

SAFETY DATA SHEET

ArcticExpress (DE3)RP Competent Cells, Product Name 230194

Section 1. Identification

Product identifier : ArcticExpress (DE3)RP Competent Cells, Product Name 230194
Part no. (chemical kit) : 230194
Part no. : pUC 18 DNA Control Plasmid 200231-42
 XL10-Gold 2-Mercaptoethanol 200314-43
 ArcticExpress (DE3)RP competent cells 230194-41

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

Material uses : Analytical reagent.
 pUC 18 DNA Control Plasmid 10 µl (0.1 ng/µl)
 XL10-Gold 2-Mercaptoethanol 50 µl
 ArcticExpress (DE3)RP competent cells 1000 µl (10 x 100 µl)

Supplier/Manufacturer : Agilent Technologies Australia Pty Ltd
 679 Springvale Road
 Mulgrave
 Victoria 3170, Australia
 1800 802 402

Emergency telephone number (with hours of operation) : CHEMTREC®: +(61)-290372994

Section 2. Hazard(s) identification

Classification of the substance or mixture

XL10-Gold

2-Mercaptoethanol

H318 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
 H317 SKIN SENSITISATION - Category 1
 H412 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3

<input checked="" type="checkbox"/> XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30% Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10% Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30%
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GHS label elements

Hazard pictograms

: XL10-Gold
 2-Mercaptoethanol



Signal word

: pUC 18 DNA Control Plasmid No signal word.
 XL10-Gold DANGER
 2-Mercaptoethanol
 ArcticExpress (DE3)RP No signal word.
 competent cells

Section 2. Hazard(s) identification

Hazard statements	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards. H318 - Causes serious eye damage. H317 - May cause an allergic skin reaction. H412 - Harmful to aquatic life with long lasting effects.
	ArcticExpress (DE3)RP competent cells	No known significant effects or critical hazards.
Precautionary statements		
Prevention	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Not applicable. P280 - Wear protective gloves. Wear eye or face protection. P273 - Avoid release to the environment. P261 - Avoid breathing vapour. P272 - Contaminated work clothing should not be allowed out of the workplace.
	ArcticExpress (DE3)RP competent cells	Not applicable.
Response	: 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. 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.
	ArcticExpress (DE3)RP competent cells	Not applicable.
Storage	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Not applicable. Not applicable. Not applicable.
Disposal	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Not applicable. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	ArcticExpress (DE3)RP competent cells	Not applicable.
Supplemental label elements		
Additional warning phrases	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Not applicable. Not applicable. Not applicable.
Other hazards which do not result in classification	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	None known. None known. None known.

Section 3. Composition and ingredient information

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

CAS number/other identifiers

Ingredient name	% (w/w)	CAS number
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	≤5	60-24-2
ArcticExpress (DE3)RP competent cells Glycerol	≥10 - ≤30	56-81-5
Dimethyl sulfoxide	≤10	67-68-5
Sucrose	≤10	57-50-1

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

Description of necessary first aid measures

Eye contact : 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 Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP competent cells Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : 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 Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP competent cells Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Section 4. First aid measures

Skin contact	: pUC 18 DNA Control Plasmid	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.
	ArcticExpress (DE3)RP competent cells	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: pUC 18 DNA Control Plasmid	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.
	XL10-Gold 2-Mercaptoethanol	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.
	ArcticExpress (DE3)RP competent cells	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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	Causes serious eye damage.
	ArcticExpress (DE3)RP competent cells	No known significant effects or critical hazards.
Inhalation	: pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
	XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards.
	ArcticExpress (DE3)RP competent cells	No known significant effects or critical hazards.

Section 4. First aid measures

- Skin contact** : pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 XL10-Gold May cause an allergic skin reaction.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP No known significant effects or critical hazards.
 competent cells
- Ingestion** : pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 XL10-Gold No known significant effects or critical hazards.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP No known significant effects or critical hazards.
 competent cells

Over-exposure signs/symptoms

- Eye contact** : pUC 18 DNA Control Plasmid No specific data.
 XL10-Gold Adverse symptoms may include the following:
 2-Mercaptoethanol
 pain
 watering
 redness
 ArcticExpress (DE3)RP No specific data.
 competent cells
- Inhalation** : pUC 18 DNA Control Plasmid No specific data.
 XL10-Gold No specific data.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP No specific data.
 competent cells
- Skin contact** : pUC 18 DNA Control Plasmid No specific data.
 XL10-Gold Adverse symptoms may include the following:
 2-Mercaptoethanol
 pain or irritation
 redness
 blistering may occur
 ArcticExpress (DE3)RP No specific data.
 competent cells
- Ingestion** : pUC 18 DNA Control Plasmid No specific data.
 XL10-Gold Adverse symptoms may include the following:
 2-Mercaptoethanol
 stomach pains
 ArcticExpress (DE3)RP No specific data.
 competent cells

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

- Notes to physician** : pUC 18 DNA Control Plasmid Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
 XL10-Gold Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
 competent cells
- Specific treatments** : pUC 18 DNA Control Plasmid No specific treatment.
 XL10-Gold No specific treatment.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP No specific treatment.
 competent cells

Section 4. First aid measures

Protection of first-aiders	: 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.
	ArcticExpress (DE3)RP competent cells	No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media	: pUC 18 DNA Control Plasmid	Use an extinguishing agent suitable for the surrounding fire.
	XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media	: pUC 18 DNA Control Plasmid	None known.
	XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	None known. None known.

Specific hazards arising from the chemical

: pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
XL10-Gold 2-Mercaptoethanol	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
ArcticExpress (DE3)RP competent cells	In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products

: pUC 18 DNA Control Plasmid	No specific data.
XL10-Gold 2-Mercaptoethanol	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
ArcticExpress (DE3)RP competent cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides

Section 5. Firefighting measures

Special protective actions for fire-fighters	: 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.
	ArcticExpress (DE3)RP 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.
Special protective equipment for fire-fighters	: 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)RP 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

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: 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 spilt 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 spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	ArcticExpress (DE3)RP 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 spilt material. Put on appropriate personal protective equipment.
For emergency responders	: pUC 18 DNA Control Plasmid	If specialised 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 specialised 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)RP competent cells	If specialised 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

Environmental precautions	: pUC 18 DNA Control Plasmid	Avoid dispersal of spilt 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 spilt 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)RP competent cells	Avoid dispersal of spilt 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).

Methods and material for containment and cleaning up

Methods for cleaning up	: 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)RP 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

Precautions for safe handling

Protective measures	: 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 vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	ArcticExpress (DE3)RP competent cells	Put on appropriate personal protective equipment (see Section 8).

Section 7. Handling and storage

Advice on general occupational hygiene

: pUC 18 DNA Control Plasmid	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
XL10-Gold 2-Mercaptoethanol	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
ArcticExpress (DE3)RP competent cells	Potentially biohazardous material. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

: 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
XL10-Gold 2-Mercaptoethanol	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
ArcticExpress (DE3)RP 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls and personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
ArcticExpress (DE3)RP competent cells Glycerol Dimethyl sulfoxide Sucrose	Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours. DFG MAC-values list (Germany, 7/2017). Absorbed through skin. PEAK: 320 mg/m ³ , 4 times per shift, 15 minutes. TWA: 160 mg/m ³ 8 hours. PEAK: 100 ppm, 4 times per shift, 15 minutes. TWA: 50 ppm 8 hours. Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

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

Section 9. Physical and chemical properties

Appearance

Physical state	: pUC 18 DNA Control Plasmid	Liquid.
	XL10-Gold	Liquid.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	Liquid.
	competent cells	
Colour	: pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	Not available.
	competent cells	
Odour	: pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	Not available.
	competent cells	
Odour threshold	: pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	Not available.
	competent cells	
pH	: pUC 18 DNA Control Plasmid	7.5
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	6.4
	competent cells	
Melting point	: pUC 18 DNA Control Plasmid	0°C (32°F)
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	Not available.
	competent cells	
Boiling point	: pUC 18 DNA Control Plasmid	100°C (212°F)
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	Not available.
	competent cells	
Flash point	: pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	Not available.
	competent cells	
Evaporation rate	: pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	Not available.
	competent cells	
Flammability (solid, gas)	: pUC 18 DNA Control Plasmid	Not applicable.
	XL10-Gold	Not applicable.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	Not applicable.
	competent cells	
Lower and upper explosive (flammable) limits	: pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	
	ArcticExpress (DE3)RP	Not available.
	competent cells	

Section 9. Physical and chemical properties

Vapour pressure	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Not available. Not available. Not available.
Vapour density	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Not available. Not available. Not available.
Relative density	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Not available. Not available. Not available.
Solubility	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Easily 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.
Partition coefficient: n-octanol/water	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Not available. Not available. Not available.
Auto-ignition temperature	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Not available. Not available. Not available.
Decomposition temperature	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Not available. Not available. Not available.
Viscosity	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	Not available. Not available. Not available.

Section 10. Stability and reactivity

Reactivity	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP 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.
Chemical stability	:	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	The product is stable. The product is stable. The product is stable.

Section 10. Stability and reactivity

Possibility of hazardous reactions	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP 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.
Conditions to avoid	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	No specific data. No specific data. No specific data.
Incompatible materials	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.
Hazardous decomposition products	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP 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

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	LD50 Dermal	Rabbit	167.1 mg/kg	-
	LD50 Oral	Rat	244 mg/kg	-
ArcticExpress (DE3)RP competent cells Glycerol Dimethyl sulfoxide Sucrose	LD50 Oral	Rat	12600 mg/kg	-
	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
	LD50 Oral	Rat	29700 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 milligrams	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
ArcticExpress (DE3)RP competent cells Glycerol	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

Section 11. Toxicological information

	Eyes - Mild irritant	Rabbit	-	milligrams 100	-
	Skin - Mild irritant	Rabbit	-	milligrams 24 hours 500	-
	Skin - Mild irritant	Rabbit	-	milligrams 100	-
				milligrams	

Sensitisation

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	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure : pUC 18 DNA Control Plasmid Not available.
 XL10-Gold Routes of entry anticipated: Oral, Dermal, Inhalation.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP Routes of entry anticipated: Oral, Dermal, Inhalation.
 competent cells

Potential acute health effects

Eye contact : pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 XL10-Gold Causes serious eye damage.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP No known significant effects or critical hazards.
 competent cells

Inhalation : pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 XL10-Gold No known significant effects or critical hazards.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP No known significant effects or critical hazards.
 competent cells

Skin contact : pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 XL10-Gold May cause an allergic skin reaction.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP No known significant effects or critical hazards.
 competent cells

Ingestion : pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 XL10-Gold No known significant effects or critical hazards.
 2-Mercaptoethanol
 ArcticExpress (DE3)RP No known significant effects or critical hazards.
 competent cells

Section 11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: pUC 18 DNA Control Plasmid	No specific data.
	XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
	ArcticExpress (DE3)RP competent cells	No specific data.
Inhalation	: pUC 18 DNA Control Plasmid	No specific data.
	XL10-Gold 2-Mercaptoethanol	No specific data.
	ArcticExpress (DE3)RP competent cells	No specific data.
Skin contact	: pUC 18 DNA Control Plasmid	No specific data.
	XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur
	ArcticExpress (DE3)RP competent cells	No specific data.
Ingestion	: pUC 18 DNA Control Plasmid	No specific data.
	XL10-Gold 2-Mercaptoethanol	Adverse symptoms may include the following: stomach pains
	ArcticExpress (DE3)RP competent cells	No specific data.

Delayed and immediate effects as well as 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	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	No known significant effects or critical hazards. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. No known significant effects or critical hazards.
Carcinogenicity	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Mutagenicity	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Section 11. Toxicological information

Teratogenicity	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Developmental effects	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Fertility effects	: pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol ArcticExpress (DE3)RP competent cells	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
XL10-Gold 2-Mercaptoethanol Oral Dermal Inhalation (vapours)	5545.5 mg/kg 3797.7 mg/kg 40.5 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
ArcticExpress (DE3)RP competent cells Glycerol Dimethyl sulfoxide	Acute LC50 54000 mg/l Fresh water Acute EC50 18299 µg/l Marine water Acute LC50 37.437 mg/l Marine water Acute LC50 25000 ppm Fresh water Acute LC50 34000000 µg/l Fresh water Chronic NOEC 3323 µg/l Marine water	Fish - Oncorhynchus mykiss Algae - Nitzschia pungens Crustaceans - Artemia sp. Daphnia - Daphnia magna - Neonate Fish - Pimephales promelas Algae - Nitzschia pungens	96 hours 96 hours 48 hours 48 hours 96 hours 96 hours

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	OECD 310 Ready Biodegradability - CO2 in Sealed Vessels (Headspace Test)	69 % - Inherent - 60 days	20 mg/l	-
ArcticExpress (DE3)RP competent cells Glycerol	301D Ready Biodegradability - Closed Bottle	93 % - 30 days	-	-

Section 12. Ecological information

	Test			
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Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
XL10-Gold 2-Mercaptoethanol	-0.056	-	low
2-Mercaptoethanol			
ArcticExpress (DE3)RP competent cells			
Glycerol	-1.76	-	low
Dimethyl sulfoxide	-1.35	3.16	low
Sucrose	-3.7	-	low

Mobility in soil

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

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

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimised 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

ADG / IMDG / IATA : Not regulated as Dangerous Goods according to the ADG Code .

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 Annex II of Marpol and the IBC Code : Not available.

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons

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Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Section 15. Regulatory information

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	: All components are listed or exempted.
China	: Not determined.
Europe	: All components are listed or exempted.
Japan	: <input checked="" type="checkbox"/> Japan inventory (ENCS) : Not determined. Japan inventory (ISHL) : All components are listed or exempted.
Malaysia	: Not determined.
New Zealand	: Not determined.
Philippines	: Not determined.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: <input checked="" type="checkbox"/> Not determined.
Turkey	: Not determined.
United States	: All components are listed or exempted.
Viet Nam	: <input checked="" type="checkbox"/> Not determined.

Section 16. Any other relevant information

History

Date of issue/Date of revision : 18/11/2018

Date of previous issue : 14/10/2016

Version : 6

Key to abbreviations

: ADG = Australian Dangerous Goods
 ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 NOHSC = National Occupational Health and Safety Commission
 SUSMP = Standard Uniform Schedule of Medicine and Poisons
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
XL10-Gold 2-Mercaptoethanol Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	Calculation method Calculation method Calculation method

References : Not available.

Section 16. Any other relevant information

✔ Indicates information that has changed from previously issued version.

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