix</p>		<p>In a fire or if heated, a pressure increase will occur and the container may burst.</p>
<p>QuikChange Multi Control Template</p>		<p>In a fire or if heated, a pressure increase will occur and the container may burst.</p>
<p>10X QuikChange Multi Reaction Buffer</p>		<p>In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.</p>
<p>pUC 18 DNA Control Plasmid</p>		<p>In a fire or if heated, a pressure increase will occur and the container may burst.</p>
<p>XL10-Gold 2-Mercaptoethanol</p>		<p>In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.</p>
<p>XL10-Gold Ultracompetent cells</p>		<p>In a fire or if heated, a pressure increase will occur and the container may burst.</p>
<p>Hazardous thermal decomposition products</p>	<p>: QuikSolution</p>	<p>Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides</p>
<p>QuikChange Multi Enzyme Blend</p>		<p>Decomposition products may include the following materials: carbon dioxide carbon monoxide</p>
<p>dNTP Mix</p>		<p>No specific data.</p>
<p>Dpn I</p>		<p>Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides</p>
<p>QuikChange Multi Ctl. Primer Mix</p>		<p>No specific data.</p>
<p>QuikChange Multi Control Template</p>		<p>No specific data.</p>
<p>10X QuikChange Multi Reaction Buffer</p>		<p>Decomposition products may include the following materials: carbon dioxide</p>

Section 5. Fire-fighting measures

	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
XL10-Gold Ultracompetent cells	metal oxide/oxides 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 action shall be taken involving any personal risk or without suitable training.
QuikChange Multi Control Template	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
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.

Section 5. Fire-fighting measures

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

Section 6. Accidental release measures

	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 ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
pUC 18 DNA Control Plasmid	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
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

Section 6. Accidental release measures

<p>For emergency responders : 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>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.</p> <p>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> <p>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> <p>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> <p>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> <p>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> <p>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> <p>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> <p>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>	<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> <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> <p>Avoid dispersal of spilled material and runoff and</p>
<p>6.2 Environmental precautions :  QuikSolution</p> <p>QuikChange Multi Enzyme Blend</p> <p>dNTP Mix</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> <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> <p>Avoid dispersal of spilled material and runoff and</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> <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> <p>Avoid dispersal of spilled material and runoff and</p>

Section 6. Accidental release measures

	contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Dpn I	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
QuikChange Multi Ctl. Primer Mix	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
QuikChange Multi Control Template	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
10X QuikChange Multi Reaction Buffer	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
pUC 18 DNA Control Plasmid	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).
XL10-Gold 2-Mercaptoethanol	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). Water polluting material. May be harmful to the environment if released in large quantities.
XL10-Gold Ultracompetent cells	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).

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : QuikSolution

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

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.
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 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

Section 7. Handling and storage

	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. Avoid release to the environment. 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 sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
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

Section 7. Handling and storage

Advice on general occupational hygiene

: QuikSolution

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.

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 before entering eating areas. See also Section 8 for additional information on hygiene measures.

10X QuikChange Multi Reaction Buffer

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

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

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XL10-Gold 2-Mercaptoethanol

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.

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

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. See Section 10 for incompatible materials before handling or use.

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. See Section 10 for incompatible materials before handling or use.

dNTP Mix

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

Dpn I

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright

Section 7. Handling and storage

QuikChange Multi Ctl. Primer Mix

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

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. See Section 10 for incompatible materials before handling or use.

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. See Section 10 for incompatible materials before handling or use.

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. See Section 10 for incompatible materials before handling or use.

XL10-Gold 2-Mercaptoethanol

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

Section 7. Handling and storage

XL10-Gold Ultracompetent cells

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

7.3 Specific end use(s)

Recommendations

<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. 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 available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
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Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
<input checked="" type="checkbox"/> QuikSolution Dimethyl sulfoxide	OARS WEEL (United States, 1/2021). 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 TWA: 10 mg/m ³ 8 hours. Form: Total dust OSHA PEL (United States, 5/2018). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.	None.

Section 8. Exposure controls/personal protection

<p>omega.-hydroxy-</p> <p>Dpn I Glycerol</p> <p>10X QuikChange Multi Reaction Buffer Ammonium sulphate Polyoxyethylene octyl phenyl ether</p> <p>XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol</p> <p>XL10-Gold Ultracompetent cells Glycerol</p> <p>Dimethyl sulfoxide</p> <p>Potassium 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</p> <p>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>None. None.</p> <p>OARS WEEL (United States, 1/2021). Absorbed through skin. TWA: 0.2 ppm 8 hours.</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</p> <p>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>OARS WEEL (United States, 1/2021). TWA: 250 ppm 8 hours. None.</p>
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Biological exposure indices

No exposure indices known.

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

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.

Section 8. Exposure controls/personal protection

- 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 and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

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	Colorless.
				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 and safety characteristics

Odor	:  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	Slight [Slight] Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
Odor threshold	:  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	Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
pH	:  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	Not available. 8.2 7.5 Not available. 7.5 7.5 Not available. 8.8 7.5 Not available. 6.4
Melting point/freezing point	: 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	18.4°C (65.1°F) Not available. 0°C (32°F) Not available. 0°C (32°F) 0°C (32°F) Not available. Not available. 0°C (32°F) Not available. Not available.
Boiling point, initial boiling point, and boiling range	: 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	188.8°C (371.8°F) Not available. 100°C (212°F) Not available. 100°C (212°F) 100°C (212°F) Not available. Not available. 100°C (212°F) Not available.

Section 9. Physical and chemical properties and safety characteristics

Flash point	XL10-Gold Ultracompetent cells Not available. QuikSolution Closed cup: 85°C (185°F) [ASTM D 93] 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 Buffer Not available. pUC 18 DNA Control Plasmid Not available. XL10-Gold 2-Mercaptoethanol Not available. XL10-Gold Ultracompetent cells Not available.
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Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
QuikChange Multi Enzyme Blend						
Glycerol				177	350.6	
Dpn I						
Glycerol				177	350.6	
10X QuikChange Multi Reaction Buffer						
Polyoxyethylene octyl phenyl ether	251	483.8				
XL10-Gold 2-Mercaptoethanol						
2-Mercaptoethanol	74	165.2		74	165.2	
XL10-Gold Ultracompetent cells						
Dimethyl sulfoxide	87	188.6	ASTM D 93	87	188.6	
Glycerol				177	350.6	

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 Buffer Not available. pUC 18 DNA Control Plasmid Not available. XL10-Gold 2-Mercaptoethanol Not available.
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Section 9. Physical and chemical properties and safety characteristics

Flammability

<ul style="list-style-type: none"> XL10-Gold Ultracompetent cells 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 available. 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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Lower and upper explosion limit/flammability limit

<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"> Lower: 2.6% Upper: 42% Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
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Vapor pressure

<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"> 0.056 kPa (0.42 mm Hg) [EU A.4] Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
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Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
QuikChange Multi Enzyme Blend						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
dNTP Mix						
water	23.8	3.2		92.258	12.3	
Dpn I						
water	23.8	3.2		92.258	12.3	

Section 9. Physical and chemical properties and safety characteristics

Glycerol	0.000075	0.00001		0.0025	0.00033
QuikChange Multi Ctl. Primer Mix					
water	23.8	3.2		92.258	12.3
QuikChange Multi Control Template					
water	23.8	3.2		92.258	12.3
10X QuikChange Multi Reaction Buffer					
water	23.8	3.2		92.258	12.3
Polyoxyethylene octyl phenyl ether	0.997581	0.13			
pUC 18 DNA Control Plasmid					
water	23.8	3.2		92.258	12.3
XL10-Gold 2-Mercaptoethanol					
water	23.8	3.2		92.258	12.3
2-Mercaptoethanol	0.98	0.13			
XL10-Gold Ultracompetent cells					
water	23.8	3.2		92.258	12.3
Dimethyl sulfoxide	0.42	0.056	EU A.4		

Relative 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 Template	Not available.
10X QuikChange Multi Reaction Buffer	Not available.
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 and safety characteristics

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 Template	Not available.
		10X QuikChange Multi Reaction Buffer	Not available.
		pUC 18 DNA Control Plasmid	Not available.
		XL10-Gold 2-Mercaptoethanol	Not available.
		XL10-Gold Ultracompetent cells	Not available.

Solubility(ies)	Media	Result
	QuikSolution	
	water	Soluble
	QuikChange Multi Enzyme Blend	
	water	Soluble
	dNTP Mix	
	water	Soluble
	Dpn I	
	water	Soluble
	QuikChange Multi Ctl. Primer Mix	
	water	Soluble
	QuikChange Multi Control Template	
	water	Soluble
	10X QuikChange Multi Reaction Buffer	
	water	Soluble
	pUC 18 DNA Control Plasmid	
	water	Soluble
	XL10-Gold 2-Mercaptoethanol	
	water	Soluble
	XL10-Gold Ultracompetent cells	
	water	Soluble

Partition coefficient: n-octanol/water	:	QuikSolution	-2.029
		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.

Section 9. Physical and chemical properties and safety characteristics

Auto-ignition temperature : QuikSolution 300 to 302°C (572 to 575.6°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 Buffer Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold 2-Mercaptoethanol Not available.
 XL10-Gold Ultracompetent cells Not available.

Ingredient name	°C	°F	Method
QuikChange Multi Enzyme Blend			
Glycerol	370	698	
Dpn I			
Glycerol	370	698	
XL10-Gold 2-Mercaptoethanol			
2-Mercaptoethanol	295	563	
XL10-Gold Ultracompetent cells			
Dimethyl sulfoxide	300 to 302	572 to 575.6	
Glycerol	370	698	

Decomposition temperature : QuikSolution 140 to 189°C (284 to 372.2°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 Buffer Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold 2-Mercaptoethanol Not available.
 XL10-Gold Ultracompetent cells Not available.

Viscosity : QuikSolution Dynamic: 2.14 mPa·s (2.14 cP)
 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.
 XL10-Gold Ultracompetent cells Not available.

Section 9. Physical and chemical properties and safety characteristics

Particle characteristics

Median particle size	: 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.

Section 10. Stability and reactivity

10.1 Reactivity	: QuikSolution	No specific test data related to reactivity available for this product or its ingredients.
	QuikChange Multi Enzyme Blend	No specific test data related to reactivity available for this product or its ingredients.
	dNTP Mix	No specific test data related to reactivity available for this product or its ingredients.
	Dpn I	No specific test data related to reactivity available for this product or its ingredients.
	QuikChange Multi Ctl. Primer Mix	No specific test data related to reactivity available for this product or its ingredients.
	QuikChange Multi Control	No specific test data related to reactivity available for this product or its ingredients.
	Template	
	10X QuikChange Multi Reaction	No specific test data related to reactivity available for this product or its ingredients.
	Buffer	
	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	: QuikSolution	The product is stable.
	QuikChange Multi Enzyme Blend	The product is stable.
	dNTP Mix	The product is stable.
	Dpn I	The product is stable.
	QuikChange Multi Ctl. Primer Mix	The product is stable.
	QuikChange Multi Control	The product is stable.
	Template	
	10X QuikChange Multi Reaction	The product is stable.
	Buffer	
	pUC 18 DNA Control Plasmid	The product is stable.
	XL10-Gold 2-Mercaptoethanol	The product is stable.
	XL10-Gold Ultracompetent cells	The product is stable.
10.3 Possibility of hazardous reactions	: QuikSolution	Under normal conditions of storage and use, hazardous reactions will not occur.
	QuikChange Multi Enzyme Blend	Under normal conditions of storage and use, hazardous reactions will not occur.
	dNTP Mix	Under normal conditions of storage and use, hazardous reactions will not occur.
	Dpn I	Under normal conditions of storage and use, hazardous reactions will not occur.
	QuikChange Multi Ctl. Primer Mix	Under normal conditions of storage and use,

Section 10. Stability and reactivity

QuikChange Multi Control Template	hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
10X QuikChange Multi Reaction Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous reactions will not occur.
XL10-Gold 2-Mercaptoethanol	Under normal conditions of storage and use, hazardous reactions will not occur.
XL10-Gold Ultracompetent cells	Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid	: QuikSolution	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.
	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.

10.5 Incompatible materials	: QuikSolution	Reactive or incompatible with the following materials: oxidizing materials
	QuikChange Multi Enzyme Blend	May react or be incompatible with 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	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	QuikChange Multi Enzyme Blend	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	dNTP Mix	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 10. Stability and reactivity

Dpn I	produced. 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	-
Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl) phenyl]-.omega.-hydroxy-	LD50 Oral	Rat	2800 mg/kg	-
Dpn I Glycerol	LD50 Oral	Rat	12600 mg/kg	-
10X QuikChange Multi Reaction Buffer Ammonium sulphate	LD50 Oral	Rat	2840 mg/kg	-
Polyoxyethylene octyl phenyl ether	LD50 Oral	Rat	1800 mg/kg	-
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-
XL10-Gold Ultracompetent cells Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-

Section 11. Toxicological information

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
QuikSolution Dimethyl sulfoxide	Eyes - Mild irritant Eyes - Mild irritant	Rabbit Rabbit	- -	100 mg 24 hours 500 mg	- -
	Skin - Mild irritant Skin - Mild irritant	Rabbit Rabbit	- -	100 mg 24 hours 500 mg	- -
QuikChange Multi Enzyme Blend Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl) phenyl]-.omega.-hydroxy-	Eyes - Severe irritant	Rabbit	-	1 %	-
Dpn I Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
10X QuikChange Multi Reaction Buffer Polyoxyethylene octyl phenyl ether	Skin - Mild irritant	Rabbit	-	24 hours 500 uL	-
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 mg	-
XL10-Gold Ultracompetent cells Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Dimethyl sulfoxide	Eyes - Mild irritant Eyes - Mild irritant	Rabbit Rabbit	- -	100 mg 24 hours 500 mg	- -
	Skin - Mild irritant Skin - Mild irritant	Rabbit Rabbit	- -	100 mg 24 hours 500 mg	- -
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-

Sensitization

Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Section 11. Toxicological information

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Category 2	oral	heart, liver

Aspiration hazard

Not available.

Information on the likely routes of exposure

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

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 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.

Section 11. Toxicological information

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	No known significant effects or critical hazards.
		Template	
		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.	
Skin contact	:	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	
		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	May cause an allergic skin reaction.
	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.	
Ingestion	:	QuikSolution	No known significant effects or critical hazards.
		QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
		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	
		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.	

Symptoms related to the physical, chemical and toxicological characteristics

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	No specific data.
		Dpn I	Adverse symptoms may include the following: irritation watering redness
		QuikChange Multi Ctl. Primer Mix	No specific data.
		QuikChange Multi Control	No specific data.
		Template	
		10X QuikChange Multi Reaction Buffer	Adverse symptoms may include the following: pain or irritation watering

Section 11. Toxicological information

	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	redness 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 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	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
	XL10-Gold Ultracompetent cells	No specific data. Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
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	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
	XL10-Gold Ultracompetent cells	No specific data. Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced fetal weight increase in fetal deaths skeletal malformations
Ingestion	: 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	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
	XL10-Gold Ultracompetent cells	No specific data. Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations
	XL10-Gold Ultracompetent cells	No specific data.

Section 11. Toxicological information

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

General : 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.
 XL10-Gold 2-Mercaptoethanol May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : XL10-Gold Ultracompetent cells No known significant effects or critical hazards.
 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.
 XL10-Gold 2-Mercaptoethanol No known significant effects or critical hazards.
 XL10-Gold Ultracompetent cells No known significant effects or critical hazards.

Mutagenicity : QuikSolution No known significant effects or critical hazards.
 QuikChange Multi Enzyme Blend No known significant effects or critical hazards.
 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.
 XL10-Gold 2-Mercaptoethanol No known significant effects or critical hazards.
 XL10-Gold Ultracompetent cells No known significant effects or critical hazards.

Section 11. Toxicological information

Reproductive toxicity	: 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 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. Suspected of damaging fertility or the unborn child. No known significant effects or critical hazards.
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Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
QuikSolution Dimethyl sulfoxide	14500	40000	N/A	N/A	N/A
QuikChange Multi Enzyme Blend Glycerol	12600	N/A	N/A	N/A	N/A
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	500	N/A	N/A	N/A	N/A
Dpn I Dpn I	130435.3	N/A	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
10X QuikChange Multi Reaction Buffer 10X QuikChange Multi Reaction Buffer	98687.3	N/A	N/A	N/A	N/A
Ammonium sulphate	2840	N/A	N/A	N/A	N/A
Polyoxyethylene octyl phenyl ether	1800	N/A	N/A	N/A	N/A
XL10-Gold 2-Mercaptoethanol XL10-Gold 2-Mercaptoethanol	4615.5	4545.5	N/A	60.7	N/A
2-Mercaptoethanol	244	200	N/A	3	N/A
XL10-Gold Ultracompetent cells XL10-Gold Ultracompetent cells	136842.1	N/A	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
Dimethyl sulfoxide	14500	40000	N/A	N/A	N/A
Potassium chloride	2600	N/A	N/A	N/A	N/A

Section 12. Ecological information

12.1 Toxicity

Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
QuikSolution Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water Acute LC50 34000000 µg/l Fresh water Chronic NOEC 100 ul/L Marine water Chronic NOEC 100 ul/L Fresh water	Daphnia - Daphnia magna - Neonate Fish - Pimephales promelas Algae - Ulva lactuca Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	48 hours 96 hours 72 hours 21 days
QuikChange Multi Enzyme Blend Glycerol Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl) phenyl]-.omega.-hydroxy-	Acute LC50 54000 mg/l Fresh water Acute EC50 210 µg/l Fresh water Acute LC50 10800 µg/l Marine water Acute LC50 8600 µg/l Fresh water Acute LC50 7200 µg/l Fresh water	Fish - Oncorhynchus mykiss Algae - Selenastrum sp. Crustaceans - Pandalus montagui - Adult Daphnia - Daphnia magna - Neonate Fish - Oncorhynchus mykiss	96 hours 96 hours 48 hours 48 hours 96 hours
Dpn I Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
10X QuikChange Multi Reaction Buffer Ammonium sulphate	Chronic NOEC 7.5 mg/l Marine water	Algae - Phaeodactylum tricornutum - Exponential growth phase	96 hours
Polyoxyethylene octyl phenyl ether	Acute LC50 5.85 mg/l Fresh water Acute LC50 11.2 mg/l Fresh water Acute LC50 4500 µg/l Fresh water	Crustaceans - Ceriodaphnia rigaudi - Neonate Daphnia - Daphnia magna - Neonate Fish - Pimephales promelas	48 hours 48 hours 96 hours
XL10-Gold Ultracompetent cells Glycerol Dimethyl sulfoxide	Acute LC50 54000 mg/l Fresh water Acute LC50 25000 ppm Fresh water Acute LC50 34000000 µg/l Fresh water Chronic NOEC 100 ul/L Marine water Chronic NOEC 100 ul/L Fresh water	Fish - Oncorhynchus mykiss Daphnia - Daphnia magna - Neonate Fish - Pimephales promelas Algae - Ulva lactuca Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	96 hours 48 hours 96 hours 72 hours 21 days
Potassium chloride	Acute EC50 9.24 g/L Fresh water Acute EC50 1337000 µg/l Fresh water Acute EC50 83000 µg/l Fresh water Acute LC50 9.68 mg/l Fresh water Acute LC50 509.65 mg/l Fresh water	Algae - Desmodesmus subspicatus Algae - Navicula seminulum Daphnia - Daphnia magna Crustaceans - Pseudosida ramosa - Neonate Fish - Danio rerio	72 hours 96 hours 48 hours 48 hours 96 hours

[12.2 Persistence and degradability](#)

Section 12. Ecological information

Product/ingredient name	Test	Result	Dose	Inoculum
QuikSolution Dimethyl sulfoxide	OECD 301D Ready Biodegradability - Closed Bottle Test	31 % - Not readily - 28 days	-	-
QuikChange Multi Enzyme Blend Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
Dpn I Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	OECD 310 Ready Biodegradability - CO ₂ in Sealed Vessels (Headspace Test)	69 % - Not readily - 60 days	20 mg/l	-
XL10-Gold Ultracompetent cells Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
Dimethyl sulfoxide	OECD 301D Ready Biodegradability - Closed Bottle Test	31 % - Not readily - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
QuikSolution Dimethyl sulfoxide	-	-	Not readily
10X QuikChange Multi Reaction Buffer Ammonium sulphate Polyoxyethylene octyl phenyl ether	- -	- -	Readily Readily
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	-	-	Not readily
XL10-Gold Ultracompetent cells			

Section 12. Ecological information

Dimethyl sulfoxide	-	-	Not readily
Potassium chloride	-	-	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
Poly(oxy-1,2-ethanediyl), . alpha-[(1,1,3,3-tetramethylbutyl) phenyl]-.omega.-hydroxy-	2.7	78.67	low
Dpn I Glycerol	-1.76	-	low
10X QuikChange Multi Reaction Buffer Ammonium sulphate	-5.1	-	low
Polyoxyethylene octyl phenyl ether	4.86	-	high
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	-0.056	-	low
XL10-Gold Ultracompetent cells Glycerol	-1.76	-	low
Dimethyl sulfoxide	-1.35	3.16	low
Potassium chloride	-0.46	-	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. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 13. Disposal considerations

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

DOT / TDG / Mexico / IMDG / IATA : Not regulated.

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

Transport in bulk according to IMO instruments : Not available.

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:** Polyoxyethylene octyl phenyl ether; Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
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

Section 15. Regulatory information

Classification	:  QuikSolution	FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B EYE IRRITATION - Category 2B Not applicable. EYE IRRITATION - Category 2B Not applicable. Not applicable. EYE IRRITATION - Category 2A Not applicable. SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 EYE IRRITATION - Category 2B
	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	

Composition/information on ingredients

Name	%	Classification
 QuikSolution Dimethyl sulfoxide	100	FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B
QuikChange Multi Enzyme Blend Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
Dpn I Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
10X QuikChange Multi Reaction Buffer Ammonium sulphate Polyoxyethylene octyl phenyl ether	≤3 <2.5	EYE IRRITATION - Category 2A ACUTE TOXICITY (oral) - Category 4 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	≤5	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 3 ACUTE TOXICITY (dermal) - Category 2 ACUTE TOXICITY (inhalation) - Category 3 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1A TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
XL10-Gold Ultracompetent cells Glycerol Dimethyl sulfoxide Sucrose Potassium chloride	≥10 - ≤25 ≤10 ≤10 ≤3	EYE IRRITATION - Category 2B FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B COMBUSTIBLE DUSTS EYE IRRITATION - Category 2B

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

Section 15. Regulatory information

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: GLYCERIN; DIMETHYL SULFOXIDE
Pennsylvania : The following components are listed: 1,2,3-PROPANETRIOL
California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

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 : All components are listed or exempted.
China : Not determined.
Eurasian Economic Union : **Russian Federation inventory**: All components are listed or exempted.
Japan : **Japan inventory (CSCL)**: Not determined.
Japan inventory (ISHL): Not determined.
New Zealand : Not determined.
Philippines : Not determined.
Republic of Korea : Not determined.
Taiwan : All components are listed or exempted.
Thailand : Not determined.
Turkey : Not determined.
United States : All components are active or exempted.
Viet Nam : Not determined.

Section 16. Other information

Procedure used to derive the classification

Section 16. Other information

Classification	Justification
QuikSolution FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B	On basis of test data On basis of test data
QuikChange Multi Enzyme Blend EYE IRRITATION - Category 2B	Calculation method
Dpn I EYE IRRITATION - Category 2B	Calculation method
10X QuikChange Multi Reaction Buffer EYE IRRITATION - Category 2A AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method Calculation method
XL10-Gold 2-Mercaptoethanol SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method Calculation method Calculation method Calculation method Calculation method
XL10-Gold Ultracompetent cells EYE IRRITATION - Category 2B	Calculation method

History

Date of issue : 11/23/2022

Date of previous issue : 12/28/2020

Version : 7

Key to abbreviations

: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 N/A = Not available
 UN = United Nations

✔ Indicates information that has changed from previously issued version.

Notice to reader

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