

SAFETY DATA SHEET



QuikChange Lightning Multi Site-Directed Mutagenesis Kit, Part Number 210516

Section 1. Identification

1.1 Product identifier

Product name : QuikChange Lightning Multi Site-Directed Mutagenesis Kit, Part Number 210516

Part no. (chemical kit) : 210516

Part no. :

QuikSolution	200516-51
QuikChange Lightning Multi Enzyme	210515-51
10X QuikChange Lightning Multi Buffer	210513-52
dNTP Mix	200519-52
Dpn I Enzyme	210518-52
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 : 11/21/2022

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 Lightning Multi Enzyme	10 µl (10 reactions)
10X QuikChange Lightning Multi Buffer	200 µl
dNTP Mix	10 µl
Dpn I Enzyme	20 µl (10 reactions)
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	500 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

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

Section 2. Hazards identification

Dpn I Enzyme	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 2-Mercaptoethanol	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
pUC 18 DNA Control Plasmid	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.

Classification of the substance or mixture

QuikSolution

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

QuikChange Lightning Multi Enzyme

H320 EYE IRRITATION - Category 2B

10X QuikChange Lightning Multi Buffer

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

Dpn I Enzyme

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

QuikSolution	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


Hazard pictograms	: 10X QuikChange Lightning Multi Buffer	
	XL10-Gold 2-Mercaptoethanol	
Signal word	: QuikSolution QuikChange Lightning Multi Enzyme 10X QuikChange Lightning Multi Buffer dNTP Mix Dpn I Enzyme 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.
Hazard statements	: QuikSolution QuikChange Lightning Multi Enzyme 10X QuikChange Lightning Multi Buffer dNTP Mix Dpn I Enzyme 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.
Precautionary statements		
Prevention	: QuikSolution QuikChange Lightning Multi Enzyme 10X QuikChange Lightning Multi Buffer dNTP Mix Dpn I Enzyme QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix	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.

Section 2. Hazards identification

Response

XL10-Gold Ultracompetent cells XL10-Gold 2-Mercaptoethanol	Not applicable. P201 - Obtain special instructions before use. P280 - Wear protective gloves, protective clothing and eye or face protection. P273 - Avoid release to the environment. P260 - Do not breathe vapor.
pUC 18 DNA Control Plasmid :  QuikSolution	Not applicable. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.
QuikChange Lightning Multi Enzyme	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.
10X QuikChange Lightning Multi Buffer	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.
dNTP Mix Dpn I Enzyme	Not applicable. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.
QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix XL10-Gold Ultracompetent cells	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.
XL10-Gold 2-Mercaptoethanol	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.
pUC 18 DNA Control Plasmid	Not applicable.

Section 2. Hazards identification

Storage	: QuikSolution	P403 + P235 - Store in a well-ventilated place. Keep cool.
	QuikChange Lightning Multi Enzyme	Not applicable.
	10X QuikChange Lightning Multi Buffer	Not applicable.
	dNTP Mix	Not applicable.
	Dpn I Enzyme	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.
Disposal	:  QuikSolution	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	QuikChange Lightning Multi Enzyme	Not applicable.
	10X QuikChange Lightning Multi Buffer	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	dNTP Mix	Not applicable.
	Dpn I Enzyme	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.
Supplemental label elements	: QuikSolution	None known.
	QuikChange Lightning Multi Enzyme	None known.
	10X QuikChange Lightning Multi Buffer	None known.
	dNTP Mix	None known.
	Dpn I Enzyme	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.
2.3 Other hazards		
Hazards not otherwise classified	: QuikSolution	None known.
	QuikChange Lightning Multi Enzyme	None known.
	10X QuikChange Lightning Multi Buffer	None known.
	dNTP Mix	None known.
	Dpn I Enzyme	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

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

Ingredient name	%	CAS number
QuikSolution		
Dimethyl sulfoxide	100	67-68-5
QuikChange Lightning Multi Enzyme		
Glycerol	≥50 - ≤75	56-81-5
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	<0.25	9036-19-5
10X QuikChange Lightning Multi Buffer		
Potassium chloride	≤5	7447-40-7
Ammonium sulphate	≤3	7783-20-2
Polyoxyethylene octyl phenyl ether	<2.5	9002-93-1
Dpn I Enzyme		
Glycerol	≥50 - ≤75	56-81-5
XL10-Gold Ultracompetent cells		
Glycerol	≥10 - ≤25	56-81-5
Dimethyl sulfoxide	≤10	67-68-5
Potassium chloride	≤3	7447-40-7
XL10-Gold 2-Mercaptoethanol		
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

QuikChange Lightning Multi Enzyme

10X QuikChange Lightning Multi Buffer

dNTP Mix

Dpn I Enzyme

QuikChange Multi Control Template

QuikChange Multi Ctl. Primer Mix

XL10-Gold Ultracompetent cells

XL10-Gold 2-Mercaptoethanol

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.

Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.

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.

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses.

Continue to rinse for at least 10 minutes. Get medical attention.

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.

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.

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.

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.

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.

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.

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation

: QuikSolution

Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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

Section 4. First aid measures

QuikChange Lightning Multi Enzyme

an open airway. Loosen tight clothing such as a 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.

10X QuikChange Lightning Multi Buffer

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

dNTP Mix

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Dpn I Enzyme

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

Section 4. First aid measures

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 not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

pUC 18 DNA Control Plasmid

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin contact

: QuikSolution

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

QuikChange Lightning Multi Enzyme

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 Lightning Multi 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 Enzyme

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

Section 4. First aid measures

Ingestion

pUC 18 DNA Control Plasmid

:  QuikSolution

QuikChange Lightning Multi Enzyme

10X QuikChange Lightning Multi Buffer

dNTP Mix

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

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

Wash 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.

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.

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.

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

Section 4. First aid measures

Dpn I Enzyme

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 Control Template

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

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. Get medical attention immediately. Call a poison center or physician. Wash out mouth with water.

XL10-Gold 2-Mercaptoethanol

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

Section 4. First aid measures

Eye contact

: QuikSolution	Adverse symptoms may include the following: irritation watering redness
QuikChange Lightning Multi Enzyme	Adverse symptoms may include the following: irritation watering redness
10X QuikChange Lightning Multi Buffer	Adverse symptoms may include the following: pain or irritation watering redness
dNTP Mix Dpn I Enzyme	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
pUC 18 DNA Control Plasmid	No specific data.

Inhalation

: QuikSolution	No specific data.
QuikChange Lightning Multi Enzyme	No specific data.
10X QuikChange Lightning Multi Buffer	No specific data.
dNTP Mix	No specific data.
Dpn I Enzyme	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
pUC 18 DNA Control Plasmid	No specific data.

Skin contact

: QuikSolution	No specific data.
QuikChange Lightning Multi Enzyme	No specific data.
10X QuikChange Lightning Multi Buffer	No specific data.
dNTP Mix	No specific data.
Dpn I Enzyme	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:

Section 4. First aid measures

Ingestion

		pain or irritation redness blistering may occur reduced fetal weight increase in fetal deaths skeletal malformations
	pUC 18 DNA Control Plasmid	No specific data.
	: QuikSolution	No specific data.
	QuikChange Lightning Multi Enzyme	No specific data.
	10X QuikChange Lightning Multi Buffer	No specific data.
	dNTP Mix	No specific data.
	Dpn I Enzyme	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
	pUC 18 DNA Control Plasmid	No specific data.

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

Notes to physician

	: QuikSolution	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	QuikChange Lightning Multi Enzyme	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	10X QuikChange Lightning Multi 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 Enzyme	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.

Section 4. First aid measures

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

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

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	:  QuikSolution QuikChange Lightning Multi Enzyme 10X QuikChange Lightning Multi Buffer dNTP Mix Dpn I Enzyme QuikChange Multi Control Template QuikChange Multi Ctl. Primer Mix	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. In a fire or if heated, a pressure increase will occur and the container may burst. 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. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur
---	---	---

Section 5. Fire-fighting measures

Hazardous thermal decomposition products

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

Section 5. Fire-fighting measures

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

Section 5. Fire-fighting measures

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

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 Lightning Multi Enzyme

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 Lightning Multi 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


Section 6. Accidental release measures

Dpn I Enzyme	<p>appropriate personal protective equipment. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.</p>
QuikChange Multi Control Template	<p>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.</p>
QuikChange Multi Ctl. Primer Mix	<p>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.</p>
XL10-Gold Ultracompetent cells	<p>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.</p>
XL10-Gold 2-Mercaptoethanol	<p>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.</p>
pUC 18 DNA Control Plasmid	<p>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.</p>
For emergency responders : QuikSolution	<p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p>
QuikChange Lightning Multi Enzyme	<p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p>
10X QuikChange Lightning Multi Buffer	<p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p>
dNTP Mix	<p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8</p>

Section 6. Accidental release measures

Dpn I Enzyme	on suitable and unsuitable materials. See also the information in "For non-emergency personnel". 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".

6.2 Environmental precautions

:  QuikSolution	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 Lightning Multi Enzyme	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 Lightning Multi 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 Enzyme	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

Section 6. Accidental release measures

	contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
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

Methods for cleaning up

: QuikSolution

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

QuikChange Lightning Multi Enzyme

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 Lightning Multi 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 Enzyme

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.

Section 6. Accidental release measures

QuikChange Multi Ctl. Primer Mix	disposal contractor. 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 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 Lightning Multi Enzyme

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 Lightning Multi 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

Section 7. Handling and storage

		product residue and can be hazardous. Do not reuse container.
	dNTP Mix	Put on appropriate personal protective equipment (see Section 8).
	Dpn I Enzyme	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 (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.
	pUC 18 DNA Control Plasmid	Put on appropriate personal protective equipment (see Section 8).
Advice on general occupational hygiene	: QuikSolution	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	QuikChange Lightning Multi Enzyme	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	10X QuikChange Lightning Multi Buffer	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face

Section 7. Handling and storage

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

Section 7. Handling and storage

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 Lightning Multi Enzyme

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 Lightning Multi Buffer

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

dNTP Mix

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

Dpn I Enzyme

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

Section 7. Handling and storage

QuikChange Multi Ctl. Primer Mix	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. 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 incompatible materials before handling or use.
XL10-Gold 2-Mercaptoethanol	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
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)

Section 7. Handling and storage

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

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
QuikSolution Dimethyl sulfoxide	OARS WEEL (United States, 1/2021). TWA: 250 ppm 8 hours.
QuikChange Lightning Multi Enzyme Glycerol	OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 10 mg/m ³ 8 hours. Form: Total dust OSHA PEL (United States, 5/2018). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	None.
10X QuikChange Lightning Multi Buffer Potassium chloride Ammonium sulphate Polyoxyethylene octyl phenyl ether	None. None. None.
Dpn I Enzyme Glycerol	OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 10 mg/m ³ 8 hours. Form: Total dust

Section 8. Exposure controls/personal protection

<p>XL10-Gold Ultracompetent cells Glycerol</p> <p>Dimethyl sulfoxide</p> <p>Potassium chloride</p> <p>XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol</p>	<p>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>OARS WEEL (United States, 1/2021). TWA: 250 ppm 8 hours. None.</p> <p>OARS WEEL (United States, 1/2021). Absorbed through skin. TWA: 0.2 ppm 8 hours.</p>
---	--

Biological exposure indices

No exposure indices known.

8.2 Exposure controls

Appropriate engineering controls

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

Environmental exposure controls

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

Individual protection measures

Hygiene measures

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

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.

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.

Section 8. Exposure controls/personal protection

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

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

Appearance

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

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

Section 9. Physical and chemical properties and safety characteristics

Flash point : QuikSolution Closed cup: 85°C (185°F) [ASTM D 93]
 Open cup: 87°C (188.6°F)

QuikChange Lightning Multi Enzyme Not available.
 10X QuikChange Lightning Multi Buffer Not available.
 dNTP Mix Not available.
 Dpn I Enzyme 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	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
QuikChange Lightning Multi Enzyme						
Glycerol				177	350.6	
10X QuikChange Lightning Multi Buffer						
Polyoxyethylene octyl phenyl ether	251	483.8				
Dpn I Enzyme						
Glycerol				177	350.6	
XL10-Gold Ultracompetent cells						
Dimethyl sulfoxide	87	188.6	ASTM D 93	87	188.6	
Glycerol				177	350.6	
XL10-Gold 2-Mercaptoethanol						
2-Mercaptoethanol	74	165.2		74	165.2	

Evaporation rate : QuikSolution 0.026 (butyl acetate = 1)
 QuikChange Lightning Multi Enzyme Not available.
 10X QuikChange Lightning Multi Buffer Not available.
 dNTP Mix Not available.
 Dpn I Enzyme Not available.
 QuikChange Multi Control Template Not available.
 QuikChange Multi Ctl. Primer Mix Not available.

Section 9. Physical and chemical properties and safety characteristics

Flammability :

- XL10-Gold Ultracompetent cells Not available.
- XL10-Gold 2-Mercaptoethanol Not available.
- pUC 18 DNA Control Plasmid Not available.
- QuikSolution Not applicable.
- QuikChange Lightning Multi Enzyme Not applicable.
- 10X QuikChange Lightning Multi Buffer Not applicable.
- dNTP Mix Not applicable.
- Dpn I Enzyme 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.

Lower and upper explosion limit/flammability limit :

- QuikSolution Lower: 2.6%
Upper: 42%
- QuikChange Lightning Multi Enzyme Not available.
- 10X QuikChange Lightning Multi Buffer Not available.
- dNTP Mix Not available.
- Dpn I Enzyme 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.

Vapor pressure :

- QuikSolution 0.056 kPa (0.42 mm Hg) [EU A.4]
- QuikChange Lightning Multi Enzyme Not available.
- 10X QuikChange Lightning Multi Buffer Not available.
- dNTP Mix Not available.
- Dpn I Enzyme 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	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
QuikChange Lightning Multi Enzyme						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
10X QuikChange Lightning Multi Buffer						

Section 9. Physical and chemical properties and safety characteristics

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

Relative vapor density : QuikSolution 2.71 [Air = 1]
 QuikChange Lightning Multi Enzyme Not available.
 10X QuikChange Lightning Multi Buffer Not available.
 dNTP Mix Not available.
 Dpn I Enzyme Not available.
 QuikChange Multi Control Template Not available.
 QuikChange Multi Ctl. Primer Mix Not available.

Section 9. Physical and chemical properties and safety characteristics

	XL10-Gold Ultracompetent cells	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	pUC 18 DNA Control Plasmid	Not available.
Relative density	: QuikSolution	1.1
	QuikChange Lightning Multi Enzyme	Not available.
	10X QuikChange Lightning Multi Buffer	Not available.
	dNTP Mix	Not available.
	Dpn I Enzyme	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.

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

Partition coefficient: n-octanol/water	:	QuikSolution	-2.029
		QuikChange Lightning Multi Enzyme	Not applicable.
		10X QuikChange Lightning Multi Buffer	Not applicable.
		dNTP Mix	Not applicable.
		Dpn I Enzyme	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 9. Physical and chemical properties and safety characteristics

Auto-ignition temperature : QuikSolution 300 to 302°C (572 to 575.6°F)
 QuikChange Lightning Multi Enzyme Not available.
 10X QuikChange Lightning Multi Buffer Not available.
 dNTP Mix Not available.
 Dpn I Enzyme 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
<input checked="" type="checkbox"/> QuikChange Lightning Multi Enzyme			
Glycerol	370	698	
Dpn I Enzyme			
Glycerol	370	698	
XL10-Gold Ultracompetent cells			
Dimethyl sulfoxide	300 to 302	572 to 575.6	
Glycerol	370	698	
XL10-Gold 2-Mercaptoethanol			
2-Mercaptoethanol	295	563	

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

Viscosity : QuikSolution Dynamic: 2.14 mPa·s (2.14 cP)
 QuikChange Lightning Multi Enzyme Not available.
 10X QuikChange Lightning Multi Buffer Not available.
 dNTP Mix Not available.
 Dpn I Enzyme Not available.
 QuikChange Multi Control Template Not available.
 QuikChange Multi Ctl. Primer Mix Not available.

Section 9. Physical and chemical properties and safety characteristics

XL10-Gold Ultracompetent cells	Not available.
XL10-Gold 2-Mercaptoethanol	Not available.
pUC 18 DNA Control Plasmid	Not available.

Particle characteristics

Median particle size

: QuikSolution	Not applicable.
QuikChange Lightning Multi Enzyme	Not applicable.
10X QuikChange Lightning Multi Buffer	Not applicable.
dNTP Mix	Not applicable.
Dpn I Enzyme	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

10.1 Reactivity

: QuikSolution	No specific test data related to reactivity available for this product or its ingredients.
QuikChange Lightning Multi Enzyme	No specific test data related to reactivity available for this product or its ingredients.
10X QuikChange Lightning Multi 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 Enzyme	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.

10.2 Chemical stability

: QuikSolution	The product is stable.
QuikChange Lightning Multi Enzyme	The product is stable.
10X QuikChange Lightning Multi Buffer	The product is stable.
dNTP Mix	The product is stable.
Dpn I Enzyme	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.
pUC 18 DNA Control Plasmid	The product is stable.

Section 10. Stability and reactivity

10.3 Possibility of hazardous reactions

: QuikSolution	Under normal conditions of storage and use, hazardous reactions will not occur.
QuikChange Lightning Multi Enzyme	Under normal conditions of storage and use, hazardous reactions will not occur.
10X QuikChange Lightning Multi 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 Enzyme	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.

10.4 Conditions to avoid

: QuikSolution	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
QuikChange Lightning Multi Enzyme	No specific data.
10X QuikChange Lightning Multi Buffer	No specific data.
dNTP Mix	No specific data.
Dpn I Enzyme	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.

10.5 Incompatible materials

: QuikSolution	Reactive or incompatible with the following materials: oxidizing materials
QuikChange Lightning Multi Enzyme	May react or be incompatible with oxidizing materials.
10X QuikChange Lightning Multi Buffer	May react or be incompatible with oxidizing materials.
dNTP Mix	May react or be incompatible with oxidizing materials.
Dpn I Enzyme	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.
pUC 18 DNA Control Plasmid	May react or be incompatible with oxidizing materials.

Section 10. Stability and reactivity

materials.

10.6 Hazardous decomposition products

QuikSolution	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
QuikChange Lightning Multi Enzyme	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
10X QuikChange Lightning Multi 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 Enzyme	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
QuikSolution Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
QuikChange Lightning Multi Enzyme Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl) phenyl]-.omega.-hydroxy-	LD50 Oral	Rat	2800 mg/kg	-
10X QuikChange Lightning Multi Buffer Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
Ammonium sulphate	LD50 Oral	Rat	2840 mg/kg	-
Polyoxyethylene octyl phenyl ether	LD50 Oral	Rat	1800 mg/kg	-
Dpn I Enzyme				

Section 11. Toxicological information

Glycerol	LD50 Oral	Rat	12600 mg/kg	-
XL10-Gold Ultracompetent cells				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
XL10-Gold 2-Mercaptoethanol				
2-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-

Irritation/Corrosion

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

Section 11. Toxicological information

Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 mg	-

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
<input checked="" type="checkbox"/> XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

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

Aspiration hazard

Not available.

Information on the likely routes of exposure

<input checked="" type="checkbox"/> QuikSolution	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
QuikChange Lightning Multi Enzyme	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
10X QuikChange Lightning Multi Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
dNTP Mix	Not available.
Dpn I Enzyme	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

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

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

Section 11. Toxicological information

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

Section 11. Toxicological information

		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 Lightning Multi Enzyme	No specific data.
	10X QuikChange Lightning Multi Buffer	No specific data.
	dNTP Mix	No specific data.
	Dpn I Enzyme	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
pUC 18 DNA Control Plasmid	No specific data.	

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General	: QuikSolution	No known significant effects or critical hazards.
	QuikChange Lightning Multi Enzyme	No known significant effects or critical hazards.
	10X QuikChange Lightning Multi Buffer	No known significant effects or critical hazards.
	dNTP Mix	No known significant effects or critical hazards.
	Dpn I Enzyme	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 damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.

Section 11. Toxicological information

Polyoxyethylene octyl phenyl ether	1800	N/A	N/A	N/A	N/A
Dpn I Enzyme					
Dpn I Enzyme	130435.3	N/A	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
XL10-Gold Ultracompetent cells					
XL10-Gold Ultracompetent cells	136842.1	N/A	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
Dimethyl sulfoxide	14500	40000	N/A	N/A	N/A
Potassium chloride	2600	N/A	N/A	N/A	N/A
XL10-Gold 2-Mercaptoethanol					
XL10-Gold 2-Mercaptoethanol	4615.5	4545.5	N/A	60.7	N/A
2-Mercaptoethanol	244	200	N/A	3	N/A

Section 12. Ecological information

12.1 Toxicity

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

Section 12. Ecological information

Dpn I Enzyme Glycerol	Acute LC50 11.2 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 4500 µg/l Fresh water	Fish - Pimephales promelas	96 hours
XL10-Gold Ultracompetent cells Glycerol Dimethyl sulfoxide	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	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
	Chronic NOEC 100 ul/L Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	21 days
Potassium chloride	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

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
QuikSolution Dimethyl sulfoxide	OECD 301D Ready Biodegradability - Closed Bottle Test	31 % - Not readily - 28 days	-	-
QuikChange Lightning Multi Enzyme Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
Dpn I Enzyme Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
XL10-Gold Ultracompetent cells Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
Dimethyl sulfoxide	OECD 301D Ready Biodegradability - Closed Bottle Test	31 % - Not readily - 28 days	-	-

Section 12. Ecological information

XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	OECD 310 Ready Biodegradability - CO ₂ in Sealed Vessels (Headspace Test)	69 % - Not readily - 60 days	20 mg/l	-
---	--	------------------------------	---------	---

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

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
<input checked="" type="checkbox"/> QuikSolution Dimethyl sulfoxide	-2.029	3.16	low
QuikChange Lightning Multi Enzyme Glycerol Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl) phenyl]-.omega.-hydroxy-	-1.76 2.7	- 78.67	low low
10X QuikChange Lightning Multi Buffer Potassium chloride Ammonium sulphate Polyoxyethylene octyl phenyl ether	-0.46 -5.1 4.86	- - -	low low high
Dpn I Enzyme Glycerol	-1.76	-	low
XL10-Gold Ultracompetent cells Glycerol Dimethyl sulfoxide	-1.76 -1.35	- 3.16	low low

Section 12. Ecological information

Potassium chloride	-0.46	-	low
XL10-Gold 2-Mercaptoethanol			
2-Mercaptoethanol	-0.056	-	low

12.4 Mobility in soil

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

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

Section 13. Disposal considerations

13.1 Waste treatment methods

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

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

Classification

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

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
 Not applicable.

Composition/information on ingredients

Name	%	Classification
 QuikSolution Dimethyl sulfoxide	100	FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B
QuikChange Lightning Multi Enzyme Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
10X QuikChange Lightning Multi Buffer Potassium chloride Ammonium sulphate Polyoxyethylene octyl phenyl ether	≤5 ≤3 <2.5	EYE IRRITATION - Category 2B EYE IRRITATION - Category 2A ACUTE TOXICITY (oral) - Category 4 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1
Dpn I Enzyme Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B

Section 15. Regulatory information

XL10-Gold Ultracompetent cells		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2B
Dimethyl sulfoxide	≤10	FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B
Sucrose	≤10	COMBUSTIBLE DUSTS
Potassium chloride	≤3	EYE IRRITATION - Category 2B
XL10-Gold 2-Mercaptoethanol		
2-Mercaptoethanol	≤5	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 3 ACUTE TOXICITY (dermal) - Category 2 ACUTE TOXICITY (inhalation) - Category 3 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1A TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

SARA 313

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

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

State regulations

- Massachusetts** : The following components are listed: GLYCERINE MIST
- New York** : None of the components are listed.
- New Jersey** : The following components are listed: 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.

Section 15. Regulatory information

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

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

History

Date of issue	: 11/21/2022
Date of previous issue	: 12/28/2020
Version	: 8

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

Section 16. Other information

✔ Indicates information that has changed from previously issued version.

[Notice to reader](#)

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