

# SAFETY DATA SHEET

ArcticExpress (DE3)RIL Competent Cells, Part Number 230193

## Section 1. Identification

### 1.1 Product identifier

**Product name** : ArcticExpress (DE3)RIL Competent Cells, Part Number 230193

**Part no. (chemical kit)** : 230193

<b>Part no.</b>	: pUC 18 DNA Control Plasmid	200231-42
	XL10-Gold 2-Mercaptoethanol	200314-43
	ArcticExpress (DE3)RIL competent cells	230193-41

**Validation date** : 6/3/2023

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

**Identified uses** : Analytical reagent.

: pUC 18 DNA Control Plasmid	10 µl (0.1 ng / µl)
XL10-Gold 2-Mercaptoethanol	50 µl
ArcticExpress (DE3)RIL competent cells	1000 µl (10 x 100 µl)

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

**Supplier/Manufacturer** : Agilent Technologies, Inc.  
5301 Stevens Creek Blvd  
Santa Clara, CA 95051, USA  
800-227-9770

### 1.4 Emergency telephone number

**In case of emergency** : CHEMTREC®: 1-800-424-9300

## Section 2. Hazards identification

### 2.1 Classification of the substance or mixture

<b>OSHA/HCS status</b>	: 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 2-Mercaptoethanol	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	ArcticExpress (DE3)RIL competent cells	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

### Classification of the substance or mixture

#### **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

#### **ArcticExpress (DE3)RIL competent cells**

H320 EYE IRRITATION - Category 2B

: ArcticExpress (DE3)RIL competent cells	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 5%
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## Section 2. Hazards identification

### 2.2 GHS label elements

<b>Hazard pictograms</b>	: XL10-Gold 2-Mercaptoethanol	
<b>Signal word</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No signal word. Danger Warning
<b>Hazard statements</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards. H317 - May cause an allergic skin reaction. H318 - Causes serious eye damage. H361 - Suspected of damaging fertility or the unborn child. H373 - May cause damage to organs through prolonged or repeated exposure. H412 - Harmful to aquatic life with long lasting effects. H320 - Causes eye irritation.
<b>Precautionary statements</b>	ArcticExpress (DE3)RIL competent cells	
<b>Prevention</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Not applicable. P201 - Obtain special instructions before use. P280 - Wear protective gloves, protective clothing and eye or face protection. P273 - Avoid release to the environment. P260 - Do not breathe vapor. Not applicable.
<b>Response</b>	ArcticExpress (DE3)RIL competent cells	Not applicable. P308 + P313 - IF exposed or concerned: Get medical advice or attention. P363 - Wash contaminated clothing before reuse. P302 + P352 - IF ON SKIN: Wash with plenty of water. P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention. P305 + P351 + P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor. 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.
<b>Storage</b>	ArcticExpress (DE3)RIL competent cells	Not applicable. Not applicable. Not applicable.
<b>Disposal</b>	:	

## Section 2. Hazards identification

<b>Supplemental label elements</b>	pUC 18 DNA Control Plasmid	Not applicable.
	XL10-Gold 2-Mercaptoethanol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	ArcticExpress (DE3)RIL competent cells	Not applicable.
	: pUC 18 DNA Control Plasmid	None known.
	XL10-Gold 2-Mercaptoethanol	None known.
	ArcticExpress (DE3)RIL competent cells	None known.
<b>2.3 Other hazards</b>		
<b>Hazards not otherwise classified</b>	: pUC 18 DNA Control Plasmid	None known.
	XL10-Gold 2-Mercaptoethanol	None known.
	ArcticExpress (DE3)RIL competent cells	None known.

## Section 3. Composition/information on ingredients

<b>Substance/mixture</b>	: pUC 18 DNA Control Plasmid	Mixture
	XL10-Gold 2-Mercaptoethanol	Mixture
	ArcticExpress (DE3)RIL competent cells	Mixture

Ingredient name	%	CAS number
<b>XL10-Gold 2-Mercaptoethanol</b>		
2-Mercaptoethanol	≤5	60-24-2
<b>ArcticExpress (DE3)RIL competent cells</b>		
Glycerol	≥10 - ≤25	56-81-5
Dimethyl sulfoxide	≤10	67-68-5
Potassium chloride	≤3	7447-40-7

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

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

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

## Section 4. First aid measures

### 4.1 Description of necessary first aid measures

<b>Eye contact</b>	: 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.
	ArcticExpress (DE3)RIL competent cells	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids.

## Section 4. First aid measures

<b>Inhalation</b>	: pUC 18 DNA Control Plasmid	Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
	XL10-Gold 2-Mercaptoethanol	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	ArcticExpress (DE3)RIL competent 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.
<b>Skin contact</b>	: pUC 18 DNA Control Plasmid	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	XL10-Gold 2-Mercaptoethanol	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	ArcticExpress (DE3)RIL competent 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.
<b>Ingestion</b>	: pUC 18 DNA Control Plasmid	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	XL10-Gold 2-Mercaptoethanol	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.
		Get medical attention immediately. Call a poison center or physician. Wash out mouth with water.

## Section 4. First aid measures

ArcticExpress (DE3)RIL  
competent cells

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

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

#### Potential acute health effects

<b>Eye contact</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. Causes serious eye damage. Causes eye irritation.
<b>Inhalation</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Skin contact</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. May cause an allergic skin reaction. No known significant effects or critical hazards.
<b>Ingestion</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

#### Over-exposure signs/symptoms

<b>Eye contact</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	No specific data. Adverse symptoms may include the following: pain watering redness Adverse symptoms may include the following:  irritation watering redness
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## Section 4. First aid measures

<b>Inhalation</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	No specific data. Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations No specific data.
<b>Skin contact</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	No specific data. Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced fetal weight increase in fetal deaths skeletal malformations No specific data.
<b>Ingestion</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	No specific data. Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations No specific data.

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

<b>Notes to physician</b>	: pUC 18 DNA Control Plasmid  XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	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.
<b>Specific treatments</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No specific treatment. No specific treatment. No specific treatment.
<b>Protection of first-aiders</b>	: pUC 18 DNA Control Plasmid  XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	No action shall be taken involving any personal risk or without suitable training.  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.  No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### 5.1 Extinguishing media

<b>Suitable extinguishing media</b>	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media</b>	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	None known. None known. None known.

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

<b>Specific hazards arising from the chemical</b>	:	pUC 18 DNA Control Plasmid XL10-Gold 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. 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.
<b>Hazardous thermal decomposition products</b>	:	ArcticExpress (DE3)RIL competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	In a fire or if heated, a pressure increase will occur and the container may burst. 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
		ArcticExpress (DE3)RIL competent cells	

### 5.3 Advice for firefighters

<b>Special protective actions for fire-fighters</b>	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL 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. 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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## Section 5. Fire-fighting measures

<b>Special protective equipment for fire-fighters</b>	: 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.
	: ArcticExpress (DE3)RIL 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.

## Section 6. Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

<b>For non-emergency personnel</b>	: 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.
	: ArcticExpress (DE3)RIL 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.
<b>For emergency responders</b>	: pUC 18 DNA Control Plasmid	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	: XL10-Gold 2-Mercaptoethanol	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	: ArcticExpress (DE3)RIL competent 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".

## Section 6. Accidental release measures

<b>6.2 Environmental precautions</b>	: pUC 18 DNA Control Plasmid	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	XL10-Gold 2-Mercaptoethanol	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
	ArcticExpress (DE3)RIL 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).

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

<b>Methods for cleaning up</b>	: 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.
	ArcticExpress (DE3)RIL 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.

## Section 7. Handling and storage

### 7.1 Precautions for safe handling

<b>Protective measures</b>	: pUC 18 DNA Control Plasmid	Put on appropriate personal protective equipment (see Section 8).
	XL10-Gold 2-Mercaptoethanol	Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and

## Section 7. Handling and storage

<b>Advice on general occupational hygiene</b>	ArcticExpress (DE3)RIL competent cells : pUC 18 DNA Control Plasmid  XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	can be hazardous. Do not reuse container. 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.  Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. 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.
<b>7.2 Conditions for safe storage, including any incompatibilities</b>	: pUC 18 DNA Control Plasmid  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. 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. Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed

## Section 7. Handling and storage

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)

<b>Recommendations</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
<b>Industrial sector specific solutions</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	Not available. Not available. Not available.

## Section 8. Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
<b>XL10-Gold 2-Mercaptoethanol</b> 2-Mercaptoethanol	<b>OARS WEEL (United States, 4/2022).</b> Absorbed through skin. TWA: 0.2 ppm 8 hours.
<b>ArcticExpress (DE3)RIL competent cells</b> Glycerol	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>OSHA PEL (United States, 5/2018).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>CAL OSHA PEL (United States, 5/2018).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: respirable fraction TWA: 10 mg/m <sup>3</sup> 8 hours. Form: total dust <b>OARS WEEL (United States, 4/2022).</b> TWA: 250 ppm 8 hours. None.
Dimethyl sulfoxide	
Potassium chloride	

#### Biological exposure indices

No exposure indices known.

### 8.2 Exposure controls

<b>Appropriate engineering controls</b>	: 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.
<b>Environmental exposure controls</b>	: 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.

## Section 8. Exposure controls/personal protection

### Individual protection measures

<b>Hygiene measures</b>	: 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.
<b>Eye/face protection</b>	: 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.
<b>Skin protection</b>	
<b>Hand protection</b>	: 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.
<b>Body protection</b>	: 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.
<b>Other skin protection</b>	: 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.
<b>Respiratory protection</b>	: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

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

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

### Appearance

<b>Physical state</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	Liquid. Liquid. Liquid.
<b>Color</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	Not available. Not available. Not available.
<b>Odor</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	Not available. Not available. Not available.
<b>Odor threshold</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	Not available. Not available. Not available.
<b>pH</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	7.5 Not available. 6.4

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

<b>Melting point/freezing point</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	0°C (32°F) Not available. Not available.																																																														
<b>Boiling point, initial boiling point, and boiling range</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	100°C (212°F) Not available. Not available.																																																														
<b>Flash point</b>	: <table border="1"> <thead> <tr> <th rowspan="2">Ingredient name</th> <th colspan="3">Closed cup</th> <th colspan="3">Open cup</th> </tr> <tr> <th>°C</th> <th>°F</th> <th>Method</th> <th>°C</th> <th>°F</th> <th>Method</th> </tr> </thead> <tbody> <tr> <td><b>XL10-Gold 2-Mercaptoethanol</b></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>2-Mercaptoethanol</td><td>74</td><td>165.2</td><td></td><td>74</td><td>165.2</td><td></td></tr> <tr> <td><b>ArcticExpress (DE3)RIL competent cells</b></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>Dimethyl sulfoxide</td><td>87</td><td>188.6</td><td>ASTM D 93</td><td>87</td><td>188.6</td><td></td></tr> <tr> <td>Glycerol</td><td></td><td></td><td></td><td>177</td><td>350.6</td><td></td></tr> </tbody> </table>	Ingredient name	Closed cup			Open cup			°C	°F	Method	°C	°F	Method	<b>XL10-Gold 2-Mercaptoethanol</b>							2-Mercaptoethanol	74	165.2		74	165.2		<b>ArcticExpress (DE3)RIL competent cells</b>							Dimethyl sulfoxide	87	188.6	ASTM D 93	87	188.6		Glycerol				177	350.6																
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<b>Evaporation rate</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	Not available. Not available. Not available.																																																														
<b>Flammability</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	Not applicable. Not applicable. Not applicable.																																																														
<b>Lower and upper explosion limit/flammability limit</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	Not available. Not available. Not available.																																																														
<b>Vapor pressure</b>	: <table border="1"> <thead> <tr> <th rowspan="2">Ingredient name</th> <th colspan="3">Vapor Pressure at 20°C</th> <th colspan="3">Vapor pressure at 50°C</th> </tr> <tr> <th>mm Hg</th> <th>kPa</th> <th>Method</th> <th>mm Hg</th> <th>kPa</th> <th>Method</th> </tr> </thead> <tbody> <tr> <td><b>pUC 18 DNA Control Plasmid</b></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>water</td><td>17.5</td><td>2.3</td><td></td><td>92.258</td><td>12.3</td><td></td></tr> <tr> <td><b>XL10-Gold 2-Mercaptoethanol</b></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>water</td><td>17.5</td><td>2.3</td><td></td><td>92.258</td><td>12.3</td><td></td></tr> <tr> <td>2-Mercaptoethanol</td><td>0.98</td><td>0.13</td><td></td><td></td><td></td><td></td></tr> <tr> <td><b>ArcticExpress (DE3)RIL competent cells</b></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>water</td><td>17.5</td><td>2.3</td><td></td><td>92.258</td><td>12.3</td><td></td></tr> </tbody> </table>	Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C			mm Hg	kPa	Method	mm Hg	kPa	Method	<b>pUC 18 DNA Control Plasmid</b>							water	17.5	2.3		92.258	12.3		<b>XL10-Gold 2-Mercaptoethanol</b>							water	17.5	2.3		92.258	12.3		2-Mercaptoethanol	0.98	0.13					<b>ArcticExpress (DE3)RIL competent cells</b>							water	17.5	2.3		92.258	12.3		
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## Section 9. Physical and chemical properties and safety characteristics

	Dimethyl sulfoxide	0.42	0.056	EU A.4																											
<b>Relative vapor density</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells			Not available. Not available. Not available.																											
<b>Relative density</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells			Not available. Not available. Not available.																											
<b>Solubility(ies)</b>	: <table border="1"> <thead> <tr> <th>Media</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>pUC 18 DNA Control Plasmid</td> <td></td> </tr> <tr> <td>water</td> <td>Soluble</td> </tr> <tr> <td>XL10-Gold 2-Mercaptoethanol</td> <td></td> </tr> <tr> <td>water</td> <td>Soluble</td> </tr> <tr> <td>ArcticExpress (DE3)RIL competent cells</td> <td></td> </tr> <tr> <td>water</td> <td>Soluble</td> </tr> </tbody> </table>	Media	Result	pUC 18 DNA Control Plasmid		water	Soluble	XL10-Gold 2-Mercaptoethanol		water	Soluble	ArcticExpress (DE3)RIL competent cells		water	Soluble																
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<b>Partition coefficient: n-octanol/water</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells			Not applicable. Not applicable. Not applicable.																											
<b>Auto-ignition temperature</b>	: <table border="1"> <thead> <tr> <th>Ingredient name</th> <th>°C</th> <th>°F</th> <th>Method</th> </tr> </thead> <tbody> <tr> <td>XL10-Gold 2-Mercaptoethanol</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2-Mercaptoethanol</td> <td>295</td> <td>563</td> <td></td> </tr> <tr> <td>ArcticExpress (DE3)RIL competent cells</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Dimethyl sulfoxide</td> <td>300 to 302</td> <td>572 to 575.6</td> <td></td> </tr> <tr> <td>Glycerol</td> <td>370</td> <td>698</td> <td></td> </tr> </tbody> </table>	Ingredient name	°C	°F	Method	XL10-Gold 2-Mercaptoethanol				2-Mercaptoethanol	295	563		ArcticExpress (DE3)RIL competent cells				Dimethyl sulfoxide	300 to 302	572 to 575.6		Glycerol	370	698							
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Glycerol	370	698																													
<b>Decomposition temperature</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells			Not available. Not available. Not available.																											
<b>Viscosity</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells			Not available. Not available. Not available.																											
<b>Particle characteristics</b>																															
<b>Median particle size</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells			Not applicable. Not applicable. Not applicable.																											

## Section 10. Stability and reactivity

<b>10.1 Reactivity</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	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.
<b>10.2 Chemical stability</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	The product is stable. The product is stable. The product is stable.
<b>10.3 Possibility of hazardous reactions</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	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.
<b>10.4 Conditions to avoid</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No specific data. No specific data. No specific data.
<b>10.5 Incompatible materials</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials.
<b>10.6 Hazardous decomposition products</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	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 11. Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<b>XL10-Gold 2-Mercaptoethanol</b> 2-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-
<b>ArcticExpress (DE3)RIL competent cells</b>				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-

## Section 11. Toxicological information

### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
XL10-Gold					
2-Mercaptoethanol					
2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 mg	-
ArcticExpress (DE3)RIL 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	-

### 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

### Specific target organ toxicity (repeated exposure)

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

### Aspiration hazard

Not available.

### Information on the likely routes of exposure

: pUC 18 DNA Control Plasmid  
XL10-Gold 2-Mercaptoethanol  
Not available.  
Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.  
ArcticExpress (DE3)RIL competent cells  
Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

### Potential acute health effects

## Section 11. Toxicological information

<b>Eye contact</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. Causes serious eye damage. Causes eye irritation.
<b>Inhalation</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Skin contact</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. May cause an allergic skin reaction. No known significant effects or critical hazards.
<b>Ingestion</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

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

<b>Eye contact</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	No specific data. Adverse symptoms may include the following: pain watering redness  Adverse symptoms may include the following: irritation watering redness
<b>Inhalation</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	No specific data. Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations No specific data.
<b>Skin contact</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	No specific data. Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced fetal weight increase in fetal deaths skeletal malformations No specific data.
<b>Ingestion</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol  ArcticExpress (DE3)RIL competent cells	No specific data. Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations No specific data.

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

#### Short term exposure

## Section 11. Toxicological information

<b>Potential immediate effects</b>	: Not available.	
<b>Potential delayed effects</b>	: Not available.	
<b>Long term exposure</b>		
<b>Potential immediate effects</b>	: Not available.	
<b>Potential delayed effects</b>	: Not available.	
<b>Potential chronic health effects</b>		
<b>General</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	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.
	ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Mutagenicity</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Reproductive toxicity</b>	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RIL competent cells	No known significant effects or critical hazards. Suspected of damaging fertility or the unborn child. No known significant effects or critical hazards.

### 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)
<b>XL10-Gold 2-Mercaptoethanol</b>					
XL10-Gold 2-Mercaptoethanol	4615.5	4545.5	N/A	60.7	N/A
2-Mercaptoethanol	244	200	N/A	3	N/A
<b>ArcticExpress (DE3)RIL competent cells</b>					
ArcticExpress (DE3)RIL 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

## Section 12. Ecological information

### 12.1 Toxicity

## Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
<b>ArcticExpress (DE3)RIL competent cells</b>			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - <i>Oncorhynchus mykiss</i>	96 hours
Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - <i>Pimephales promelas</i>	96 hours
	Chronic NOEC 100 µl/L Marine water	Algae - <i>Ulva lactuca</i>	72 hours
	Chronic NOEC 100 µl/L Fresh water	Daphnia - <i>Daphnia magna</i> - Juvenile (Fledgling, Hatchling, Weanling)	21 days
Potassium chloride	Acute EC50 9.24 g/L Fresh water	Algae - <i>Desmodesmus subspicatus</i>	72 hours
	Acute EC50 1337000 µg/l Fresh water	Algae - <i>Navicula seminulum</i>	96 hours
	Acute LC50 9.68 mg/l Fresh water	Crustaceans - <i>Pseudosida ramosa</i> - Neonate	48 hours
	Acute LC50 93000 µg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 509.65 mg/l Fresh water	Fish - <i>Danio rerio</i>	96 hours

### 12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
<b>XL10-Gold</b> <b>2-Mercaptoethanol</b> 2-Mercaptoethanol	OECD 310 Ready Biodegradability - CO <sub>2</sub> in Sealed Vessels (Headspace Test)	69 % - Not readily - 60 days	20 mg/l	-
<b>ArcticExpress (DE3)RIL competent cells</b>				
Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
Dimethyl sulfoxide	OECD 301D Ready Biodegradability - Closed Bottle Test	31 % - Not readily - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
<b>XL10-Gold</b> <b>2-Mercaptoethanol</b> 2-Mercaptoethanol	-	-	Not readily
<b>ArcticExpress (DE3)RIL competent cells</b>			
Dimethyl sulfoxide	-	-	Not readily
Potassium chloride	-	-	Readily

### 12.3 Bioaccumulative potential

## Section 12. Ecological information

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
XL10-Gold			
2-Mercaptoethanol			
2-Mercaptoethanol	-0.056	-	low
ArcticExpress (DE3)RIL competent cells			
Glycerol	-1.76	-	low
Dimethyl sulfoxide	-1.35	3.16	low
Potassium chloride	-0.46	-	low

### 12.4 Mobility in soil

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

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

## Section 13. Disposal considerations

### 13.1 Waste treatment methods

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

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

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

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

## Section 14. Transport information

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

**IATA**

**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** : Listed

**(b) Hazardous Air Pollutants (HAPs)**

**Clean Air Act Section 602** : Not listed  
**Class I Substances**

**Clean Air Act Section 602** : Not listed  
**Class II Substances**

**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**

: **p**UC 18 DNA Control Plasmid  
**XL10-Gold 2-Mercaptoethanol**  
Not applicable.  
SERIOUS EYE DAMAGE - Category 1  
SKIN SENSITIZATION - Category 1  
TOXIC TO REPRODUCTION - Category 2  
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2  
EYE IRRITATION - Category 2B

ArcticExpress (DE3)RIL competent cells

#### Composition/information on ingredients

Name	%	Classification
<b>XL10-Gold 2-Mercaptoethanol</b> 2-Mercaptoethanol	≤5	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 3 ACUTE TOXICITY (dermal) - Category 2 ACUTE TOXICITY (inhalation) - Category 3 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1A TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
<b>ArcticExpress (DE3)RIL competent cells</b>		
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

### 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
<b>XL10-Gold 2-Mercaptoethanol</b> SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method Calculation method Calculation method Calculation method Calculation method
<b>ArcticExpress (DE3)RIL competent cells</b> EYE IRRITATION - Category 2B	Calculation method

### History

**Date of issue** : 06/03/2023

**Date of previous issue** : 12/03/2020

## Section 16. Other information

<b>Version</b>	: 8
<b>Key to abbreviations</b>	<ul style="list-style-type: none"><li>: ATE = Acute Toxicity Estimate</li><li>BCF = Bioconcentration Factor</li><li>GHS = Globally Harmonized System of Classification and Labelling of Chemicals</li><li>IATA = International Air Transport Association</li><li>IBC = Intermediate Bulk Container</li><li>IMDG = International Maritime Dangerous Goods</li><li>LogPow = logarithm of the octanol/water partition coefficient</li><li>MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)</li><li>N/A = Not available</li><li>UN = United Nations</li></ul>

 Indicates information that has changed from previously issued version.

### Notice to reader

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