

# SAFETY DATA SHEET



XL2-Blue MRF Ultracompetent Cells, Part Number 200151

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

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

### 1.2 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)

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

Agilent Technologies Manufacturing GmbH & Co. KG  
Hewlett-Packard-Str. 8  
76337 Waldbronn  
Germany  
0800 603 1000

**e-mail address of person responsible for this SDS** : pdl-msds\_author@agilent.com

### 1.4 Emergency telephone number

**Emergency telephone number (with hours of operation)** : CHEMTREC®: +(44)-870-8200418

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Product definition** :  XL2-Blue MRF' Mixture  
ultracompetent cells  
pUC 18 DNA Control Plasmid Mixture  
2-Mercaptoethanol For Ultra Comp Cells Mixture

#### Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

#### 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

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**SECTION 2: Hazards identification**

<b>Ingredients of unknown toxicity</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10%
	2-Mercaptoethanol For Ultra Comp 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 inhalation toxicity: 1 - 10%

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

**2.2 Label elements**

**Hazard pictograms** :  2-Mercaptoethanol For Ultra Comp Cells



**Signal word** :  XL2-Blue MRF' ultracompetent cells  
pUC 18 DNA Control Plasmid  
2-Mercaptoethanol For Ultra Comp Cells

No signal word.  
No signal word.  
Danger

**Hazard statements** :  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** :  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 protective clothing. Wear eye or face protection.  
P273 - Avoid release to the environment.

**Response** :  XL2-Blue MRF' ultracompetent cells  
pUC 18 DNA Control Plasmid  
2-Mercaptoethanol For Ultra Comp Cells

Not applicable.  
Not applicable.  
P302 + P312 - IF ON SKIN: Call a POISON CENTER or physician if you feel unwell.  
P305 + P310 - IF IN EYES: Immediately call a POISON CENTER or physician.

**Storage** :  XL2-Blue MRF' ultracompetent cells  
pUC 18 DNA Control Plasmid  
2-Mercaptoethanol For Ultra Comp Cells

Not applicable.  
Not applicable.  
Not applicable.

**Disposal** :  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.

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**SECTION 2: Hazards identification**

<b>Hazardous ingredients</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells 2-Mercaptoethanol For Ultra Comp Cells	Not applicable. - 2-Mercaptoethanol
<b>Supplemental label elements</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Safety data sheet available on request. Not applicable. Not applicable.
<b>Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles</b>	: <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.
<b><u>Special packaging requirements</u></b>		
<b>Tactile warning of danger</b>	: <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.

**2.3 Other hazards**

<b>Other hazards which do not result in classification</b>	: <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.
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**SECTION 3: Composition/information on ingredients**

<b>3.1 Substances</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Mixture Mixture Mixture
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Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells				
Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Dimethyl sulfoxide	EC: 200-664-3 CAS: 67-68-5	≤10	Aquatic Chronic 3, H412	[1]
Sucrose	REACH #: Annex IV EC: 200-334-9 CAS: 57-50-1	≤10	Not classified.	[2]
<b>2-Mercaptoethanol For Ultra Comp Cells</b>				
2-Mercaptoethanol	EC: 200-464-6 CAS: 60-24-2	<10	Acute Tox. 3, H301 Acute Tox. 2, H310 Acute Tox. 2, H330 Skin Irrit. 2, H315 Eye Dam. 1, H318	[1]

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**SECTION 3: Composition/information on ingredients**

Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤10	Skin Sens. 1, H317 STOT SE 3, H335 Aquatic Chronic 2, H411 Eye Irrit. 2, H319  <b>See Section 16 for the full text of the H statements declared above.</b>	[1]
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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.

Type

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
- [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
- [5] Substance of equivalent concern
- [6] Additional disclosure due to company policy

**SECTION 4: First aid measures**

**4.1 Description of first aid measures**

<b>Eye contact</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells  pUC 18 DNA Control Plasmid  2-Mercaptoethanol For Ultra Comp 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.  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. 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.
<b>Inhalation</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells  pUC 18 DNA Control Plasmid  2-Mercaptoethanol For Ultra Comp Cells	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.  Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.  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>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells  pUC 18 DNA Control Plasmid  2-Mercaptoethanol For Ultra Comp Cells	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.  Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.  Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated

**SECTION 4: First aid measures**

**Ingestion**

:  XL2-Blue MRF' ultracompetent cells

pUC 18 DNA Control Plasmid

2-Mercaptoethanol For Ultra Comp Cells

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.

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.

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.

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.

**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.

**4.2 Most important symptoms and effects, both acute and delayed**

Potential acute health effects

**Eye contact**

:  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.

Causes serious eye damage.

**Inhalation**

:  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.

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**SECTION 4: First aid measures**

<b>Skin contact</b>	:	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.
<b>Ingestion</b>	:	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**

<b>Eye contact</b>	:	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
<b>Inhalation</b>	:	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.
<b>Skin contact</b>	:	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
<b>Ingestion</b>	:	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

**4.3 Indication of any immediate medical attention and special treatment needed**

<b>Notes to physician</b>	:	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.
<b>Specific treatments</b>	:	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 5: Firefighting measures

### 5.1 Extinguishing media

<b>Suitable extinguishing media</b>	: XL2-Blue MRF' ultracompetent cells	Use an extinguishing agent suitable for the surrounding fire.
	pUC 18 DNA Control Plasmid	Use an extinguishing agent suitable for the surrounding fire.
	2-Mercaptoethanol For Ultra Comp Cells	Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media</b>	: XL2-Blue MRF' ultracompetent cells	None known.
	pUC 18 DNA Control Plasmid	None known.
	2-Mercaptoethanol For Ultra Comp Cells	None known.

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

<b>Hazards from the substance or mixture</b>	: XL2-Blue MRF' ultracompetent cells	In a fire or if heated, a pressure increase will occur and the container may burst.
	pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
	2-Mercaptoethanol For Ultra Comp Cells	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
<b>Hazardous combustion products</b>	: XL2-Blue MRF' ultracompetent cells	Decomposition products may include the following materials:  carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
	pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	No specific data.  Decomposition products may include the following materials:  carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides

### 5.3 Advice for firefighters

<b>Special precautions for fire-fighters</b>	: 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.
<b>Special protective equipment for fire-fighters</b>	: 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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	pUC 18 DNA Control Plasmid	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full

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2-Mercaptoethanol For  
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face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.  
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

**SECTION 6: Accidental release measures**

**6.1 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".

**6.2 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.

**6.3 Methods and material for containment and cleaning up**



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**SECTION 6: Accidental release measures**

<b>Methods for cleaning up</b>	: <input checked="" type="checkbox"/> 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.

**6.4 Reference to other sections** : See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling**

<b>Protective measures</b>	: <input checked="" type="checkbox"/> 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.
<b>Advice on general occupational hygiene</b>	: <input checked="" type="checkbox"/> 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.

**7.2 Conditions for safe storage, including any incompatibilities**

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**SECTION 7: Handling and storage**

<b>Storage</b>	: 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.

**7.3 Specific end use(s)**

<b>Recommendations</b>	: XL2-Blue MRF' ultracompetent cells	Industrial applications, Professional applications.
	pUC 18 DNA Control Plasmid	Industrial applications, Professional applications.
	2-Mercaptoethanol For Ultra Comp Cells	Industrial applications, Professional applications.
<b>Industrial sector specific solutions</b>	: XL2-Blue MRF' ultracompetent cells	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
	2-Mercaptoethanol For Ultra Comp Cells	Not applicable.

**SECTION 8: Exposure controls/personal protection**

**8.1 Control parameters**

**Occupational exposure limits**

Product/ingredient name	Exposure limit values
XL2-Blue MRF' ultracompetent cells	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Mist <b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> STEL: 20 mg/m <sup>3</sup> 15 minutes. TWA: 10 mg/m <sup>3</sup> 8 hours.
Glycerol	
Sucrose	

## **SECTION 8: Exposure controls/personal protection**

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

### DNELs/DMELs

No DNELs/DMELs available.

### PNECs

No PNECs available

## **8.2 Exposure controls**

**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.

### 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.

**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.

**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.

**XL2-Blue MRF Ultracompetent Cells, Part Number 200151**

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state</b>	:	XL2-Blue MRF' ultracompetent cells	Liquid.
		pUC 18 DNA Control Plasmid	Liquid.
		2-Mercaptoethanol For Ultra Comp Cells	Liquid.
<b>Colour</b>	:	XL2-Blue MRF' ultracompetent cells	Not available.
		pUC 18 DNA Control Plasmid	Not available.
		2-Mercaptoethanol For Ultra Comp Cells	Not available.
<b>Odour</b>	:	XL2-Blue MRF' ultracompetent cells	Not available.
		pUC 18 DNA Control Plasmid	Not available.
		2-Mercaptoethanol For Ultra Comp Cells	Not available.
<b>Odour threshold</b>	:	XL2-Blue MRF' ultracompetent cells	Not available.
		pUC 18 DNA Control Plasmid	Not available.
		2-Mercaptoethanol For Ultra Comp Cells	Not available.
<b>pH</b>	:	XL2-Blue MRF' ultracompetent cells	6.4
		pUC 18 DNA Control Plasmid	7.5
		2-Mercaptoethanol For Ultra Comp Cells	Not available.
<b>Melting point/freezing point</b>	:	XL2-Blue MRF' ultracompetent cells	Not available.
		pUC 18 DNA Control Plasmid	0°C
		2-Mercaptoethanol For Ultra Comp Cells	Not available.
<b>Initial boiling point and boiling range</b>	:	XL2-Blue MRF' ultracompetent cells	Not available.
		pUC 18 DNA Control Plasmid	100°C
		2-Mercaptoethanol For Ultra Comp Cells	Not available.
<b>Flash point</b>	:	XL2-Blue MRF' ultracompetent cells	Not available.
		pUC 18 DNA Control Plasmid	Not available.
		2-Mercaptoethanol For Ultra Comp Cells	Not available.
<b>Evaporation rate</b>	:	XL2-Blue MRF' ultracompetent cells	Not available.
		pUC 18 DNA Control Plasmid	Not available.
		2-Mercaptoethanol For Ultra Comp Cells	Not available.

**XL2-Blue MRF Ultracompetent Cells, Part Number 200151**

**SECTION 9: Physical and chemical properties**

<b>Flammability (solid, gas)</b>	: <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.
<b>Upper/lower flammability or explosive limits</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
<b>Vapour pressure</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
<b>Vapour density</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
<b>Relative density</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
<b>Solubility(ies)</b>	: <input checked="" type="checkbox"/> 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.
<b>Partition coefficient: n-octanol/water</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
<b>Auto-ignition temperature</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.
<b>Decomposition temperature</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells pUC 18 DNA Control Plasmid 2-Mercaptoethanol For Ultra Comp Cells	Not available. Not available. Not available.

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**SECTION 9: Physical and chemical properties**

<b>Viscosity</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	2-Mercaptoethanol For Ultra Comp Cells	Not available.
<b>Explosive properties</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	2-Mercaptoethanol For Ultra Comp Cells	Not available.
<b>Oxidising properties</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	2-Mercaptoethanol For Ultra Comp Cells	Not available.

**9.2 Other information**

No additional information.

**SECTION 10: Stability and reactivity**

<b>10.1 Reactivity</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	No specific test data related to reactivity available for this product or its ingredients.
	pUC 18 DNA Control Plasmid	No specific test data related to reactivity available for this product or its ingredients.
	2-Mercaptoethanol For Ultra Comp Cells	No specific test data related to reactivity available for this product or its ingredients.
<b>10.2 Chemical stability</b>	: <input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	The product is stable.
	pUC 18 DNA Control Plasmid	The product is stable.
	2-Mercaptoethanol For Ultra Comp Cells	The product is stable.
<b>10.3 Possibility of hazardous reactions</b>	: <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.
<b>10.4 Conditions to avoid</b>	: <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.
<b>10.5 Incompatible materials</b>	: <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.

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## SECTION 10: Stability and reactivity

<b>10.6 Hazardous decomposition products</b>	:	<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

### 11.1 Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
<b>2-Mercaptoethanol For Ultra Comp Cells</b> 2-Mercaptoethanol	LD50 Dermal	Rabbit	167.1 mg/kg	-
	LD50 Oral	Rat	244 mg/kg	-
	Sodium chloride	Rat	3000 mg/kg	-

#### 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

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 milligrams	-
<b>2-Mercaptoethanol For Ultra Comp Cells</b> 2-Mercaptoethanol Sodium chloride	Eyes - Severe irritant	Rabbit	-	2 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

#### Sensitiser

<b>Conclusion/Summary</b>	:	Not available.
<b>Skin</b>	:	<input checked="" type="checkbox"/> May cause skin sensitisation.

#### Mutagenicity

<b>Conclusion/Summary</b>	:	Not available.
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#### Carcinogenicity

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## SECTION 11: Toxicological information

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Specific target organ toxicity (single exposure)

Product/ingredient 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

<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	Routes of entry anticipated: Oral, Dermal, Inhalation.
pUC 18 DNA Control Plasmid	Not available.
<input checked="" type="checkbox"/> 2-Mercaptoethanol For Ultra Comp Cells	Routes of entry anticipated: Oral, Dermal, Inhalation.

### Potential acute health effects

<b>Inhalation</b>	<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.
	<input checked="" type="checkbox"/> 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards.
<b>Ingestion</b>	<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.
	<input checked="" type="checkbox"/> 2-Mercaptoethanol For Ultra Comp Cells	No known significant effects or critical hazards.
<b>Skin contact</b>	<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.
	<input checked="" type="checkbox"/> 2-Mercaptoethanol For Ultra Comp Cells	Harmful in contact with skin. May cause an allergic skin reaction.
<b>Eye contact</b>	<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.
	<input checked="" type="checkbox"/> 2-Mercaptoethanol For Ultra Comp Cells	Causes serious eye damage.

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

<b>Inhalation</b>	<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells	No specific data.
	pUC 18 DNA Control Plasmid	No specific data.
	<input checked="" type="checkbox"/> 2-Mercaptoethanol For Ultra Comp Cells	No specific data.



**XL2-Blue MRF Ultracompetent Cells, Part Number 200151**

**SECTION 11: Toxicological information**

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

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Short term exposure**

<b>Potential immediate effects</b>	: Not available.
<b>Potential delayed effects</b>	: Not available.

**Long term exposure**

<b>Potential immediate effects</b>	: Not available.
<b>Potential delayed effects</b>	: Not available.

**Potential chronic health effects**

<b>General</b>	: <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.  Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
<b>Carcinogenicity</b>	: <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.
<b>Mutagenicity</b>	: <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.

**XL2-Blue MRF Ultracompetent Cells, Part Number 200151**

**SECTION 11: Toxicological information**

<b>Teratogenicity</b>	: <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.
<b>Developmental effects</b>	: <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.
<b>Fertility effects</b>	: <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.

**SECTION 12: Ecological information**

**12.1 Toxicity**

Product/ingredient name	Result	Species	Exposure
<input checked="" type="checkbox"/> XL2-Blue MRF' ultracompetent cells Dimethyl sulfoxide	Acute EC50 18299 µg/l Marine water	Algae - Nitzschia pungens	96 hours
	Acute LC50 37.437 mg/l Marine water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 3323 µg/l Marine water	Algae - Nitzschia pungens	96 hours
	2-Mercaptoethanol For Ultra Comp Cells Sodium chloride	Acute EC50 4.74 g/L Fresh water	Algae - Chlamydomonas reinhardtii
Acute EC50 519.6 mg/l Fresh water		Crustaceans - Cypris subglobosa	48 hours
Acute EC50 402600 µg/l Fresh water		Daphnia - Daphnia magna	48 hours
Acute IC50 6.87 g/L Fresh water		Aquatic plants - Lemna minor	96 hours
Acute LC50 1000000 µg/l Fresh water		Fish - Morone saxatilis - Larvae	96 hours
Chronic LC10 781 mg/l Fresh water		Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
Chronic NOEC 6 g/L Fresh water		Aquatic plants - Lemna minor	96 hours
Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water		Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	21 days 8 weeks

**12.2 Persistence and degradability**

Product/ingredient name	Test	Result	Dose	Inoculum
<input checked="" type="checkbox"/> 2-Mercaptoethanol For Ultra Comp Cells 2-Mercaptoethanol	OECD 310 Ready Biodegradability - CO2 in Sealed Vessels (Headspace)	69 % - Inherent - 60 days	20 mg/l	-

**XL2-Blue MRF Ultracompetent Cells, Part Number 200151**

## SECTION 12: Ecological information

	Test)			
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### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>XL2-Blue MRF' ultracompetent cells</b> Dimethyl sulfoxide	-1.35	3.16	low
<b>2-Mercaptoethanol For Ultra Comp Cells</b> 2-Mercaptoethanol	-0.056	-	low

### 12.4 Mobility in soil

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

**Mobility** : Not available.

### 12.5 Results of PBT and vPvB assessment

**PBT** : Not applicable.

**vPvB** : Not applicable.

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

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

**Methods of disposal** : 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.

**Hazardous waste** : The classification of the product may meet the criteria for a hazardous waste.

#### Packaging

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

**Special precautions** : 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

**ADR/RID / IMDG / IATA** : Not regulated.

**14.6 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.

**14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** : Not available.

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## **SECTION 15: Regulatory information**

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

#### **EU Regulation (EC) No. 1907/2006 (REACH)**

##### **Annex XIV - List of substances subject to authorisation**

###### **Annex XIV**

None of the components are listed.

###### **Substances of very high concern**

None of the components are listed.

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** :  XL2-Blue MRF<sup>1</sup> ultracompetent cells Not applicable.  
pUC 18 DNA Control Plasmid Not applicable.  
2-Mercaptoethanol For Ultra Comp Cells Not applicable.

##### **Other EU regulations**

**Industrial emissions (integrated pollution prevention and control) - Air** : Listed

##### **Ozone depleting substances (1005/2009/EU)**

Not listed.

##### **Prior Informed Consent (PIC) (649/2012/EU)**

Not listed.

##### **Seveso Directive**

This product is not controlled under the Seveso Directive.

##### **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.

**XL2-Blue MRF Ultracompetent Cells, Part Number 200151**

**SECTION 15: Regulatory information**

- 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.

**15.2 Chemical safety assessment** : This product contains substances for which Chemical Safety Assessments might still be required.

**SECTION 16: Other information**

Indicates information that has changed from previously issued version.

- Abbreviations and acronyms** :
- ATE = Acute Toxicity Estimate
  - CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
  - DNEL = Derived No Effect Level
  - EUH statement = CLP-specific Hazard statement
  - PNEC = Predicted No Effect Concentration
  - RRN = REACH Registration Number

**Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**

Classification	Justification
<input checked="" type="checkbox"/> <b>2-Mercaptoethanol For Ultra Comp Cells</b> Acute Tox. 4, H312 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	Calculation method Calculation method Calculation method Calculation method

**Full text of abbreviated H statements**

<input checked="" type="checkbox"/> <b>XL2-Blue MRF' ultracompetent cells</b> H412  <b>2-Mercaptoethanol For Ultra Comp Cells</b> H301 H310 H312 H315 H317 H318 H319 H330 H335 H411 H412	Harmful to aquatic life with long lasting effects.  Toxic if swallowed. Fatal in contact with skin. Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Causes serious eye irritation. Fatal if inhaled. May cause respiratory irritation. Toxic to aquatic life with long lasting effects. Harmful to aquatic life with long lasting effects.
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**Full text of classifications [CLP/GHS]**

<input checked="" type="checkbox"/> <b>XL2-Blue MRF' ultracompetent cells</b> Aquatic Chronic 3, H412  <b>2-Mercaptoethanol For Ultra Comp Cells</b> Acute Tox. 2, H310 Acute Tox. 2, H330 Acute Tox. 3, H301 Acute Tox. 4, H312 Aquatic Chronic 2, H411 Aquatic Chronic 3, H412 Eye Dam. 1, H318 Eye Irrit. 2, H319 Skin Irrit. 2, H315	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3  ACUTE TOXICITY (dermal) - Category 2 ACUTE TOXICITY (inhalation) - Category 2 ACUTE TOXICITY (oral) - Category 3 ACUTE TOXICITY (dermal) - Category 4 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 SKIN CORROSION/IRRITATION - Category 2
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## **SECTION 16: Other information**

Skin Sens. 1, H317  
STOT SE 3, H335

SKIN SENSITISATION - Category 1  
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE  
(Respiratory tract irritation) - Category 3

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

**Date of previous issue** : 17/10/2016

**Version** : 2

### **Notice to reader**

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