

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
 1.22 M 2-mercaptoethanol 210210-43

Validation date : 10/14/2016

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

Material uses : Analytical reagent.
 XL2-Blue Ultracompetent Cells 1000 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
 1.22 M 2-mercaptoethanol 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 This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 Cells
 XL2-Blue MRF' ultracompetent cells This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 ultracompetent cells
 SoloPack Gold competent cells This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 cells
 pUC 18 DNA Control Plasmid While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
 XL10-Gold This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 2-Mercaptoethanol This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 1.22 M 2-mercaptoethanol This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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

1.22 M 2-mercaptoethanol

H318 SERIOUS EYE DAMAGE - Category 1

H317 SKIN SENSITIZATION - Category 1

2.2 GHS label elements

Hazard pictograms



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
1.22 M 2-mercaptoethanol Danger

Hazard statements

: **XL2-Blue Ultracompetent Cells** H320 - Causes eye irritation.
XL2-Blue MRF' ultracompetent cells H320 - Causes eye irritation.
SoloPack Gold competent cells H320 - Causes eye irritation.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
XL10-Gold 2-Mercaptoethanol GHS SYMBOL - **Corrosion - Exclamation mark** -
H318 - Causes serious eye damage.
H317 - May cause an allergic skin reaction.
1.22 M 2-mercaptoethanol GHS SYMBOL - **Corrosion - Exclamation mark** -
H318 - Causes serious eye damage.
H317 - May cause an allergic skin reaction.

Precautionary statements

Prevention

: **XL2-Blue Ultracompetent Cells** P264 - Wash hands thoroughly after handling.
XL2-Blue MRF' ultracompetent cells P264 - Wash hands thoroughly after handling.
SoloPack Gold competent cells P264 - Wash hands thoroughly after handling.
pUC 18 DNA Control Plasmid Not applicable.
XL10-Gold 2-Mercaptoethanol P280 - Wear protective gloves. Wear eye or face protection.
P261 - Avoid breathing vapor.
P272 (OSHA) - Contaminated work clothing must not be allowed out of the workplace.
1.22 M 2-mercaptoethanol P280 - Wear protective gloves. Wear eye or face protection.
P261 - Avoid breathing vapor.

Section 2. Hazards identification

Response	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	P272 (OSHA) - Contaminated work clothing must not be allowed out of the workplace. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical attention.
	XL2-Blue MRF' ultracompetent cells	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical attention.
	SoloPack Gold competent cells	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical attention.
	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Not applicable. P302 + P352 + P363 - IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. P333 + P313 - If skin irritation or rash occurs: Get medical attention.
	1.22 M 2-mercaptoethanol	P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician. P302 + P352 + P363 - IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. P333 + P313 - If skin irritation or rash occurs: Get medical attention. P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
Storage	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	Not applicable.
	XL2-Blue MRF' ultracompetent cells	Not applicable.
	SoloPack Gold competent cells	Not applicable.
	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Not applicable.
	1.22 M 2-mercaptoethanol	Not applicable.
Disposal	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	Not applicable.
	XL2-Blue MRF' ultracompetent cells	Not applicable.
	SoloPack Gold competent cells	Not applicable.
	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	1.22 M 2-mercaptoethanol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Supplemental label elements

: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	international regulations.
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.
1.22 M 2-mercaptoethanol	None known.

2.3 Other hazards

Hazards not otherwise classified

: <input checked="" type="checkbox"/> 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.
1.22 M 2-mercaptoethanol	None known.

Section 3. Composition/information on ingredients

Substance/mixture

: <input checked="" type="checkbox"/> 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
1.22 M 2-mercaptoethanol	Mixture

Ingredient name	%	CAS number
<input checked="" type="checkbox"/> 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		
Sodium chloride	≥10 - ≤25	7647-14-5
2-Mercaptoethanol	≤5	60-24-2
1.22 M 2-mercaptoethanol		
2-Mercaptoethanol	<10	60-24-2
Sodium chloride	≤8.8	7647-14-5

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

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

4.1 Description of necessary first aid measures

Eye contact

: 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.

1.22 M 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.

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.

Section 4. First aid measures

	SoloPack Gold competent 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.
	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.
	1.22 M 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.
<p>Skin contact</p>	<p>:  XL2-Blue Ultracompetent Cells</p>	<p>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.</p>
	XL2-Blue MRF' ultracompetent cells	<p>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.</p>
	SoloPack Gold competent cells	<p>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</p>

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	pUC 18 DNA Control Plasmid	before reuse. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	1.22 M 2-mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
<p>Ingestion</p>	<p>:  XL2-Blue Ultracompetent Cells</p>	<p>Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.</p>
	XL2-Blue MRF' ultracompetent cells	<p>Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.</p>
	SoloPack Gold competent cells	<p>Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has</p>

Section 4. First aid measures

pUC 18 DNA Control Plasmid	<p>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.</p> <p>Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.</p>
XL10-Gold 2-Mercaptoethanol	<p>Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.</p>
1.22 M 2-mercaptoethanol	<p>Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.</p>

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Section 4. First aid measures

Eye contact	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	Causes eye irritation.
	XL2-Blue MRF' ultracompetent cells	Causes eye irritation.
	SoloPack Gold competent cells	Causes eye irritation.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Inhalation	: <input checked="" type="checkbox"/> 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.
Skin contact	: <input checked="" type="checkbox"/> 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.
Ingestion	: <input checked="" type="checkbox"/> 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.
	1.22 M 2-mercaptoethanol	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: <input checked="" type="checkbox"/> 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
	1.22 M 2-mercaptoethanol	Adverse symptoms may include the following: pain watering redness

Section 4. First aid measures

Inhalation	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
Skin contact	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No specific data. No specific data. No specific data. No specific data. Adverse symptoms may include the following: pain or irritation redness blistering may occur Adverse symptoms may include the following: pain or irritation redness blistering may occur
Ingestion	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No specific data. No specific data. No specific data. No specific data. Adverse symptoms may include the following: stomach pains Adverse symptoms may include the following: stomach pains

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

Notes to physician	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment.

Section 4. First aid measures

Protection of first-aiders	: <input checked="" type="checkbox"/> 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.
	1.22 M 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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	: <input checked="" type="checkbox"/> 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.
	1.22 M 2-mercaptoethanol	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: <input checked="" type="checkbox"/> 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.
	1.22 M 2-mercaptoethanol	None known.

5.2 Special hazards arising from the substance or mixture

Section 5. Fire-fighting measures

Specific hazards arising from the chemical

- : XL2-Blue Ultracompetent Cells
- XL2-Blue MRF' ultracompetent cells
- SoloPack Gold competent cells
- pUC 18 DNA Control Plasmid
- XL10-Gold 2-Mercaptoethanol
- 1.22 M 2-mercaptoethanol

In a fire or if heated, a pressure increase will occur and the container may burst.
 In a fire or if heated, a pressure increase will occur and the container may burst.
 In a fire or if heated, a pressure increase will occur and the container may burst.
 In a fire or if heated, a pressure increase will occur and the container may burst.
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Hazardous thermal decomposition products

- : XL2-Blue Ultracompetent Cells
- XL2-Blue MRF' ultracompetent cells
- SoloPack Gold competent cells
- pUC 18 DNA Control Plasmid
- XL10-Gold 2-Mercaptoethanol
- 1.22 M 2-mercaptoethanol

Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 sulfur oxides
 halogenated compounds
 metal oxide/oxides
 Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 sulfur oxides
 halogenated compounds
 metal oxide/oxides
 Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 sulfur oxides
 halogenated compounds
 metal oxide/oxides
 No specific data.
 Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 sulfur oxides
 halogenated compounds
 metal oxide/oxides
 Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 sulfur oxides
 halogenated compounds
 metal oxide/oxides

5.3 Advice for firefighters

Special protective actions for fire-fighters

- : XL2-Blue Ultracompetent Cells
- 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.
 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.

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	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.
	1.22 M 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.
Special protective equipment for fire-fighters	: <input checked="" type="checkbox"/> 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.
	1.22 M 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.

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: <input checked="" type="checkbox"/> 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

Section 6. Accidental release measures

SoloPack Gold competent cells	<p>ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.</p> <p>No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.</p>
pUC 18 DNA Control Plasmid	<p>No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.</p>
XL10-Gold 2-Mercaptoethanol	<p>No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.</p>
1.22 M 2-mercaptoethanol	<p>No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.</p>
For emergency responders : <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	<p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p> <p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p> <p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p> <p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p> <p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p> <p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p> <p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".</p>
XL2-Blue MRF' ultracompetent cells	
SoloPack Gold competent cells	
pUC 18 DNA Control Plasmid	
XL10-Gold 2-Mercaptoethanol	
1.22 M 2-mercaptoethanol	

Section 6. Accidental release measures

the information in "For non-emergency personnel".

6.2 Environmental precautions

: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
XL2-Blue MRF' ultracompetent cells	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
SoloPack Gold competent cells	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
pUC 18 DNA Control Plasmid	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
XL10-Gold 2-Mercaptoethanol	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
1.22 M 2-mercaptoethanol	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up

: <input checked="" type="checkbox"/> 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.

Section 6. Accidental release measures

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.
1.22 M 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.

Section 7. Handling and storage

7.1 Precautions for safe handling

Protective measures : <input checked="" type="checkbox"/> L2-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 alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
pUC 18 DNA Control Plasmid	Put on appropriate personal protective equipment (see Section 8).
XL10-Gold 2-Mercaptoethanol	Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
1.22 M 2-mercaptoethanol	Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not

Section 7. Handling and storage

Advice on general occupational hygiene

: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	<p>get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.</p> <p>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.</p>
XL2-Blue MRF' ultracompetent cells	<p>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.</p>
SoloPack Gold competent cells	<p>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.</p>
pUC 18 DNA Control Plasmid	<p>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.</p>
XL10-Gold 2-Mercaptoethanol	<p>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.</p>
1.22 M 2-mercaptoethanol	<p>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.</p>

Section 7. Handling and storage

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.

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.

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.

pUC 18 DNA Control Plasmid

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

XL10-Gold 2-Mercaptoethanol

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from 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.

1.22 M 2-mercaptoethanol

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

Section 7. Handling and storage

containment to avoid environmental contamination.

7.3 Specific end use(s)

Recommendations	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
Industrial sector specific solutions	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
<input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells Glycerol Dimethyl sulfoxide Potassium chloride	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL (United States, 2/2013). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>AIHA WEEL (United States, 10/2011). TWA: 250 ppm 8 hours. None.</p>
XL2-Blue MRF' ultracompetent cells Glycerol Dimethyl sulfoxide Potassium chloride	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL (United States, 2/2013). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>AIHA WEEL (United States, 10/2011). TWA: 250 ppm 8 hours. None.</p>
SoloPack Gold competent cells Glycerol	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL (United States, 2/2013). TWA: 5 mg/m³ 8 hours. Form: Respirable</p>

Section 8. Exposure controls/personal protection

Dimethyl sulfoxide	fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust AIHA WEEL (United States, 10/2011). TWA: 250 ppm 8 hours. None.
Potassium chloride	
XL10-Gold 2-Mercaptoethanol	
Sodium chloride	None.
2-Mercaptoethanol	AIHA WEEL (United States, 10/2011). Absorbed through skin. TWA: 0.2 ppm 8 hours.
1.22 M 2-mercaptoethanol	
2-Mercaptoethanol	AIHA WEEL (United States, 10/2011). Absorbed through skin. TWA: 0.2 ppm 8 hours.
Sodium chloride	None.

8.2 Exposure controls

Appropriate engineering controls

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

Environmental exposure controls

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

Individual protection measures

Hygiene measures

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

Eye/face protection

- ☑ Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection

- ☑ Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection

- ☑ Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

- ☑ Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: <input checked="" type="checkbox"/> 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.
Color	: <input checked="" type="checkbox"/> 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	: <input checked="" type="checkbox"/> 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 threshold	: <input checked="" type="checkbox"/> 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.
pH	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	6.4
	XL2-Blue MRF' ultracompetent cells	6.4
	SoloPack Gold competent cells	6.4
	pUC 18 DNA Control Plasmid	7.5
	XL10-Gold 2-Mercaptoethanol	Not available.
Melting point	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells	Not available.
	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.
	1.22 M 2-mercaptoethanol	Not available.

Section 9. Physical and chemical properties

Boiling point	: <input checked="" type="checkbox"/> 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.
Flash point	: <input checked="" type="checkbox"/> 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.
Evaporation rate	: <input checked="" type="checkbox"/> 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.
Flammability (solid, gas)	: <input checked="" type="checkbox"/> 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.
Lower and upper explosive (flammable) limits	: <input checked="" type="checkbox"/> 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.
Vapor pressure	: <input checked="" type="checkbox"/> 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.
Vapor density	: <input checked="" type="checkbox"/> 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.
Relative density	: <input checked="" type="checkbox"/> 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.
	: <input checked="" type="checkbox"/> XL10-Gold 2-Mercaptoethanol	Not available.

Section 9. Physical and chemical properties

Solubility	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	Soluble in the following materials: cold water and hot water. Soluble in the following materials: cold water and hot water. Soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	Not available. Not available. Not available. Not available. Not available. Not available.
Auto-ignition temperature	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	Not available. Not available. Not available. Not available. Not available. Not available.
Decomposition temperature	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	Not available. Not available. Not available. Not available. Not available. Not available.
Viscosity	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	Not available. Not available. Not available. Not available. Not available. Not available.

Section 10. Stability and reactivity

10.1 Reactivity	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients.
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Section 10. Stability and reactivity

10.2 Chemical stability	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol 	<ul style="list-style-type: none"> The product is stable. The product is stable. The product is stable. The product is stable. The product is stable. The product is stable.
10.3 Possibility of hazardous reactions	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol 	<ul style="list-style-type: none"> Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol 	<ul style="list-style-type: none"> No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
10.5 Incompatible materials	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol 	<ul style="list-style-type: none"> May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials.
10.6 Hazardous decomposition products	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<ul style="list-style-type: none"> Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 10. Stability and reactivity

1.22 M 2-mercaptoethanol

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				
Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
2-Mercaptoethanol	LD50 Dermal	Rabbit	200 mg/kg	-
	LD50 Oral	Rat	244 mg/kg	-
1.22 M 2-mercaptoethanol				
2-Mercaptoethanol	LD50 Dermal	Rabbit	200 mg/kg	-
	LD50 Oral	Rat	244 mg/kg	-
Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
XL2-Blue Ultracompetent Cells					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 milligrams	-

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Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
XL2-Blue MRF' ultracompetent cells					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 milligrams	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
SoloPack Gold competent cells					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 milligrams	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
XL10-Gold 2-Mercaptoethanol					
Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 milligrams	-
1.22 M 2-mercaptoethanol					
2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 milligrams	-
Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

Sensitization

Not available.

Mutagenicity

Not available.

Section 11. Toxicological information

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
<input checked="" type="checkbox"/> XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Category 3	Not applicable.	Respiratory tract irritation
1.22 M 2-mercaptoethanol 2-Mercaptoethanol	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure

- XL2-Blue Ultracompetent Cells
Routes of entry anticipated: Oral, Dermal, Inhalation.
- XL2-Blue MRF' ultracompetent cells
Routes of entry anticipated: Oral, Dermal, Inhalation.
- SoloPack Gold competent cells
Routes of entry anticipated: Oral, Dermal, Inhalation.
- pUC 18 DNA Control Plasmid
Not available.
- XL10-Gold 2-Mercaptoethanol
Routes of entry anticipated: Oral, Dermal, Inhalation.
- 1.22 M 2-mercaptoethanol
Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact

- XL2-Blue Ultracompetent Cells
Causes eye irritation.
- XL2-Blue MRF' ultracompetent cells
Causes eye irritation.
- SoloPack Gold competent cells
Causes eye irritation.
- pUC 18 DNA Control Plasmid
No known significant effects or critical hazards.
- XL10-Gold 2-Mercaptoethanol
Causes serious eye damage.
- 1.22 M 2-mercaptoethanol
Causes serious eye damage.

Inhalation

- 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.
- 1.22 M 2-mercaptoethanol
No known significant effects or critical hazards.

Section 11. Toxicological information

Skin contact	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	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	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	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

Eye contact	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	Adverse symptoms may include the following: irritation watering redness Adverse symptoms may include the following: irritation watering redness Adverse symptoms may include the following: irritation watering redness No specific data. Adverse symptoms may include the following: pain watering redness Adverse symptoms may include the following: pain watering redness
Inhalation	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No specific data. No specific data. No specific data. No specific data. No specific data.
Skin contact	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. Adverse symptoms may include the following: pain or irritation redness blistering may occur Adverse symptoms may include the following: pain or irritation redness blistering may occur

Section 11. Toxicological information

Ingestion	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No specific data. No specific data. No specific data. No specific data. Adverse symptoms may include the following: stomach pains Adverse symptoms may include the following: stomach pains
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Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects	: Not available.
Potential delayed effects	: Not available.

Long term exposure

Potential immediate effects	: Not available.
Potential delayed effects	: Not available.

Potential chronic health effects

General	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	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	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Teratogenicity	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

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Developmental effects	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	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.
Fertility effects	: <input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells XL2-Blue MRF' ultracompetent cells SoloPack Gold competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 1.22 M 2-mercaptoethanol	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.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
<input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells Oral	136842.1 mg/kg
XL2-Blue MRF' ultracompetent cells Oral	136842.1 mg/kg
SoloPack Gold competent cells Oral	136842.1 mg/kg
XL10-Gold 2-Mercaptoethanol Oral	4615.5 mg/kg
Dermal	4545.5 mg/kg
Inhalation (vapors)	45.45 mg/l
1.22 M 2-mercaptoethanol Oral	2417.3 mg/kg
Dermal	2105.3 mg/kg
Inhalation (vapors)	21.05 mg/l

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<input checked="" type="checkbox"/> XL2-Blue Ultracompetent Cells Glycerol Dimethyl sulfoxide	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
Potassium chloride	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 100 ul/L Marine water	Algae - Ulva lactuca	72 hours
	Acute EC50 1337000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 9.24 g/L Fresh water	Algae - Desmodesmus subspicatus	72 hours
	Acute EC50 141460 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 12.77 mg/l Fresh water	Crustaceans - Pseudosida	48 hours

Section 12. Ecological information

XL2-Blue MRF' ultracompetent cells Glycerol Dimethyl sulfoxide Potassium chloride	Acute LC50 880000 µg/l Fresh water	ramosa - Neonate Fish - Pimephales promelas	96 hours
	Acute LC50 54000 mg/l Fresh water Acute LC50 25000 ppm Fresh water	Fish - Oncorhynchus mykiss Daphnia - Daphnia magna - Neonate	96 hours 48 hours
	Acute LC50 34000000 µg/l Fresh water Chronic NOEC 100 ul/L Marine water Acute EC50 1337000 µg/l Fresh water Acute EC50 9.24 g/L Fresh water	Fish - Pimephales promelas Algae - Ulva lactuca Algae - Navicula seminulum Algae - Desmodismus subspicatus	96 hours 72 hours 96 hours 72 hours
	Acute EC50 141460 µg/l Fresh water Acute LC50 12.77 mg/l Fresh water	Daphnia - Daphnia magna Crustaceans - Pseudosida ramosa - Neonate	48 hours 48 hours
	Acute LC50 880000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
SoloPack Gold competent cells Glycerol Dimethyl sulfoxide Potassium chloride	Acute LC50 54000 mg/l Fresh water Acute LC50 25000 ppm Fresh water	Fish - Oncorhynchus mykiss Daphnia - Daphnia magna - Neonate	96 hours 48 hours
	Acute LC50 34000000 µg/l Fresh water Chronic NOEC 100 ul/L Marine water Acute EC50 1337000 µg/l Fresh water Acute EC50 9.24 g/L Fresh water	Fish - Pimephales promelas Algae - Ulva lactuca Algae - Navicula seminulum Algae - Desmodismus subspicatus	96 hours 72 hours 96 hours 72 hours
	Acute EC50 141460 µg/l Fresh water Acute LC50 12.77 mg/l Fresh water	Daphnia - Daphnia magna Crustaceans - Pseudosida ramosa - Neonate	48 hours 48 hours
	Acute LC50 880000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	XL10-Gold 2-Mercaptoethanol Sodium chloride 1.22 M 2-mercaptoethanol Sodium chloride	Acute EC50 2430000 µg/l Fresh water Acute EC50 519.6 mg/l Fresh water Acute IC50 6.87 g/L Fresh water Acute LC50 1661 mg/l Fresh water Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water	Algae - Navicula seminulum Crustaceans - Cypris subglobosa Aquatic plants - Lemna minor Daphnia - Daphnia magna Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)
Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water		Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 21 days 8 weeks
Acute EC50 2430000 µg/l Fresh water Acute EC50 519.6 mg/l Fresh water Acute IC50 6.87 g/L Fresh water Acute LC50 1661 mg/l Fresh water Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water		Algae - Navicula seminulum Crustaceans - Cypris subglobosa Aquatic plants - Lemna minor Daphnia - Daphnia magna Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	96 hours 48 hours 96 hours 48 hours 96 hours 3 weeks
Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water		Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 21 days 8 weeks

Section 12. Ecological information

12.2 Persistence and degradability

Not available.

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
1.22 M 2-mercaptoethanol			
2-Mercaptoethanol	-0.056	-	low

12.4 Mobility in soil

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

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

Section 13. Disposal considerations

13.1 Waste treatment methods

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

Section 13. Disposal considerations

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

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

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

Section 14. Transport information

Regulatory information

DOT / IMDG / IATA : Not regulated.

Section 15. Regulatory information

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

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.
Clean Water Act (CWA) 311: Edetic acid

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

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
XL2-Blue Ultracompetent Cells						
Glycerol	≥10 - ≤25	No.	No.	No.	Yes.	No.
Dimethyl sulfoxide	≤10	Yes.	No.	No.	Yes.	No.
Potassium chloride	≤3	No.	No.	No.	Yes.	No.
XL2-Blue MRF' ultracompetent cells						
Glycerol	≥10 - ≤25	No.	No.	No.	Yes.	No.

Section 15. Regulatory information

Dimethyl sulfoxide	≤10	Yes.	No.	No.	Yes.	No.
Potassium chloride	≤3	No.	No.	No.	Yes.	No.
SoloPack Gold competent cells						
Glycerol	≥10 - ≤25	No.	No.	No.	Yes.	No.
Dimethyl sulfoxide	≤10	Yes.	No.	No.	Yes.	No.
Potassium chloride	≤3	No.	No.	No.	Yes.	No.
XL10-Gold 2-Mercaptoethanol						
Sodium chloride	≥10 - ≤25	No.	No.	No.	Yes.	No.
2-Mercaptoethanol	≤5	Yes.	No.	No.	Yes.	No.
1.22 M 2-mercaptoethanol						
2-Mercaptoethanol	<10	Yes.	No.	No.	Yes.	No.
Sodium chloride	≤8.8	No.	No.	No.	Yes.	No.

State regulations

Massachusetts

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

New York

: None of the components are listed.

New Jersey

: The following components are listed: DIMETHYL SULFOXIDE; METHANE, SULFINYLBIIS-; GLYCERIN; 1,2,3-PROPANETRIOL; THIOGLYCOL; 2-MERCAPTOETHANOL

Pennsylvania

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

California Prop. 65

No products were found.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia

: All components are listed or exempted.

Canada inventory

: All components are listed or exempted.

China

: Not determined.

Europe

: All components are listed or exempted.

Japan

: **Japan inventory (ENCS):** Not determined.
Japan inventory (ISHL): Not determined.

Malaysia

: Not determined.

New Zealand

: Not determined.

Philippines

: Not determined.

Section 15. Regulatory information

Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Turkey	: Not determined.

Section 16. Other information

History

Date of issue	: 10/14/2016
Date of previous issue	: 01/31/2016.
Version	: 4.1

✔ Indicates information that has changed from previously issued version.

Notice to reader

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