

# SAFETY DATA SHEET



QuikChange Multi Site-Directed Mutagenesis Kit, Part Number 200515

## Section 1. Identification

### 1.1 Product identifier

**Product name** : QuikChange Multi Site-Directed Mutagenesis Kit, Part Number 200515

**Part no. (chemical kit)** : 200515

**Part no.** :  QuikSolution 200516-51  
 QuikChange Multi Enzyme Blend 200515-51  
 10X QuikChange Multi Reaction Buffer 200514-52  
 dNTP Mix 200519-52  
 Dpn I 200519-53  
 QuikChange Multi Control Template 200514-53  
 QuikChange Multi Ctl. Primer Mix 200514-54  
 XL10-Gold Ultracompetent cells 200315-41  
 XL10-Gold 2-Mercaptoethanol 200314-43  
 pUC 18 DNA Control Plasmid 200231-42

**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	500 µl
QuikChange Multi Enzyme Blend	10 µl (25 U 2.5 U/µl)
10X QuikChange Multi Reaction Buffer	200 µl
dNTP Mix	10 µl
Dpn I	10 µl (100 U 10 U/µl)
QuikChange Multi Control Template	5 µl (250 ng 50 ng/µl)
QuikChange Multi Ctl. Primer Mix	5 µl (5 µl 100 ng/µl ea.)
XL10-Gold Ultracompetent cells	540 µl
XL10-Gold 2-Mercaptoethanol	50 µl
pUC 18 DNA Control Plasmid	10 µl ( 0.1 ng / µl )

### 1.3 Details of the supplier of the safety data sheet

**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

<b>OSHA/HCS status</b> : 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).
10X QuikChange Multi Reaction Buffer	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
dNTP Mix	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

## Section 2. Hazards identification

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

### Classification of the substance or mixture

#### **QuikSolution**

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

#### **QuikChange Multi Enzyme Blend**

H320 EYE IRRITATION - Category 2B

#### **10X QuikChange Multi Reaction Buffer**

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

#### **Dpn I**

H320 EYE IRRITATION - Category 2B

#### **XL10-Gold Ultracompetent cells**

H320 EYE IRRITATION - Category 2B





#### **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

<b>QuikSolution</b>	Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 5.7%
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

<b>Hazard pictograms</b>	: 10X QuikChange Multi Reaction Buffer  XL10-Gold 2-Mercaptoethanol	    
<b>Signal word</b>	: QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Warning Warning Warning  No signal word. Warning No signal word.  No signal word. Warning Danger No signal word.
<b>Hazard statements</b>	: QuikSolution  QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer  dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol  pUC 18 DNA Control Plasmid	H227 - Combustible liquid. H320 - Causes eye irritation. H320 - Causes eye irritation. H319 - Causes serious eye irritation.  H412 - Harmful to aquatic life with long lasting effects. 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. H320 - Causes eye irritation. 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. No known significant effects or critical hazards.
<b>Precautionary statements</b>	: QuikSolution  QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer  dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol	P210 - Keep away from flames and hot surfaces. No smoking. Not applicable. P280 - Wear eye or face protection.  P273 - Avoid release to the environment. Not applicable. Not applicable. Not applicable.  Not applicable. Not applicable. P201 - Obtain special instructions before use. P280 - Wear protective gloves, protective clothing

## Section 2. Hazards identification

### Response

pUC 18 DNA Control Plasmid  
 : QuikSolution

QuikChange Multi Enzyme Blend

10X QuikChange Multi Reaction Buffer

dNTP Mix  
 Dpn I

QuikChange Multi Control Template  
 QuikChange Multi Ctl. Primer Mix  
 XL10-Gold Ultracompetent cells

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.  
 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.  
 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.  
 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.  
 Not applicable.

XL10-Gold 2-Mercaptoethanol

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.  
 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.

### Storage

pUC 18 DNA Control Plasmid  
 : QuikSolution

QuikChange Multi Enzyme Blend  
 10X QuikChange Multi Reaction Buffer  
 dNTP Mix  
 Dpn I  
 QuikChange Multi Control Template

Not applicable.  
 P403 + P235 - Store in a well-ventilated place. Keep cool.  
 Not applicable.  
 Not applicable.  
 Not applicable.  
 Not applicable.  
 Not applicable.

## Section 2. Hazards identification

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

## Section 3. Composition/information on ingredients

<b>Substance/mixture</b>	: QuikSolution	Substance
	QuikChange Multi Enzyme Blend	Mixture
	10X QuikChange Multi Reaction Buffer	Mixture
	dNTP Mix	Mixture
	Dpn I	Mixture
	QuikChange Multi Control Template	Mixture
	QuikChange Multi Ctl. Primer Mix	Mixture
	XL10-Gold Ultracompetent cells	Mixture
	XL10-Gold 2-Mercaptoethanol	Mixture

## Section 3. Composition/information on ingredients

pUC 18 DNA Control Plasmid

Mixture

Ingredient name	%	CAS number
<b>QuikSolution</b>		
Dimethyl sulfoxide	100	67-68-5
<b>QuikChange Multi Enzyme Blend</b>		
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
<b>10X QuikChange Multi Reaction Buffer</b>		
Ammonium sulphate	≤3	7783-20-2
Polyoxyethylene octyl phenyl ether	<2.5	9002-93-1
<b>Dpn I</b>		
Glycerol	≥50 - ≤75	56-81-5
<b>XL10-Gold Ultracompetent cells</b>		
Glycerol	≥10 - ≤25	56-81-5
Dimethyl sulfoxide	≤10	67-68-5
Potassium chloride	≤3	7447-40-7
<b>XL10-Gold 2-Mercaptoethanol</b>		
2-Mercaptoethanol	≤5	60-24-2

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.

10X QuikChange Multi Reaction

Immediately flush eyes with plenty of water,

## Section 4. First aid measures

Buffer	occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
dNTP Mix	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
Dpn I	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
QuikChange Multi Control Template	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
QuikChange Multi Ctl. Primer Mix	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
XL10-Gold Ultracompetent cells	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
pUC 18 DNA Control Plasmid	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
<b>Inhalation</b>	
: QuikSolution	Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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

10X QuikChange Multi Reaction Buffer	collar, tie, belt or waistband. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
dNTP Mix	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Dpn I	Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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 Control Template	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
QuikChange Multi Ctl. Primer Mix	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
XL10-Gold Ultracompetent cells	Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
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



## Section 4. First aid measures

### Skin contact

		not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	pUC 18 DNA Control Plasmid	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	: QuikSolution	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	QuikChange Multi Enzyme Blend	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	10X QuikChange Multi Reaction Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	dNTP Mix	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Dpn I	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	QuikChange Multi Control Template	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	QuikChange Multi Ctl. Primer Mix	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	XL10-Gold Ultracompetent cells	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	pUC 18 DNA Control Plasmid	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

## 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.

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.

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

## Section 4. First aid measures

QuikChange Multi Control Template	immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. 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 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.
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.
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.
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.

### 4.2 Most important symptoms/effects, acute and delayed

#### Potential acute health effects

<p><b>Eye contact</b></p>	<p>:  QuikSolution                  QuikChange Multi Enzyme Blend                  10X QuikChange Multi Reaction Buffer                  dNTP Mix                  Dpn I                  QuikChange Multi Control Template</p>	<p>Causes eye irritation.                  Causes eye irritation.                  Causes serious eye irritation.</p> <p>No known significant effects or critical hazards.                  Causes eye irritation.                  No known significant effects or critical hazards.</p>
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## Section 4. First aid measures

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

### Over-exposure signs/symptoms

<b>Eye contact</b>	: <input checked="" type="checkbox"/> QuikSolution	Adverse symptoms may include the following: irritation watering redness
	QuikChange Multi Enzyme Blend	Adverse symptoms may include the following: irritation watering redness
	10X QuikChange Multi Reaction Buffer	Adverse symptoms may include the following:  pain or irritation watering redness
	dNTP Mix	No specific data.
	Dpn I	Adverse symptoms may include the following: irritation watering redness

## Section 4. First aid measures

### Inhalation

QuikChange Multi Control Template	No specific data.
QuikChange Multi Ctl. Primer Mix	No specific data.
XL10-Gold Ultracompetent cells	Adverse symptoms may include the following: irritation watering redness
XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
pUC 18 DNA Control Plasmid	No specific data.
: QuikSolution	No specific data.
QuikChange Multi Enzyme Blend	No specific data.
10X QuikChange Multi Reaction Buffer	No specific data.
dNTP Mix	No specific data.
Dpn I	No specific data.
QuikChange Multi Control Template	No specific data.
QuikChange Multi Ctl. Primer Mix	No specific data.
XL10-Gold Ultracompetent cells	No specific data.
XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations

### Skin contact

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

### Ingestion

pUC 18 DNA Control Plasmid	No specific data.
: QuikSolution	No specific data.
QuikChange Multi Enzyme Blend	No specific data.
10X QuikChange Multi Reaction Buffer	No specific data.
dNTP Mix	No specific data.
Dpn I	No specific data.
QuikChange Multi Control Template	No specific data.
QuikChange Multi Ctl. Primer Mix	No specific data.
XL10-Gold Ultracompetent cells	No specific data.
XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations

## Section 4. First aid measures

pUC 18 DNA Control Plasmid No specific data.

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

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

## Section 4. First aid measures

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

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### 5.1 Extinguishing media

<b>Suitable extinguishing media</b>	: QuikSolution	Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.
	QuikChange Multi Enzyme Blend	Use an extinguishing agent suitable for the surrounding fire.
	10X QuikChange Multi Reaction Buffer	Use an extinguishing agent suitable for the surrounding fire.
	dNTP Mix	Use an extinguishing agent suitable for the surrounding fire.
	Dpn I	Use an extinguishing agent suitable for the surrounding fire.
	QuikChange Multi Control Template	Use an extinguishing agent suitable for the surrounding fire.
	QuikChange Multi Ctl. Primer Mix	Use an extinguishing agent suitable for the surrounding fire.
	XL10-Gold Ultracompetent cells	Use an extinguishing agent suitable for the surrounding fire.
	XL10-Gold 2-Mercaptoethanol	Use an extinguishing agent suitable for the surrounding fire.
	pUC 18 DNA Control Plasmid	Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media</b>	: QuikSolution	Do not use water jet.
	QuikChange Multi Enzyme Blend	None known.
	10X QuikChange Multi Reaction Buffer	None known.
	dNTP Mix	None known.
	Dpn I	None known.
	QuikChange Multi Control Template	None known.
	QuikChange Multi Ctl. Primer Mix	None known.
	XL10-Gold Ultracompetent cells	None known.

## Section 5. Fire-fighting measures

XL10-Gold 2-Mercaptoethanol      None known.  
 pUC 18 DNA Control Plasmid      None known.

### 5.2 Special hazards arising from the substance or mixture

<b>Specific hazards arising from the chemical</b>	: QuikSolution	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.
	QuikChange Multi Enzyme Blend	In a fire or if heated, a pressure increase will occur and the container may burst.
	10X QuikChange Multi Reaction Buffer	In a fire or if heated, a pressure increase will occur and the container may burst. 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.
	dNTP Mix	In a fire or if heated, a pressure increase will occur and the container may burst.
	Dpn I	In a fire or if heated, a pressure increase will occur and the container may burst.
	QuikChange Multi Control Template	In a fire or if heated, a pressure increase will occur and the container may burst.
	QuikChange Multi Ctl. Primer Mix	In a fire or if heated, a pressure increase will occur and the container may burst.
	XL10-Gold Ultracompetent cells	In a fire or if heated, a pressure increase will occur and the container may burst.
	XL10-Gold 2-Mercaptoethanol	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
	pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
<b>Hazardous thermal decomposition products</b>	: QuikSolution	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides
	QuikChange Multi Enzyme Blend	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	10X QuikChange Multi Reaction Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides halogenated compounds
	dNTP Mix	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides



## Section 5. Fire-fighting measures

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

### 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.
10X QuikChange Multi Reaction Buffer	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
dNTP Mix	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Dpn I	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
QuikChange Multi Control Template	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
QuikChange Multi Ctl. Primer Mix	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
XL10-Gold Ultracompetent cells	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No

## Section 5. Fire-fighting measures

		action shall be taken involving any personal risk or without suitable training.
	XL10-Gold 2-Mercaptoethanol	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	pUC 18 DNA Control Plasmid	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
<b>Special protective equipment for fire-fighters</b>	: 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.
	10X QuikChange Multi Reaction Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	dNTP Mix	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Dpn I	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	QuikChange Multi Control Template	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.
	XL10-Gold Ultracompetent cells	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	XL10-Gold 2-Mercaptoethanol	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	pUC 18 DNA Control Plasmid	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

### [6.1 Personal precautions, protective equipment and emergency procedures](#)

## Section 6. Accidental release measures

**For non-emergency personnel**

: QuikSolution

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

QuikChange Multi Enzyme Blend

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

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.

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 Control Template

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

QuikChange Multi Ctl. Primer Mix

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

XL10-Gold Ultracompetent cells

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

## Section 6. Accidental release measures

breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.

pUC 18 DNA Control Plasmid

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

**For emergency responders :** QuikSolution

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

QuikChange Multi Enzyme Blend

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

10X QuikChange Multi Reaction Buffer

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

dNTP Mix

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

Dpn I

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

QuikChange Multi Control Template

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

QuikChange Multi Ctl. Primer Mix

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

XL10-Gold Ultracompetent cells

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

XL10-Gold 2-Mercaptoethanol

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

pUC 18 DNA Control Plasmid

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

## Section 6. Accidental release measures

### 6.2 Environmental precautions

:  QuikSolution

QuikChange Multi Enzyme Blend

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).

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.

dNTP Mix

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Dpn I

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).

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).

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).

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.

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).

### 6.3 Methods and materials for containment and cleaning up

## Section 6. Accidental release measures

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

## Section 6. Accidental release measures

disposal contractor.

## Section 7. Handling and storage

### 7.1 Precautions for safe handling

#### Protective measures

:  QuikSolution

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

QuikChange Multi Enzyme Blend

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

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.

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 Control Template

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

QuikChange Multi Ctl. Primer Mix

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

XL10-Gold Ultracompetent cells

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

XL10-Gold 2-Mercaptoethanol

Put on appropriate personal protective equipment

## Section 7. Handling and storage

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

### Advice on general occupational hygiene

- pUC 18 DNA Control Plasmid
- : QuikSolution
- QuikChange Multi Enzyme Blend
- 10X QuikChange Multi Reaction Buffer
- dNTP Mix
- Dpn I
- 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.

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

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

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

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

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

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



## Section 7. Handling and storage

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

### 7.2 Conditions for safe storage, including any incompatibilities

: 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.
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

## Section 7. Handling and storage

dNTP Mix

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.

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 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.

QuikChange Multi Ctl. Primer Mix

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

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

## Section 7. Handling and storage

XL10-Gold 2-Mercaptoethanol


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. 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.

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.

### 7.3 Specific end use(s)

#### Recommendations

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

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

### 8.1 Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
<p><b>QuikSolution</b> Dimethyl sulfoxide</p> <p><b>QuikChange Multi Enzyme Blend</b> Glycerol</p> <p>Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-</p> <p><b>10X QuikChange Multi Reaction Buffer</b> Ammonium sulphate Polyoxyethylene octyl phenyl ether</p> <p><b>Dpn I</b> Glycerol</p> <p><b>XL10-Gold Ultracompetent cells</b> Glycerol</p> <p>Dimethyl sulfoxide</p> <p>Potassium chloride</p> <p><b>XL10-Gold 2-Mercaptoethanol</b> 2-Mercaptoethanol</p>	<p><b>OARS WEEL (United States, 1/2021).</b> TWA: 250 ppm 8 hours.</p> <p><b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m<sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m<sup>3</sup> 8 hours. Form: Total dust</p> <p><b>OSHA PEL (United States, 5/2018).</b> TWA: 5 mg/m<sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m<sup>3</sup> 8 hours. Form: Total dust</p> <p>None.</p> <p>None.</p> <p><b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m<sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m<sup>3</sup> 8 hours. Form: Total dust</p> <p><b>OSHA PEL (United States, 5/2018).</b> TWA: 5 mg/m<sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m<sup>3</sup> 8 hours. Form: Total dust</p> <p><b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m<sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m<sup>3</sup> 8 hours. Form: Total dust</p> <p><b>OSHA PEL (United States, 5/2018).</b> TWA: 5 mg/m<sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m<sup>3</sup> 8 hours. Form: Total dust</p> <p><b>OARS WEEL (United States, 1/2021).</b> TWA: 250 ppm 8 hours.</p> <p>None.</p> <p><b>OARS WEEL (United States, 1/2021).</b> <b>Absorbed through skin.</b> TWA: 0.2 ppm 8 hours.</p>

#### Biological exposure indices

No exposure indices known.

### 8.2 Exposure controls

## Section 8. Exposure controls/personal protection

- 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.
- 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

<b>Physical state</b>	<ul style="list-style-type: none"> <li>☑ QuikSolution</li> <li>QuikChange Multi Enzyme Blend</li> <li>10X QuikChange Multi Reaction Buffer</li> <li>dNTP Mix</li> <li>Dpn I</li> <li>QuikChange Multi Control Template</li> <li>QuikChange Multi Ctl. Primer Mix</li> <li>XL10-Gold Ultracompetent cells</li> <li>XL10-Gold 2-Mercaptoethanol</li> <li>pUC 18 DNA Control Plasmid</li> </ul>	<ul style="list-style-type: none"> <li>Liquid. [Clear.]</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> </ul>
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## Section 9. Physical and chemical properties and safety characteristics

<b>Color</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Colorless. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
<b>Odor</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Slight [Slight] Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
<b>Odor threshold</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
<b>pH</b>	: <input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	Not available. 8.2 8.8 7.5 Not available. 7.5 7.5 6.4 Not available. 7.5
<b>Melting point/freezing point</b>	: QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol	18.4°C (65.1°F) Not available. Not available. Not available. Not available. 0°C (32°F) 0°C (32°F) Not available. Not available.

## Section 9. Physical and chemical properties and safety characteristics

	pUC 18 DNA Control Plasmid	0°C (32°F)
<b>Boiling point, initial boiling point, and boiling range</b>	QuikSolution	188.8°C (371.8°F)
	QuikChange Multi Enzyme Blend	Not available.
	10X QuikChange Multi Reaction Buffer	Not available.
	dNTP Mix	Not available.
	Dpn I	Not available.
	QuikChange Multi Control	100°C (212°F)
	Template	
	QuikChange Multi Ctl. Primer Mix	100°C (212°F)
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	100°C (212°F)
<b>Flash point</b>	QuikSolution	Closed cup: 85°C (185°F) [ASTM D 93] Open cup: 87°C (188.6°F)
	QuikChange Multi Enzyme Blend	Not available.
	10X QuikChange Multi Reaction Buffer	Not available.
	dNTP Mix	Not available.
	Dpn I	Not available.
	QuikChange Multi Control	Not available.
	Template	
	QuikChange Multi Ctl. Primer Mix	Not available.
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
<b>QuikChange Multi Enzyme Blend</b>						
Glycerol				177	350.6	
<b>10X QuikChange Multi Reaction Buffer</b>						
Polyoxyethylene octyl phenyl ether	251	483.8				
<b>Dpn I</b>						
Glycerol				177	350.6	
<b>XL10-Gold Ultracompetent cells</b>						
Dimethyl sulfoxide	87	188.6	ASTM D 93	87	188.6	
Glycerol				177	350.6	
<b>XL10-Gold 2-Mercaptoethanol</b>						

## Section 9. Physical and chemical properties and safety characteristics

	2-Mercaptoethanol	74	165.2		74	165.2	
<b>Evaporation rate</b>	: <input checked="" type="checkbox"/> QuikSolution						0.026 (butyl acetate = 1)
	QuikChange Multi Enzyme Blend						Not available.
	10X QuikChange Multi Reaction Buffer						Not available.
	dNTP Mix						Not available.
	Dpn I						Not available.
	QuikChange Multi Control Template						Not available.
	QuikChange Multi Ctl. Primer Mix						Not available.
	XL10-Gold Ultracompetent cells						Not available.
	XL10-Gold 2-Mercaptoethanol						Not available.
	pUC 18 DNA Control Plasmid						Not available.
<b>Flammability</b>	: <input checked="" type="checkbox"/> QuikSolution						Not applicable.
	QuikChange Multi Enzyme Blend						Not applicable.
	10X QuikChange Multi Reaction Buffer						Not applicable.
	dNTP Mix						Not applicable.
	Dpn I						Not applicable.
	QuikChange Multi Control Template						Not applicable.
	QuikChange Multi Ctl. Primer Mix						Not applicable.
	XL10-Gold Ultracompetent cells						Not applicable.
	XL10-Gold 2-Mercaptoethanol						Not applicable.
	pUC 18 DNA Control Plasmid						Not applicable.
<b>Lower and upper explosion limit/flammability limit</b>	: <input checked="" type="checkbox"/> QuikSolution						Lower: 2.6% Upper: 42%
	QuikChange Multi Enzyme Blend						Not available.
	10X QuikChange Multi Reaction Buffer						Not available.
	dNTP Mix						Not available.
	Dpn I						Not available.
	QuikChange Multi Control Template						Not available.
	QuikChange Multi Ctl. Primer Mix						Not available.
	XL10-Gold Ultracompetent cells						Not available.
	XL10-Gold 2-Mercaptoethanol						Not available.
	pUC 18 DNA Control Plasmid						Not available.
<b>Vapor pressure</b>	: <input checked="" type="checkbox"/> QuikSolution						0.056 kPa (0.42 mm Hg) [EU A.4]
	QuikChange Multi Enzyme Blend						Not available.
	10X QuikChange Multi Reaction Buffer						Not available.
	dNTP Mix						Not available.
	Dpn I						Not available.
	QuikChange Multi Control Template						Not available.
	QuikChange Multi Ctl. Primer Mix						Not available.
	XL10-Gold Ultracompetent cells						Not available.
	XL10-Gold 2-Mercaptoethanol						Not available.
	pUC 18 DNA Control Plasmid						Not available.



## Section 9. Physical and chemical properties and safety characteristics

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
<b>QuikChange Multi Enzyme Blend</b>						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
<b>10X QuikChange Multi Reaction Buffer</b>						
water	23.8	3.2		92.258	12.3	
Polyoxyethylene octyl phenyl ether	0.997581	0.13				
<b>dNTP Mix</b>						
water	23.8	3.2		92.258	12.3	
<b>Dpn I</b>						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
<b>QuikChange Multi Control Template</b>						
water	23.8	3.2		92.258	12.3	
<b>QuikChange Multi Ctl. Primer Mix</b>						
water	23.8	3.2		92.258	12.3	
<b>XL10-Gold Ultracompetent cells</b>						
water	23.8	3.2		92.258	12.3	
Dimethyl sulfoxide	0.42	0.056	EU A.4			
<b>XL10-Gold 2-Mercaptoethanol</b>						
water	23.8	3.2		92.258	12.3	
2-Mercaptoethanol	0.98	0.13				

## Section 9. Physical and chemical properties and safety characteristics

		<b>pUC 18 DNA Control Plasmid</b>					
		water	23.8	3.2		92.258	12.3
<b>Relative vapor density</b>	:	<input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid				2.71 [Air = 1]	Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
<b>Relative density</b>	:	<input checked="" type="checkbox"/> QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid				1.1	Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
<b>Solubility(ies)</b>	:	<b>Media</b>	<b>Result</b>				
		<input checked="" type="checkbox"/> QuikSolution water <b>QuikChange Multi Enzyme Blend</b> water <b>10X QuikChange Multi Reaction Buffer</b> water <b>dNTP Mix</b> water <b>Dpn I</b> water <b>QuikChange Multi Control Template</b> water <b>QuikChange Multi Ctl. Primer Mix</b> water <b>XL10-Gold Ultracompetent cells</b> water <b>XL10-Gold 2-Mercaptoethanol</b> water <b>pUC 18 DNA Control Plasmid</b> water	Soluble  Soluble  Soluble  Soluble  Soluble  Soluble  Soluble  Soluble  Soluble  Soluble				

## Section 9. Physical and chemical properties and safety characteristics

**Partition coefficient: n-octanol/water** : QuikSolution -2.029  
 QuikChange Multi Enzyme Blend Not applicable.  
 10X QuikChange Multi Reaction Buffer Not applicable.  
 Buffer  
 dNTP Mix Not applicable.  
 Dpn I Not applicable.  
 QuikChange Multi Control Template Not applicable.  
 QuikChange Multi Ctl. Primer Mix Not applicable.  
 XL10-Gold Ultracompetent cells Not applicable.  
 XL10-Gold 2-Mercaptoethanol Not applicable.  
 pUC 18 DNA Control Plasmid Not applicable.

**Auto-ignition temperature** : QuikSolution 300 to 302°C (572 to 575.6°F)  
 QuikChange Multi Enzyme Blend Not available.  
 10X QuikChange Multi Reaction Buffer Not available.  
 Buffer  
 dNTP Mix Not available.  
 Dpn I Not available.  
 QuikChange Multi Control Template Not available.  
 QuikChange Multi Ctl. Primer Mix Not available.  
 XL10-Gold Ultracompetent cells Not available.  
 XL10-Gold 2-Mercaptoethanol Not available.  
 pUC 18 DNA Control Plasmid Not available.

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

**Decomposition temperature** : QuikSolution 140 to 189°C (284 to 372.2°F)  
 QuikChange Multi Enzyme Blend Not available.  
 10X QuikChange Multi Reaction Buffer Not available.  
 Buffer  
 dNTP Mix Not available.  
 Dpn I Not available.  
 QuikChange Multi Control Template Not available.  
 QuikChange Multi Ctl. Primer Mix Not available.  
 XL10-Gold Ultracompetent cells Not available.  
 XL10-Gold 2-Mercaptoethanol Not available.  
 pUC 18 DNA Control Plasmid Not available.

## Section 9. Physical and chemical properties and safety characteristics

<b>Viscosity</b>	: QuikSolution	Dynamic: 2.14 mPa·s (2.14 cP)
	QuikChange Multi Enzyme Blend	Not available.
	10X QuikChange Multi Reaction Buffer	Not available.
	dNTP Mix	Not available.
	Dpn I	Not available.
	QuikChange Multi Control Template	Not available.
	QuikChange Multi Ctl. Primer Mix	Not available.
	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.

### Particle characteristics

<b>Median particle size</b>	: QuikSolution	Not applicable.
	QuikChange Multi Enzyme Blend	Not applicable.
	10X QuikChange Multi Reaction Buffer	Not applicable.
	dNTP Mix	Not applicable.
	Dpn I	Not applicable.
	QuikChange Multi Control Template	Not applicable.
	QuikChange Multi Ctl. Primer Mix	Not applicable.
	XL10-Gold Ultracompetent cells	Not applicable.
	XL10-Gold 2-Mercaptoethanol	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.

## Section 10. Stability and reactivity

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

<b>10.2 Chemical stability</b>	: QuikSolution	The product is stable.
	QuikChange Multi Enzyme Blend	The product is stable.
	10X QuikChange Multi Reaction Buffer	The product is stable.
	dNTP Mix	The product is stable.
	Dpn I	The product is stable.
	QuikChange Multi Control Template	The product is stable.
	QuikChange Multi Ctl. Primer Mix	The product is stable.
	XL10-Gold Ultracompetent cells	The product is stable.
	XL10-Gold 2-Mercaptoethanol	The product is stable.

## Section 10. Stability and reactivity

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

## Section 10. Stability and reactivity

pUC 18 DNA Control Plasmid		May react or be incompatible with oxidizing materials.
<b>10.6 Hazardous decomposition products</b>	: QuikSolution	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	QuikChange Multi Enzyme Blend	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10X QuikChange Multi Reaction Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	dNTP Mix	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Dpn I	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	QuikChange Multi Control Template	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	QuikChange Multi Ctl. Primer Mix	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	XL10-Gold Ultracompetent cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	XL10-Gold 2-Mercaptoethanol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<b>QuikSolution</b> Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
<b>QuikChange Multi Enzyme Blend</b> Glycerol Poly(oxy-1,2-ethanediyl), . alpha.-[ (1,1,3,3-tetramethylbutyl) phenyl]-.omega.-hydroxy-	LD50 Oral LD50 Oral	Rat Rat	12600 mg/kg 2800 mg/kg	- -
<b>10X QuikChange Multi Reaction Buffer</b> Ammonium sulphate Polyoxyethylene octyl phenyl ether	LD50 Oral LD50 Oral	Rat Rat	2840 mg/kg 1800 mg/kg	- -
<b>Dpn I</b>				

## Section 11. Toxicological information

Glycerol	LD50 Oral	Rat	12600 mg/kg	-
<b>XL10-Gold Ultracompetent cells</b>				
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	-
<b>XL10-Gold 2-Mercaptoethanol</b>				
2-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-

### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>QuikSolution</b>					
Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	100 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	100 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
<b>QuikChange Multi Enzyme Blend</b>					
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 %	-
<b>10X QuikChange Multi Reaction Buffer</b>					
Polyoxyethylene octyl phenyl ether	Skin - Mild irritant	Rabbit	-	24 hours 500 uL	-
<b>Dpn I</b>					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
<b>XL10-Gold Ultracompetent cells</b>					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	100 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	100 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-

## Section 11. Toxicological information

<b>XL10-Gold 2-Mercaptoethanol</b> 2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 mg	-
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### Sensitization

Not available.

### Mutagenicity

**Conclusion/Summary** : Not available.

### Carcinogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Specific target organ toxicity (single exposure)

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

### Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
<b>XL10-Gold 2-Mercaptoethanol</b> 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.
10X QuikChange Multi Reaction Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
dNTP Mix	Not available.
Dpn I	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
QuikChange Multi Control Template	Not available.
QuikChange Multi Ctl. Primer Mix	Not available.
XL10-Gold Ultracompetent cells	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
XL10-Gold 2-Mercaptoethanol	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
pUC 18 DNA Control Plasmid	Not available.

### Potential acute health effects



## Section 11. Toxicological information

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

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

<b>Eye contact</b>	: QuikSolution	Adverse symptoms may include the following: irritation watering redness
	QuikChange Multi Enzyme Blend	Adverse symptoms may include the following: irritation watering redness
	10X QuikChange Multi Reaction	Adverse symptoms may include the following:

## Section 11. Toxicological information

	Buffer	pain or irritation watering redness
	dNTP Mix Dpn I	No specific data. Adverse symptoms may include the following: irritation watering redness
	QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells	No specific data. Adverse symptoms may include the following: irritation watering redness
	XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
<b>Inhalation</b>	pUC 18 DNA Control Plasmid	No specific data.
	: QuikSolution	No specific data.
	QuikChange Multi Enzyme Blend	No specific data.
	10X QuikChange Multi Reaction Buffer	No specific data.
	dNTP Mix	No specific data.
	Dpn I	No specific data.
	QuikChange Multi Control Template	No specific data.
	QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells	No specific data. No specific data.
	XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
	pUC 18 DNA Control Plasmid	No specific data.
<b>Skin contact</b>	: QuikSolution	No specific data.
	QuikChange Multi Enzyme Blend	No specific data.
	10X QuikChange Multi Reaction Buffer	No specific data.
	dNTP Mix	No specific data.
	Dpn I	No specific data.
	QuikChange Multi Control Template	No specific data.
	QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells	No specific data. No specific data.
	XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced fetal weight increase in fetal deaths skeletal malformations
	pUC 18 DNA Control Plasmid	No specific data.

## Section 11. Toxicological information

<b>Ingestion</b>	: QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol  pUC 18 DNA Control Plasmid	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations No specific data.
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### 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

<b>General</b>	: QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol  pUC 18 DNA Control Plasmid	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.  No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.  No known significant effects or critical hazards. No known significant effects or critical hazards. May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. No known significant effects or critical hazards.
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<b>Carcinogenicity</b>	: QuikSolution QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol pUC 18 DNA Control Plasmid	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.  No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.  No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
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**Section 11. Toxicological information**

<b>Mutagenicity</b>	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
	10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I	No known significant effects or critical hazards.
	QuikChange Multi Control Template	No known significant effects or critical hazards.
	QuikChange Multi Ctl. Primer Mix	No known significant effects or critical hazards.
	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
<b>Reproductive toxicity</b>	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Multi Enzyme Blend	No known significant effects or critical hazards.
	10X QuikChange Multi Reaction Buffer	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I	No known significant effects or critical hazards.
	QuikChange Multi Control Template	No known significant effects or critical hazards.
	QuikChange Multi Ctl. Primer Mix	No known significant effects or critical hazards.
	XL10-Gold Ultracompetent cells	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	Suspected of damaging fertility or the unborn child.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

**Numerical measures of toxicity****Acute toxicity estimates**

<b>Product/ingredient name</b>	<b>Oral (mg/kg)</b>	<b>Dermal (mg/kg)</b>	<b>Inhalation (gases) (ppm)</b>	<b>Inhalation (vapors) (mg/l)</b>	<b>Inhalation (dusts and mists) (mg/l)</b>
<b>QuikSolution</b> Dimethyl sulfoxide	14500	40000	N/A	N/A	N/A
<b>QuikChange Multi Enzyme Blend</b> Glycerol	12600	N/A	N/A	N/A	N/A
Poly(oxy-1,2-ethanediy), .alpha.-[ (1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	500	N/A	N/A	N/A	N/A
<b>10X QuikChange Multi Reaction Buffer</b> 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
<b>Dpn I</b> Dpn I	130445.7	N/A	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
<b>XL10-Gold Ultracompetent cells</b> 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
<b>XL10-Gold 2-Mercaptoethanol</b> XL10-Gold 2-Mercaptoethanol	4615.5	4545.5	N/A	60.7	N/A
2-Mercaptoethanol	244	200	N/A	3	N/A

## Section 11. Toxicological information

## Section 12. Ecological information

### 12.1 Toxicity

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

## Section 12. Ecological information

### 12.2 Persistence and degradability

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

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

## Section 12. Ecological information

<b>XL10-Gold 2-Mercaptoethanol</b> 2-Mercaptoethanol	-	-	Not readily
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### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>QuikSolution</b> Dimethyl sulfoxide	-2.029	3.16	low
<b>QuikChange Multi Enzyme Blend</b> Glycerol	-1.76	-	low
Poly(oxy-1,2-ethanediyl), . alpha-[ (1,1,3,3-tetramethylbutyl) phenyl]-.omega.-hydroxy-	2.7	78.67	low
<b>10X QuikChange Multi Reaction Buffer</b> Ammonium sulphate	-5.1	-	low
Polyoxyethylene octyl phenyl ether	4.86	-	high
<b>Dpn I</b> Glycerol	-1.76	-	low
<b>XL10-Gold Ultracompetent cells</b> Glycerol	-1.76	-	low
Dimethyl sulfoxide	-1.35	3.16	low
Potassium chloride	-0.46	-	low
<b>XL10-Gold 2-Mercaptoethanol</b> 2-Mercaptoethanol	-0.056	-	low

### 12.4 Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

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

## Section 13. Disposal considerations

### 13.1 Waste treatment methods

**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues.

## Section 13. Disposal considerations

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

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

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

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

## Section 14. Transport information

**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

<b>Classification</b>	:  QuikSolution	FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B EYE IRRITATION - Category 2B EYE IRRITATION - Category 2A Not applicable. EYE IRRITATION - Category 2B Not applicable. Not applicable. EYE IRRITATION - Category 2B SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 Not applicable.
	QuikChange Multi Enzyme Blend 10X QuikChange Multi Reaction Buffer dNTP Mix Dpn I QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol	
	pUC 18 DNA Control Plasmid	

### Composition/information on ingredients

Name	%	Classification
 <b>QuikSolution</b> Dimethyl sulfoxide	100	FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B
<b>QuikChange Multi Enzyme Blend</b> Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
<b>10X QuikChange Multi Reaction Buffer</b> 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
<b>Dpn I</b> Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
<b>XL10-Gold Ultracompetent cells</b> 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
<b>XL10-Gold 2-Mercaptoethanol</b> 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

### SARA 313

	Product name	CAS number	%
<b>Form R - Reporting requirements</b>	<b>10X QuikChange Multi Reaction Buffer</b> Ammonium sulphate	7783-20-2	≤3
<b>Supplier notification</b>	<b>10X QuikChange Multi Reaction Buffer</b> 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
<b>QuikSolution</b> FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B	On basis of test data On basis of test data
<b>QuikChange Multi Enzyme Blend</b> EYE IRRITATION - Category 2B	Calculation method
<b>10X QuikChange Multi Reaction Buffer</b> EYE IRRITATION - Category 2A AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method Calculation method
<b>Dpn I</b> EYE IRRITATION - Category 2B	Calculation method
<b>XL10-Gold Ultracompetent cells</b> EYE IRRITATION - Category 2B	Calculation method
<b>XL10-Gold 2-Mercaptoethanol</b> 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

### History

**Date of issue** : 11/23/2022

**Date of previous issue** : 12/28/2020

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### 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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