

SAFETY DATA SHEET

Routine Cloning Competent Cell Pack, Part Number 230248

Section 1. Identification

1.1 Product identifier

Product name : Routine Cloning Competent Cell Pack, Part Number 230248

Part no. (chemical kit) : 230248

Part no. :

XL2-Blue Ultracompetent Cells	200150-41
XL2-Blue MRF' ultracompetent cells	200151-41
SoloPack Gold competent cells	230325-41
pUC 18 DNA Control Plasmid	200231-42
XL10-Gold 2-Mercaptoethanol	200314-43
2-Mercaptoethanol For Ultra Comp Cells	210210-43

Validation date : 3/28/2023

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

Identified uses :

<input checked="" type="checkbox"/> Analytical reagent.	
<input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	10000 µl (10 x 100 µl)
XL2-Blue MRF' ultracompetent cells	1000 µl (10 x 100 µl)
SoloPack Gold competent cells	375 µl (15 x 25 µl)
pUC 18 DNA Control Plasmid	30 µl (0.1 ng / µl)
XL10-Gold 2-Mercaptoethanol	50 µl
2-Mercaptoethanol For Ultra Comp Cells	1.22 M 25 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 :	XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol For Ultra Comp Cells	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). 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. 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).
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Classification of the substance or mixture

Section 2. Hazards identification

XL2-Blue Ultracompetent Cells

H320 EYE IRRITATION - Category 2B

XL2-Blue MRF' ultracompetent cells

H320 EYE IRRITATION - Category 2B

SoloPack Gold competent 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

2-Mercaptoethanol For Ultra Comp Cells


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

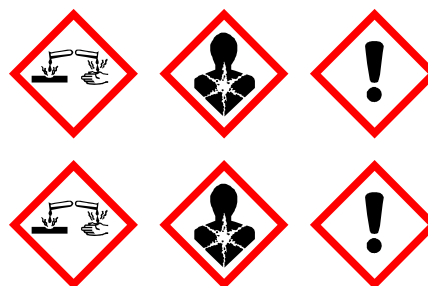
H412 AQUATIC HAZARD (LONG-TERM) - Category 3

 XL2-Blue Ultracompetent Cells	Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 5%
XL2-Blue MRF' ultracompetent cells	Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 5%
SoloPack Gold competent cells	Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 5%

2.2 GHS label elements

Hazard pictograms

: XL10-Gold 2-Mercaptoethanol






2-Mercaptoethanol For Ultra Comp Cells

Signal word

: XL2-Blue Ultracompetent Cells	Warning
XL2-Blue MRF' ultracompetent cells	Warning
SoloPack Gold competent cells	Warning
pUC 18 DNA Control Plasmid	No signal word.
XL10-Gold 2-Mercaptoethanol	Danger
2-Mercaptoethanol For Ultra Comp Cells	Danger

Section 2. Hazards identification

Hazard statements	:  XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	H320 - Causes eye irritation. H320 - Causes eye irritation. H320 - Causes eye irritation. No known significant effects or critical hazards. H317 - May cause an allergic skin reaction. H318 - Causes serious eye damage. H361 - Suspected of damaging fertility or the unborn child. H373 - May cause damage to organs through prolonged or repeated exposure. H412 - Harmful to aquatic life with long lasting effects. 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.
	2-Mercaptoethanol For Ultra Comp Cells	
<u>Precautionary statements</u>		
Prevention	:  XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Not applicable. Not applicable. Not applicable. 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. 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.
	2-Mercaptoethanol For Ultra Comp Cells	
Response	:  XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention. Not applicable. P308 + P313 - IF exposed or concerned: Get

Section 2. Hazards identification

	2-Mercaptoethanol For Ultra Comp Cells	<p>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. 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.</p>
Storage	<ul style="list-style-type: none"> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol For Ultra Comp Cells 	<p>Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.</p>
Disposal	<ul style="list-style-type: none"> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol <p>2-Mercaptoethanol For Ultra Comp Cells</p>	<p>Not applicable. Not applicable. Not applicable. Not applicable. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p>
Supplemental label elements	<ul style="list-style-type: none"> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol For Ultra Comp Cells 	<p>None known. None known. None known. None known. None known. None known.</p>
2.3 Other hazards		
Hazards not otherwise classified	<ul style="list-style-type: none"> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol For Ultra 	<p>None known. None known. None known. None known. None known. None known.</p>

Section 2. Hazards identification

Comp Cells

Section 3. Composition/information on ingredients

Substance/mixture	:	XL2-Blue Ultracompetent Cells	Mixture
		XL2-Blue MRF' ultracompetent cells	Mixture
		SoloPack Gold competent cells	Mixture
		pUC 18 DNA Control Plasmid	Mixture
		XL10-Gold 2-Mercaptoethanol	Mixture
		2-Mercaptoethanol For Ultra Comp Cells	Mixture

Ingredient name	%	CAS number
XL2-Blue Ultracompetent Cells		
Glycerol	≥10 - ≤25	56-81-5
Dimethyl sulfoxide	≤10	67-68-5
Potassium chloride	≤3	7447-40-7
XL2-Blue MRF' ultracompetent cells		
Glycerol	≥10 - ≤25	56-81-5
Dimethyl sulfoxide	≤10	67-68-5
Potassium chloride	≤3	7447-40-7
SoloPack Gold competent 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
2-Mercaptoethanol For Ultra Comp Cells		
2-Mercaptoethanol	<10	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

: XL2-Blue Ultracompetent Cells

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.

XL2-Blue MRF' ultracompetent cells

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.

SoloPack Gold competent cells

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.

pUC 18 DNA Control Plasmid

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

XL10-Gold 2-Mercaptoethanol

Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

2-Mercaptoethanol For Ultra Comp Cells

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.

Inhalation

: XL2-Blue Ultracompetent Cells

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

XL2-Blue MRF' ultracompetent cells

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

SoloPack Gold competent cells

Remove victim to fresh air and keep at rest in a

Section 4. First aid measures

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.

pUC 18 DNA Control Plasmid

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

XL10-Gold 2-Mercaptoethanol

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

2-Mercaptoethanol For Ultra Comp Cells

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.

Skin contact

: XL2-Blue 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.

XL2-Blue MRF' 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.

SoloPack Gold competent 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.

pUC 18 DNA Control Plasmid

Flush contaminated skin with plenty of water.

Section 4. First aid measures

	XL10-Gold 2-Mercaptoethanol	Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	2-Mercaptoethanol For Ultra Comp Cells	Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	:  XL2-Blue Ultracompetent Cells	Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	XL2-Blue MRF' 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.
	SoloPack Gold competent 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.

Section 4. First aid measures

pUC 18 DNA Control Plasmid

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.

XL10-Gold 2-Mercaptoethanol

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

2-Mercaptoethanol For Ultra Comp Cells

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact

: XL2-Blue Ultracompetent Cells
XL2-Blue MRF' ultracompetent cells
SoloPack Gold competent cells
pUC 18 DNA Control Plasmid
XL10-Gold 2-Mercaptoethanol
2-Mercaptoethanol For Ultra Comp Cells

Causes eye irritation.

Causes eye irritation.

Causes eye irritation.

No known significant effects or critical hazards.

Causes serious eye damage.

Causes serious eye damage.

Inhalation

: XL2-Blue Ultracompetent Cells
XL2-Blue MRF' ultracompetent cells
SoloPack Gold competent cells
pUC 18 DNA Control Plasmid
XL10-Gold 2-Mercaptoethanol
2-Mercaptoethanol For Ultra Comp Cells

No known significant effects or critical hazards.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

Section 4. First aid measures

Skin contact	: XL2-Blue Ultracompetent Cells	No known significant effects or critical hazards.
	XL2-Blue MRF' ultracompetent cells	No known significant effects or critical hazards.
	SoloPack Gold competent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	May cause an allergic skin reaction.
	2-Mercaptoethanol For Ultra Comp Cells	May cause an allergic skin reaction.
Ingestion	: XL2-Blue Ultracompetent Cells	No known significant effects or critical hazards.
	XL2-Blue MRF' ultracompetent cells	No known significant effects or critical hazards.
	SoloPack Gold competent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards.
	2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards.
Over-exposure signs/symptoms		
Eye contact	: XL2-Blue Ultracompetent Cells	Adverse symptoms may include the following: irritation watering redness
	XL2-Blue MRF' ultracompetent cells	Adverse symptoms may include the following: irritation watering redness
	SoloPack Gold competent cells	Adverse symptoms may include the following: irritation watering redness
	pUC 18 DNA Control Plasmid	No specific data.
	XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
	2-Mercaptoethanol For Ultra Comp Cells	Adverse symptoms may include the following: pain watering redness
Inhalation	: XL2-Blue Ultracompetent Cells	No specific data.
	XL2-Blue MRF' ultracompetent cells	No specific data.
	SoloPack Gold competent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
	2-Mercaptoethanol For Ultra Comp Cells	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations

Section 4. First aid measures

Skin contact

: XL2-Blue Ultracompetent Cells	No specific data.
XL2-Blue MRF' ultracompetent cells	No specific data.
SoloPack Gold competent cells	No specific data.
pUC 18 DNA Control Plasmid	No specific data.
XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced fetal weight increase in fetal deaths skeletal malformations
2-Mercaptoethanol For Ultra Comp Cells	Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced fetal weight increase in fetal deaths skeletal malformations

Ingestion

: XL2-Blue Ultracompetent Cells	No specific data.
XL2-Blue MRF' ultracompetent cells	No specific data.
SoloPack Gold competent cells	No specific data.
pUC 18 DNA Control Plasmid	No specific data.
XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations
2-Mercaptoethanol For Ultra Comp Cells	Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations

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

Notes to physician

: XL2-Blue Ultracompetent Cells	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
XL2-Blue MRF' ultracompetent cells	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
SoloPack Gold competent cells	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.
XL10-Gold 2-Mercaptoethanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
2-Mercaptoethanol For Ultra Comp Cells	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Section 4. First aid measures

Specific treatments	: XL2-Blue Ultracompetent Cells	No specific treatment.
	XL2-Blue MRF' ultracompetent cells	No specific treatment.
	SoloPack Gold competent cells	No specific treatment.
	pUC 18 DNA Control Plasmid	No specific treatment.
	XL10-Gold 2-Mercaptoethanol	No specific treatment.
Protection of first-aiders	2-Mercaptoethanol For Ultra Comp Cells	No specific treatment.
	: XL2-Blue 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.
	XL2-Blue MRF' 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.
	SoloPack Gold competent 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.
	pUC 18 DNA Control Plasmid	No action shall be taken involving any personal risk or without suitable training.
	XL10-Gold 2-Mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
	2-Mercaptoethanol For Ultra Comp Cells	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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	: XL2-Blue Ultracompetent Cells	Use an extinguishing agent suitable for the surrounding fire.
	XL2-Blue MRF' ultracompetent cells	Use an extinguishing agent suitable for the surrounding fire.
	SoloPack Gold competent cells	Use an extinguishing agent suitable for the surrounding fire.
	pUC 18 DNA Control Plasmid	Use an extinguishing agent suitable for the surrounding fire.
	XL10-Gold 2-Mercaptoethanol	Use an extinguishing agent suitable for the surrounding fire.
	2-Mercaptoethanol For Ultra Comp Cells	Use an extinguishing agent suitable for the surrounding fire.

Section 5. Fire-fighting measures

Unsuitable extinguishing media	: XL2-Blue Ultracompetent Cells	None known.
	XL2-Blue MRF' ultracompetent cells	None known.
	SoloPack Gold competent cells	None known.
	pUC 18 DNA Control Plasmid	None known.
	XL10-Gold 2-Mercaptoethanol	None known.
	2-Mercaptoethanol For Ultra Comp Cells	None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	: XL2-Blue Ultracompetent Cells	In a fire or if heated, a pressure increase will occur and the container may burst.
	XL2-Blue MRF' ultracompetent cells	In a fire or if heated, a pressure increase will occur and the container may burst.
	SoloPack Gold competent cells	In a fire or if heated, a pressure increase will occur and the container may burst.
	pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
	XL10-Gold 2-Mercaptoethanol	In a fire or if heated, a pressure increase will occur and the container may burst. 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.
Hazardous thermal decomposition products	: 2-Mercaptoethanol For Ultra Comp Cells	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.
	: XL2-Blue Ultracompetent Cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
	XL2-Blue MRF' ultracompetent cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
	SoloPack Gold competent cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No specific data. Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides

Section 5. Fire-fighting measures

2-Mercaptoethanol For Ultra
Comp Cells

Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides
halogenated compounds
metal oxide/oxides

5.3 Advice for firefighters

Special protective actions for fire-fighters

: XL2-Blue 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.

XL2-Blue MRF' 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.

SoloPack Gold competent 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.

pUC 18 DNA Control Plasmid

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

XL10-Gold 2-Mercaptoethanol

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

2-Mercaptoethanol For Ultra
Comp Cells

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters

: XL2-Blue 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.

XL2-Blue MRF' 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.

SoloPack Gold competent cells

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

pUC 18 DNA Control Plasmid

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

XL10-Gold 2-Mercaptoethanol

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

2-Mercaptoethanol For Ultra
Comp Cells

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

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: XL2-Blue Ultracompetent Cells

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

XL2-Blue MRF' ultracompetent cells

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

SoloPack Gold competent cells

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

pUC 18 DNA Control Plasmid

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

XL10-Gold 2-Mercaptoethanol

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

2-Mercaptoethanol For Ultra Comp Cells

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

For emergency responders : XL2-Blue Ultracompetent Cells

XL2-Blue MRF' 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". 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

Section 6. Accidental release measures

	<p>SoloPack Gold competent cells</p> <p>pUC 18 DNA Control Plasmid</p> <p>XL10-Gold 2-Mercaptoethanol</p> <p>2-Mercaptoethanol For Ultra Comp Cells</p>	<p>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".</p> <p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p> <p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p> <p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p>
<p>6.2 Environmental precautions</p>	<p>: XL2-Blue Ultracompetent Cells</p> <p>XL2-Blue MRF' ultracompetent cells</p> <p>SoloPack Gold competent cells</p> <p>pUC 18 DNA Control Plasmid</p> <p>XL10-Gold 2-Mercaptoethanol</p> <p>2-Mercaptoethanol For Ultra Comp Cells</p>	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p> <p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p> <p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p> <p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p> <p>Avoid dispersal of spilled material and runoff and 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.</p> <p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.</p>

6.3 Methods and materials for containment and cleaning up

Section 6. Accidental release measures

Methods for cleaning up	: XL2-Blue 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.
	XL2-Blue MRF' 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.
	SoloPack Gold competent 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.
	pUC 18 DNA Control Plasmid	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
	XL10-Gold 2-Mercaptoethanol	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
	2-Mercaptoethanol For Ultra Comp Cells	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

7.1 Precautions for safe handling

Protective measures	: XL2-Blue 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.
	XL2-Blue MRF' 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.
	SoloPack Gold competent 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

Section 7. Handling and storage

	pUC 18 DNA Control Plasmid	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).
	2-Mercaptoethanol For Ultra Comp Cells	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.
Advice on general occupational hygiene	: XL2-Blue Ultracompetent Cells	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.
	XL2-Blue MRF' 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.
	SoloPack Gold competent 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,

Section 7. Handling and storage

pUC 18 DNA Control Plasmid

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.

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.

2-Mercaptoethanol For Ultra Comp Cells

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

7.2 Conditions for safe storage, including any incompatibilities

: XL2-Blue 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.

XL2-Blue MRF' 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.

SoloPack Gold competent 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.

pUC 18 DNA Control Plasmid

Store in accordance with local regulations. Store in

Section 7. Handling and storage

XL10-Gold 2-Mercaptoethanol

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.

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.

2-Mercaptoethanol For Ultra Comp 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. 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.

7.3 Specific end use(s)

Recommendations

: XL2-Blue Ultracompetent Cells
XL2-Blue MRF' ultracompetent cells
SoloPack Gold competent cells
pUC 18 DNA Control Plasmid
XL10-Gold 2-Mercaptoethanol
2-Mercaptoethanol For Ultra Comp Cells

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

: XL2-Blue Ultracompetent Cells
XL2-Blue MRF' ultracompetent cells
SoloPack Gold competent cells
pUC 18 DNA Control Plasmid
XL10-Gold 2-Mercaptoethanol
2-Mercaptoethanol For Ultra Comp Cells

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
XL2-Blue Ultracompetent Cells Glycerol Dimethyl sulfoxide Potassium chloride	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 OARS WEEL (United States, 1/2021). TWA: 250 ppm 8 hours. None.
XL2-Blue MRF' ultracompetent cells Glycerol Dimethyl sulfoxide Potassium chloride	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 OARS WEEL (United States, 1/2021). TWA: 250 ppm 8 hours. None.
SoloPack Gold competent cells Glycerol Dimethyl sulfoxide Potassium chloride	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 OARS WEEL (United States, 1/2021). TWA: 250 ppm 8 hours. None.
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol 2-Mercaptoethanol For Ultra Comp Cells 2-Mercaptoethanol	OARS WEEL (United States, 1/2021). Absorbed through skin. TWA: 0.2 ppm 8 hours. OARS WEEL (United States, 1/2021). Absorbed through skin. TWA: 0.2 ppm 8 hours.

Biological exposure indices

No exposure indices known.

8.2 Exposure controls

Section 8. Exposure controls/personal protection

- Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Individual protection measures**
- Hygiene measures** : Handle as biohazard material (Biosafety level 1). Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics


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

Appearance

- | | | |
|-----------------------|--|---------|
| Physical state | : XL2-Blue Ultracompetent Cells | Liquid. |
| | : XL2-Blue MRF' ultracompetent cells | Liquid. |
| | : SoloPack Gold competent cells | Liquid. |
| | : pUC 18 DNA Control Plasmid | Liquid. |
| | : XL10-Gold 2-Mercaptoethanol | Liquid. |
| | : 2-Mercaptoethanol For Ultra Comp Cells | Liquid. |

Section 9. Physical and chemical properties and safety characteristics

Color	: XL2-Blue Ultracompetent Cells	Not available.
	XL2-Blue MRF' ultracompetent cells	Not available.
	SoloPack Gold competent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
Odor	2-Mercaptoethanol For Ultra Comp Cells	Not available.
	: XL2-Blue Ultracompetent Cells	Not available.
	XL2-Blue MRF' ultracompetent cells	Not available.
	SoloPack Gold competent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
Odor threshold	XL10-Gold 2-Mercaptoethanol	Not available.
	2-Mercaptoethanol For Ultra Comp Cells	Not available.
	: XL2-Blue Ultracompetent Cells	Not available.
	XL2-Blue MRF' ultracompetent cells	Not available.
	SoloPack Gold competent cells	Not available.
pH	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	2-Mercaptoethanol For Ultra Comp Cells	Not available.
	: XL2-Blue Ultracompetent Cells	6.4
	XL2-Blue MRF' ultracompetent cells	6.4
Melting point/freezing point	SoloPack Gold competent cells	6.4
	pUC 18 DNA Control Plasmid	7.5
	XL10-Gold 2-Mercaptoethanol	Not available.
	2-Mercaptoethanol For Ultra Comp Cells	Not available.
	: XL2-Blue Ultracompetent Cells	Not available.
Boiling point, initial boiling point, and boiling range	XL2-Blue MRF' ultracompetent cells	Not available.
	SoloPack Gold competent cells	Not available.
	pUC 18 DNA Control Plasmid	0°C (32°F)
	XL10-Gold 2-Mercaptoethanol	Not available.
	2-Mercaptoethanol For Ultra Comp Cells	Not available.
Flash point	: XL2-Blue Ultracompetent Cells	Not available.
	XL2-Blue MRF' ultracompetent cells	Not available.
	SoloPack Gold competent cells	Not available.
	pUC 18 DNA Control Plasmid	100°C (212°F)
	XL10-Gold 2-Mercaptoethanol	Not available.
	2-Mercaptoethanol For Ultra Comp Cells	Not available.

Flash point	:	Ingredient name	Closed cup			Open cup		
			°C	°F	Method	°C	°F	Method
		 XL2-Blue Ultracompetent Cells						
		Dimethyl sulfoxide	87	188.6	ASTM D 93	87	188.6	
		Glycerol				177	350.6	

Section 9. Physical and chemical properties and safety characteristics

XL2-Blue MRF' ultracompetent cells						
Dimethyl sulfoxide	87	188.6	ASTM D 93	87	188.6	
Glycerol				177	350.6	
SoloPack Gold competent 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	
2-Mercaptoethanol For Ultra Comp Cells						
2-Mercaptoethanol	74	165.2		74	165.2	

Evaporation rate

- : XL2-Blue Ultracompetent Cells Not available.
- : XL2-Blue MRF' ultracompetent cells Not available.
- : SoloPack Gold competent cells Not available.
- : pUC 18 DNA Control Plasmid Not available.
- : XL10-Gold 2-Mercaptoethanol Not available.
- : 2-Mercaptoethanol For Ultra Comp Cells Not available.

Flammability

- : XL2-Blue Ultracompetent Cells Not applicable.
- : XL2-Blue MRF' ultracompetent cells Not applicable.
- : SoloPack Gold competent cells Not applicable.
- : pUC 18 DNA Control Plasmid Not applicable.
- : XL10-Gold 2-Mercaptoethanol Not applicable.
- : 2-Mercaptoethanol For Ultra Comp Cells Not applicable.

Lower and upper explosion limit/flammability limit

- : XL2-Blue Ultracompetent Cells Not available.
- : XL2-Blue MRF' ultracompetent cells Not available.
- : SoloPack Gold competent cells Not available.
- : pUC 18 DNA Control Plasmid Not available.
- : XL10-Gold 2-Mercaptoethanol Not available.
- : 2-Mercaptoethanol For Ultra Comp Cells Not available.

Vapor pressure

:

Section 9. Physical and chemical properties and safety characteristics

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
XL2-Blue Ultracompetent Cells						
water	23.8	3.2		92.258	12.3	
Dimethyl sulfoxide	0.42	0.056	EU A.4			
XL2-Blue MRF' ultracompetent cells						
water	23.8	3.2		92.258	12.3	
Dimethyl sulfoxide	0.42	0.056	EU A.4			
SoloPack Gold competent cells						
water	23.8	3.2		92.258	12.3	
Dimethyl sulfoxide	0.42	0.056	EU A.4			
pUC 18 DNA Control Plasmid						
water	23.8	3.2		92.258	12.3	
XL10-Gold 2-Mercaptoethanol						
water	23.8	3.2		92.258	12.3	
2-Mercaptoethanol	0.98	0.13				
2-Mercaptoethanol For Ultra Comp Cells						
water	23.8	3.2		92.258	12.3	
2-Mercaptoethanol	0.98	0.13				

Relative vapor density

XL2-Blue Ultracompetent Cells	Not available.
XL2-Blue MRF' ultracompetent cells	Not available.
SoloPack Gold competent cells	Not available.
pUC 18 DNA Control Plasmid	Not available.
XL10-Gold 2-Mercaptoethanol	Not available.
2-Mercaptoethanol For Ultra Comp Cells	Not available.

Section 9. Physical and chemical properties and safety characteristics


Relative density	: XL2-Blue Ultracompetent Cells	Not available.
	XL2-Blue MRF' ultracompetent cells	Not available.
	SoloPack Gold competent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold 2-Mercaptoethanol	Not available.
	2-Mercaptoethanol For Ultra Comp Cells	Not available.

Solubility(ies)	: Media	Result
	XL2-Blue Ultracompetent Cells water	Soluble
	XL2-Blue MRF' ultracompetent cells water	Soluble
	SoloPack Gold competent cells water	Soluble
	pUC 18 DNA Control Plasmid water	Soluble
	XL10-Gold 2-Mercaptoethanol water	Soluble
	2-Mercaptoethanol For Ultra Comp Cells water	Soluble

Partition coefficient: n-octanol/water	: XL2-Blue Ultracompetent Cells	Not applicable.
	XL2-Blue MRF' ultracompetent cells	Not applicable.
	SoloPack Gold competent cells	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
	XL10-Gold 2-Mercaptoethanol	Not applicable.
	2-Mercaptoethanol For Ultra Comp Cells	Not applicable.

Auto-ignition temperature	: Ingredient name	°C	°F	Method
	XL2-Blue Ultracompetent Cells			
	Dimethyl sulfoxide	300 to 302	572 to 575.6	
	Glycerol	370	698	
	XL2-Blue MRF' ultracompetent cells			
	Dimethyl sulfoxide	300 to 302	572 to 575.6	
	Glycerol	370	698	
	SoloPack Gold competent cells			
	Dimethyl sulfoxide	300 to 302	572 to 575.6	
	Glycerol	370	698	

Section 9. Physical and chemical properties and safety characteristics

	XL10-Gold 2-Mercaptoethanol			
	2-Mercaptoethanol	295	563	
	2-Mercaptoethanol For Ultra Comp Cells			
	2-Mercaptoethanol	295	563	
Decomposition temperature	: XL2-Blue Ultracompetent Cells	Not available.		
	XL2-Blue MRF' ultracompetent cells	Not available.		
	SoloPack Gold competent cells	Not available.		
	pUC 18 DNA Control Plasmid	Not available.		
	XL10-Gold 2-Mercaptoethanol	Not available.		
	2-Mercaptoethanol For Ultra Comp Cells	Not available.		
Viscosity	: XL2-Blue Ultracompetent Cells	Not available.		
	XL2-Blue MRF' ultracompetent cells	Not available.		
	SoloPack Gold competent cells	Not available.		
	pUC 18 DNA Control Plasmid	Not available.		
	XL10-Gold 2-Mercaptoethanol	Not available.		
	2-Mercaptoethanol For Ultra Comp Cells	Not available.		
Particle characteristics				
Median particle size	:  XL2-Blue Ultracompetent Cells	Not applicable.		
	XL2-Blue MRF' ultracompetent cells	Not applicable.		
	SoloPack Gold competent cells	Not applicable.		
	pUC 18 DNA Control Plasmid	Not applicable.		
	XL10-Gold 2-Mercaptoethanol	Not applicable.		
	2-Mercaptoethanol For Ultra Comp Cells	Not applicable.		

Section 10. Stability and reactivity

10.1 Reactivity	: XL2-Blue Ultracompetent Cells	No specific test data related to reactivity available for this product or its ingredients.
	XL2-Blue MRF' ultracompetent cells	No specific test data related to reactivity available for this product or its ingredients.
	SoloPack Gold competent cells	No specific test data related to reactivity available for this product or its ingredients.
	pUC 18 DNA Control Plasmid	No specific test data related to reactivity available for this product or its ingredients.
	XL10-Gold 2-Mercaptoethanol	No specific test data related to reactivity available for this product or its ingredients.
	2-Mercaptoethanol For Ultra Comp Cells	No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: XL2-Blue Ultracompetent Cells	The product is stable.
	XL2-Blue MRF' ultracompetent cells	The product is stable.
	SoloPack Gold competent cells	The product is stable.
	pUC 18 DNA Control Plasmid	The product is stable.
	XL10-Gold 2-Mercaptoethanol	The product is stable.
	2-Mercaptoethanol For Ultra Comp Cells	The product is stable.

Section 10. Stability and reactivity

10.3 Possibility of hazardous reactions

: XL2-Blue Ultracompetent Cells	Under normal conditions of storage and use, hazardous reactions will not occur.
XL2-Blue MRF' ultracompetent cells	Under normal conditions of storage and use, hazardous reactions will not occur.
SoloPack Gold competent cells	Under normal conditions of storage and use, hazardous reactions will not occur.
pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous reactions will not occur.
XL10-Gold 2-Mercaptoethanol	Under normal conditions of storage and use, hazardous reactions will not occur.
2-Mercaptoethanol For Ultra Comp Cells	Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid

: XL2-Blue Ultracompetent Cells	No specific data.
XL2-Blue MRF' ultracompetent cells	No specific data.
SoloPack Gold competent cells	No specific data.
pUC 18 DNA Control Plasmid	No specific data.
XL10-Gold 2-Mercaptoethanol	No specific data.
2-Mercaptoethanol For Ultra Comp Cells	No specific data.

10.5 Incompatible materials

: XL2-Blue Ultracompetent Cells	May react or be incompatible with oxidizing materials.
XL2-Blue MRF' ultracompetent cells	May react or be incompatible with oxidizing materials.
SoloPack Gold competent cells	May react or be incompatible with oxidizing materials.
pUC 18 DNA Control Plasmid	May react or be incompatible with oxidizing materials.
XL10-Gold 2-Mercaptoethanol	May react or be incompatible with oxidizing materials.
2-Mercaptoethanol For Ultra Comp Cells	May react or be incompatible with oxidizing materials.

10.6 Hazardous decomposition products

: XL2-Blue Ultracompetent Cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
XL2-Blue MRF' ultracompetent cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
SoloPack Gold competent cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
XL10-Gold 2-Mercaptoethanol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
2-Mercaptoethanol For Ultra Comp Cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
XL2-Blue 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	-
XL2-Blue MRF' 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	-
SoloPack Gold competent 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	-
2-Mercaptoethanol For Ultra Comp Cells				
2-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
XL2-Blue 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	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
XL2-Blue MRF' 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	-

Section 11. Toxicological information

Potassium chloride	Skin - Mild irritant Skin - Mild irritant	Rabbit Rabbit	- -	mg 100 mg 24 hours 500 mg	- -
SoloPack Gold competent 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	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
XL10-Gold 2-Mercaptoethanol					
2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 mg	-
2-Mercaptoethanol For Ultra Comp Cells					
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
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Category 3	-	Respiratory tract irritation
2-Mercaptoethanol For Ultra Comp Cells 2-Mercaptoethanol	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)


Section 11. Toxicological information

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

Aspiration hazard

Not available.

Information on the likely routes of exposure

- :  XL2-Blue Ultracompetent Cells
- XL2-Blue MRF' ultracompetent cells
- SoloPack Gold competent cells
- pUC 18 DNA Control Plasmid
- XL10-Gold 2-Mercaptoethanol
- 2-Mercaptoethanol For Ultra Comp Cells

Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
 Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
 Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
 Not available.
 Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
 Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Eye contact

- : XL2-Blue Ultracompetent Cells
- XL2-Blue MRF' ultracompetent cells
- SoloPack Gold competent cells
- pUC 18 DNA Control Plasmid
- XL10-Gold 2-Mercaptoethanol
- 2-Mercaptoethanol For Ultra Comp Cells

Causes eye irritation.
 Causes eye irritation.
 Causes eye irritation.
 No known significant effects or critical hazards.
 Causes serious eye damage.
 Causes serious eye damage.

Inhalation

- : XL2-Blue Ultracompetent Cells
- XL2-Blue MRF' ultracompetent cells
- SoloPack Gold competent cells
- pUC 18 DNA Control Plasmid
- XL10-Gold 2-Mercaptoethanol
- 2-Mercaptoethanol For Ultra Comp Cells

No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.

Skin contact

- : XL2-Blue Ultracompetent Cells
- XL2-Blue MRF' ultracompetent cells
- SoloPack Gold competent cells
- pUC 18 DNA Control Plasmid
- XL10-Gold 2-Mercaptoethanol
- 2-Mercaptoethanol For Ultra Comp Cells

No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 May cause an allergic skin reaction.
 May cause an allergic skin reaction.

Ingestion

- : XL2-Blue Ultracompetent Cells
- XL2-Blue MRF' ultracompetent cells
- SoloPack Gold competent cells
- pUC 18 DNA Control Plasmid
- XL10-Gold 2-Mercaptoethanol
- 2-Mercaptoethanol For Ultra Comp Cells

No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact

: XL2-Blue Ultracompetent Cells

Adverse symptoms may include the following:
irritation
watering
redness

XL2-Blue MRF' ultracompetent cells

Adverse symptoms may include the following:

irritation
watering
redness

SoloPack Gold competent cells

Adverse symptoms may include the following:
irritation
watering
redness

pUC 18 DNA Control Plasmid
XL10-Gold 2-Mercaptoethanol

No specific data.

Adverse symptoms may include the following:
pain
watering
redness

2-Mercaptoethanol For Ultra Comp Cells

Adverse symptoms may include the following:

pain
watering
redness

Inhalation

: XL2-Blue Ultracompetent Cells
XL2-Blue MRF' ultracompetent cells

No specific data.

No specific data.

SoloPack Gold competent cells
pUC 18 DNA Control Plasmid
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

2-Mercaptoethanol For Ultra Comp Cells

Adverse symptoms may include the following:

reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact

: XL2-Blue Ultracompetent Cells
XL2-Blue MRF' ultracompetent cells

No specific data.

No specific data.

SoloPack Gold competent cells
pUC 18 DNA Control Plasmid
XL10-Gold 2-Mercaptoethanol

No specific data.

No specific data.

Adverse symptoms may include the following:
pain or irritation
redness

blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations

2-Mercaptoethanol For Ultra Comp Cells

Adverse symptoms may include the following:

pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations

Section 11. Toxicological information

Ingestion	: XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No specific data. No specific data. No specific data. No specific data. Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations
	: 2-Mercaptoethanol For Ultra Comp Cells	Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations

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	: XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards. No known significant effects or critical hazards.
	: 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards. No known significant effects or critical hazards. May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity	: XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Mutagenicity	: XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Section 11. Toxicological information

Reproductive toxicity	: XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. Suspected of damaging fertility or the unborn child. Suspected of damaging fertility or the unborn child.
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Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
XL2-Blue Ultracompetent Cells					
XL2-Blue 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
XL2-Blue MRF' ultracompetent cells					
XL2-Blue MRF' 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
SoloPack Gold competent cells					
SoloPack Gold competent 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
2-Mercaptoethanol For Ultra Comp Cells					
2-Mercaptoethanol For Ultra Comp Cells	2417.3	2105.3	N/A	31.6	N/A
2-Mercaptoethanol	244	200	N/A	3	N/A

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
XL2-Blue Ultracompetent Cells			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 100 µl/L Marine water	Algae - Ulva lactuca	72 hours
	Chronic NOEC 100 µl/L Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling,	21 days

Section 12. Ecological information

Potassium chloride	Acute EC50 9.24 g/L Fresh water	Weanling) 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
XL2-Blue MRF' ultracompetent cells			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 100 µl/L Marine water	Algae - Ulva lactuca	72 hours
	Chronic NOEC 100 µl/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
SoloPack Gold competent cells			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 100 µl/L Marine water	Algae - Ulva lactuca	72 hours
	Chronic NOEC 100 µl/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
XL2-Blue 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

XL2-Blue MRF' 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	-	-
SoloPack Gold competent 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	-	-
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	-
2-Mercaptoethanol For Ultra Comp Cells 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
XL2-Blue Ultracompetent Cells Dimethyl sulfoxide Potassium chloride	- -	- -	Not readily Readily
XL2-Blue MRF' ultracompetent cells Dimethyl sulfoxide Potassium chloride	- -	- -	Not readily Readily
SoloPack Gold competent cells Dimethyl sulfoxide Potassium chloride	- -	- -	Not readily Readily

Section 12. Ecological information

XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	-	-	Not readily
2-Mercaptoethanol For Ultra Comp Cells 2-Mercaptoethanol	-	-	Not readily

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
XL2-Blue Ultracompetent Cells			
Glycerol	-1.76	-	low
Dimethyl sulfoxide	-1.35	3.16	low
Potassium chloride	-0.46	-	low
XL2-Blue MRF' ultracompetent cells			
Glycerol	-1.76	-	low
Dimethyl sulfoxide	-1.35	3.16	low
Potassium chloride	-0.46	-	low
SoloPack Gold competent cells			
Glycerol	-1.76	-	low
Dimethyl sulfoxide	-1.35	3.16	low
Potassium chloride	-0.46	-	low
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	-0.056	-	low
2-Mercaptoethanol For Ultra Comp Cells 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

Section 13. Disposal considerations

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) 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

:  **XL2-Blue Ultracompetent Cells**
XL2-Blue MRF⁺ ultracompetent cells
SoloPack Gold competent cells
pUC 18 DNA Control Plasmid
XL10-Gold 2-Mercaptoethanol

EYE IRRITATION - Category 2B
EYE IRRITATION - Category 2B
EYE IRRITATION - Category 2B
Not applicable.
SERIOUS EYE DAMAGE - Category 1
SKIN SENSITIZATION - Category 1
TOXIC TO REPRODUCTION - Category 2
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

Section 15. Regulatory information

2-Mercaptoethanol For Ultra Comp Cells

SERIOUS EYE DAMAGE - Category 1
 SKIN SENSITIZATION - Category 1
 TOXIC TO REPRODUCTION - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

Composition/information on ingredients

Name	%	Classification
XL2-Blue 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
XL2-Blue MRF' 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
SoloPack Gold competent 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
2-Mercaptoethanol For Ultra Comp Cells		
2-Mercaptoethanol	<10	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

State regulations

Massachusetts

: The following components are listed: GLYCERINE MIST; SUCROSE DUST; 2-MERCAPTOETHANOL

New York

: None of the components are listed.

New Jersey

: The following components are listed: GLYCERIN; DIMETHYL SULFOXIDE; THIOGLYCOL

Section 15. Regulatory information

Pennsylvania : The following components are listed: 1,2,3-PROPANETRIOL; .ALPHA.-D-GLUCOPYRANOSIDE, .BETA.-D-FRUCTOFURANOSYL; ETHANOL, 2-MERCAPTO-

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

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
<input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells EYE IRRITATION - Category 2B	Calculation method
XL2-Blue MRF' ultracompetent cells EYE IRRITATION - Category 2B	Calculation method
SoloPack Gold competent 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	Calculation method Calculation method Calculation method

Section 16. Other information

SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method
AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method
2-Mercaptoethanol For Ultra Comp Cells	
SERIOUS EYE DAMAGE - Category 1	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
TOXIC TO REPRODUCTION - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method
AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method

History

Date of issue : 03/28/2023

Date of previous issue : 12/22/2020

Version : 7

Key to abbreviations :

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

📌 Indicates information that has changed from previously issued version.

Notice to reader

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