

SAFETY DATA SHEET

XL2-Blue MRF Ultracompetent Cells, Part Number 200151

Section 1. Identification

Product identifier : XL2-Blue MRF Ultracompetent Cells, Part Number 200151
Part no. (chemical kit) : 200151
Part no. : XL2-Blue MRF' ultracompetent cells 200151-41
 pUC 18 DNA Control Plasmid 200231-42
 2-Mercaptoethanol For Ultra Comp Cells 210210-43

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

Material uses : Analytical reagent.
 XL2-Blue MRF' ultracompetent cells 1000 µl (10 x 100 µl)
 pUC 18 DNA Control Plasmid 10 µl (0.1 ng/µl)
 2-Mercaptoethanol For Ultra Comp Cells 25 µl (1.22 M 25 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

2-Mercaptoethanol For Ultra Comp Cells

H312 ACUTE TOXICITY (dermal) - Category 4
 H318 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
 H317 SKIN SENSITISATION - Category 1
 H412 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3

XL2-Blue MRF' ultracompetent cells 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%
 2-Mercaptoethanol For Ultra Comp Cells Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 1 - 10%

GHS label elements

Hazard pictograms

2-Mercaptoethanol For Ultra Comp Cells



Signal word

XL2-Blue MRF' ultracompetent cells No signal word.
 pUC 18 DNA Control Plasmid No signal word.
 2-Mercaptoethanol For Ultra Comp Cells DANGER

Section 2. Hazard(s) identification

Hazard statements	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards. No known significant effects or critical hazards. H312 - Harmful in contact with skin. H318 - Causes serious eye damage. H317 - May cause an allergic skin reaction. H412 - Harmful to aquatic life with long lasting effects.
 Precautionary statements		
Prevention	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not applicable. Not applicable. P280 - Wear protective gloves. Wear eye or face protection. Wear protective clothing. P273 - Avoid release to the environment. P261 - Avoid breathing vapour. P272 - Contaminated work clothing should not be allowed out of the workplace.
Response	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not applicable. Not applicable. P302 + P352 + P312 + P363 - IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. Wash contaminated clothing before reuse. P333 + P313 - If skin irritation or rash occurs: Get medical attention. P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
Storage	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not applicable. Not applicable. Not applicable.
Disposal	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not applicable. Not applicable. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
 Supplemental label elements		
Additional warning phrases	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not applicable. Not applicable. Not applicable.
Other hazards which do not result in classification	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	None known. None known. None known.

Section 3. Composition and ingredient information

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

CAS number/other identifiers

Ingredient name	% (w/w)	CAS number
<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells		
Glycerol	≥10 - ≤30	56-81-5
Dimethyl sulfoxide	≤10	67-68-5
Sucrose	≤10	57-50-1
2-Mercaptoethanol For Ultra Comp Cells		
2-Mercaptoethanol	<10	60-24-2

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 : XL2-Blue MRF' ultracompetent cells
Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

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.

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

Inhalation : XL2-Blue MRF' ultracompetent cells
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

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.

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

Section 4. First aid measures

Skin contact	:	XL2-Blue MRF' ultracompetent cells	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		pUC 18 DNA Control Plasmid	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		2-Mercaptoethanol For Ultra Comp Cells	Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	:	XL2-Blue MRF' ultracompetent 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.
		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.
		2-Mercaptoethanol For Ultra Comp Cells	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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	:	XL2-Blue MRF' ultracompetent cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		2-Mercaptoethanol For Ultra Comp Cells	Causes serious eye damage.
Inhalation	:	XL2-Blue MRF' ultracompetent cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards.

Section 4. First aid measures

Skin contact	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
	2-Mercaptoethanol For Ultra Comp Cells	Harmful in contact with skin. May cause an allergic skin reaction.
Ingestion	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
	2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	2-Mercaptoethanol For Ultra Comp Cells	Adverse symptoms may include the following: pain watering redness
Inhalation	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	2-Mercaptoethanol For Ultra Comp Cells	No specific data.
Skin contact	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	2-Mercaptoethanol For Ultra Comp Cells	Adverse symptoms may include the following: pain or irritation redness blistering may occur
Ingestion	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	2-Mercaptoethanol For Ultra Comp Cells	Adverse symptoms may include the following: stomach pains

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

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

Section 4. First aid measures

Protection of first-aiders	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp 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. 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.
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See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp 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.
Unsuitable extinguishing media	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	None known. None known. None known.
Specific hazards arising from the chemical	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous thermal decomposition products	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides No specific data. Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides

Section 5. Firefighting measures

Special protective actions for fire-fighters	: XL2-Blue MRF' ultracompetent cells	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	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.
	2-Mercaptoethanol For Ultra Comp Cells	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	: XL2-Blue MRF' ultracompetent cells	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	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.
	2-Mercaptoethanol For Ultra Comp Cells	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: XL2-Blue MRF' ultracompetent cells	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	pUC 18 DNA Control Plasmid	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	2-Mercaptoethanol For Ultra Comp Cells	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	: XL2-Blue MRF' ultracompetent 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".
	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".
	2-Mercaptoethanol For Ultra Comp 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	: XL2-Blue MRF' ultracompetent 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).
	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).
	2-Mercaptoethanol For Ultra Comp 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). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and material for containment and cleaning up

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

Section 7. Handling and storage

Precautions for safe handling

Protective measures	: XL2-Blue MRF' ultracompetent cells	Put on appropriate personal protective equipment (see Section 8).
	pUC 18 DNA Control Plasmid	Put on appropriate personal protective equipment (see Section 8).
	2-Mercaptoethanol For Ultra Comp Cells	Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. 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.

Section 7. Handling and storage

Advice on general occupational hygiene

: XL2-Blue MRF' ultracompetent cells

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

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.

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

Conditions for safe storage, including any incompatibilities

: XL2-Blue MRF' ultracompetent cells

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

pUC 18 DNA Control Plasmid Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

2-Mercaptoethanol For Ultra Comp Cells Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in 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
<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent 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** : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

[Individual protection measures](#)

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

Section 8. Exposure controls and personal protection

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

Section 9. Physical and chemical properties

Appearance

Physical state	:	<ul style="list-style-type: none"> XL2-Blue MRF' Liquid. ultracompetent cells pUC 18 DNA Control Plasmid Liquid. 2-Mercaptoethanol For Ultra Liquid. Comp Cells
Colour	:	<ul style="list-style-type: none"> XL2-Blue MRF' Not available. ultracompetent cells pUC 18 DNA Control Plasmid Not available. 2-Mercaptoethanol For Ultra Not available. Comp Cells
Odour	:	<ul style="list-style-type: none"> XL2-Blue MRF' Not available. ultracompetent cells pUC 18 DNA Control Plasmid Not available. 2-Mercaptoethanol For Ultra Not available. Comp Cells
Odour threshold	:	<ul style="list-style-type: none"> XL2-Blue MRF' Not available. ultracompetent cells pUC 18 DNA Control Plasmid Not available. 2-Mercaptoethanol For Ultra Not available. Comp Cells
pH	:	<ul style="list-style-type: none"> XL2-Blue MRF' 6.4 ultracompetent cells pUC 18 DNA Control Plasmid 7.5 2-Mercaptoethanol For Ultra Not available. Comp Cells
Melting point	:	<ul style="list-style-type: none"> XL2-Blue MRF' Not available. ultracompetent cells pUC 18 DNA Control Plasmid 0°C (32°F) 2-Mercaptoethanol For Ultra Not available. Comp Cells
Boiling point	:	<ul style="list-style-type: none"> XL2-Blue MRF' Not available. ultracompetent cells pUC 18 DNA Control Plasmid 100°C (212°F) 2-Mercaptoethanol For Ultra Not available. Comp Cells
Flash point	:	<ul style="list-style-type: none"> XL2-Blue MRF' Not available. ultracompetent cells pUC 18 DNA Control Plasmid Not available. 2-Mercaptoethanol For Ultra Not available. Comp Cells
Evaporation rate	:	<ul style="list-style-type: none"> XL2-Blue MRF' Not available. ultracompetent cells pUC 18 DNA Control Plasmid Not available. 2-Mercaptoethanol For Ultra Not available. Comp Cells
Flammability (solid, gas)	:	<ul style="list-style-type: none"> XL2-Blue MRF' Not applicable. ultracompetent cells pUC 18 DNA Control Plasmid Not applicable. 2-Mercaptoethanol For Ultra Not applicable. Comp Cells

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
Vapour pressure	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
Vapour density	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
Relative density	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
Solubility	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
Auto-ignition temperature	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
Decomposition temperature	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
Viscosity	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.

Section 10. Stability and reactivity

Reactivity	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp 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	: XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	The product is stable. The product is stable. The product is stable.

Section 10. Stability and reactivity

Possibility of hazardous reactions	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	Under normal conditions of storage and use, hazardous reactions will not occur.
	pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous reactions will not occur.
	2-Mercaptoethanol For Ultra Comp Cells	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	2-Mercaptoethanol For Ultra Comp Cells	No specific data.
Incompatible materials	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	May react or be incompatible with oxidising materials.
	pUC 18 DNA Control Plasmid	May react or be incompatible with oxidising materials.
	2-Mercaptoethanol For Ultra Comp Cells	May react or be incompatible with oxidising materials.
Hazardous decomposition products	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	2-Mercaptoethanol For Ultra Comp Cells	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
<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	Glycerol	Rat	12600 mg/kg	-
	Dimethyl sulfoxide	Rat	40000 mg/kg	-
		Rat	14500 mg/kg	-
	Sucrose	Rat	29700 mg/kg	-
2-Mercaptoethanol For Ultra Comp Cells	2-Mercaptoethanol	Rabbit	167.1 mg/kg	-
		Rat	244 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	Glycerol	Rabbit	-	24 hours 500 milligrams	-
		Rabbit	-	24 hours 500 milligrams	-
Dimethyl sulfoxide		Rabbit	-	24 hours 500 milligrams	-
		Rabbit	-	100 milligrams	-

Section 11. Toxicological information

2-Mercaptoethanol For Ultra Comp Cells 2-Mercaptoethanol	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 milligrams	-
	Eyes - Severe irritant	Rabbit	-	2 milligrams	-

Sensitisation

Not available.

Conclusion/Summary

Skin : May cause skin sensitisation.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
<input checked="" type="checkbox"/> 2-Mercaptoethanol For Ultra Comp Cells 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 : L2-Blue MRF' ultracompetent cells Routes of entry anticipated: Oral, Dermal, Inhalation.
 pUC 18 DNA Control Plasmid Not available.
 2-Mercaptoethanol For Ultra Comp Cells Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact : L2-Blue MRF' ultracompetent cells No known significant effects or critical hazards.
 pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 2-Mercaptoethanol For Ultra Comp Cells Causes serious eye damage.

Inhalation : L2-Blue MRF' ultracompetent cells No known significant effects or critical hazards.
 pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 2-Mercaptoethanol For Ultra Comp Cells No known significant effects or critical hazards.

Skin contact : L2-Blue MRF' ultracompetent cells No known significant effects or critical hazards.
 pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 2-Mercaptoethanol For Ultra Comp Cells Harmful in contact with skin. May cause an allergic skin reaction.

Section 11. Toxicological information

Ingestion : XL2-Blue MRF' ultracompetent cells No known significant effects or critical hazards.
 pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 2-Mercaptoethanol For Ultra Comp Cells No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : XL2-Blue MRF' ultracompetent cells No specific data.
 pUC 18 DNA Control Plasmid No specific data.
 2-Mercaptoethanol For Ultra Comp Cells Adverse symptoms may include the following:
 pain
 watering
 redness

Inhalation : XL2-Blue MRF' ultracompetent cells No specific data.
 pUC 18 DNA Control Plasmid No specific data.
 2-Mercaptoethanol For Ultra Comp Cells No specific data.

Skin contact : XL2-Blue MRF' ultracompetent cells No specific data.
 pUC 18 DNA Control Plasmid No specific data.
 2-Mercaptoethanol For Ultra Comp Cells Adverse symptoms may include the following:
 pain or irritation
 redness
 blistering may occur

Ingestion : XL2-Blue MRF' ultracompetent cells No specific data.
 pUC 18 DNA Control Plasmid No specific data.
 2-Mercaptoethanol For Ultra Comp Cells Adverse symptoms may include the following:
 stomach pains

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 : XL2-Blue MRF' ultracompetent cells No known significant effects or critical hazards.
 pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 2-Mercaptoethanol For Ultra Comp Cells Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : XL2-Blue MRF' ultracompetent cells No known significant effects or critical hazards.
 pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 2-Mercaptoethanol For Ultra Comp Cells No known significant effects or critical hazards.

Section 11. Toxicological information

Mutagenicity	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Teratogenicity	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Developmental effects	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Fertility effects	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
<input checked="" type="checkbox"/> 2-Mercaptoethanol For Ultra Comp Cells Oral Dermal Inhalation (vapours)	2568.4 mg/kg 1758.9 mg/kg 21.05 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent 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
<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
2-Mercaptoethanol For Ultra Comp Cells 2-Mercaptoethanol	OECD 310	69 % - Inherent - 60 days	20 mg/l	-

Section 12. Ecological information

	Ready Biodegradability - CO2 in Sealed Vessels (Headspace Test)			
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Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
XL2-Blue MRF' ultracompetent cells			
Glycerol	-1.76	-	low
Dimethyl sulfoxide	-1.35	3.16	low
Sucrose	-3.7	-	low
2-Mercaptoethanol For Ultra Comp Cells			
2-Mercaptoethanol	-0.056	-	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

6

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

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

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia	: All components are listed or exempted.
Canada	: All components are listed or exempted.
China	: Not determined.
Europe	: All components are listed or exempted.
Japan	: Japan inventory (ENCS) : Not determined. Japan inventory (ISHL) : 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	: Not determined.
Turkey	: Not determined.
United States	: All components are listed or exempted.
Viet Nam	: Not determined.

Section 16. Any other relevant information

History

Date of issue/Date of revision : 23/11/2018

Date of previous issue : 17/10/2016

Version : 5

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

Section 16. Any other relevant information

SUSMP = Standard Uniform Schedule of Medicine and Poisons
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
2-Mercaptoethanol For Ultra Comp Cells Acute Tox. 4, H312 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	Calculation method Calculation method Calculation method Calculation method

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

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