

SAFETY DATA SHEET

XL10-Gold Kan-r Ultracompetent Cells, Part Number 200317

Section 1. Identification

Product identifier : XL10-Gold Kan-r Ultracompetent Cells, Part Number 200317

Part no. (chemical kit) : 200317

Part no. : XL10-Gold Kan (r) ultracompetent cells 200317-41
pUC 18 DNA Control Plasmid 200231-42
XL10-Gold 2-Mercaptoethanol 200314-43

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

Identified uses : Analytical reagent.

XL10-Gold Kan (r) ultracompetent cells 1 ml (10 x 0.1 ml)
pUC 18 DNA Control Plasmid 0.01 ml (0.1 ng / µl)
XL10-Gold 2-Mercaptoethanol 0.05 ml

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

Emergency telephone number (with hours of operation) : CHEMTREC®: 1-800-424-9300

Section 2. Hazard identification

Classification of the substance or mixture

XL10-Gold Kan (r)
ultracompetent cells
H320

EYE IRRITATION - Category 2B

**XL10-Gold
2-Mercaptoethanol**
H318
H317
H361
H373
H412

SERIOUS EYE DAMAGE - Category 1
SKIN SENSITIZATION - Category 1A
TOXIC TO REPRODUCTION - Category 2
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms

: XL10-Gold
2-Mercaptoethanol



Signal word

: XL10-Gold Kan (r) ultracompetent cells Warning
pUC 18 DNA Control Plasmid No signal word.
XL10-Gold Danger
2-Mercaptoethanol

Section 2. Hazard identification

Hazard statements	<ul style="list-style-type: none"> : <input checked="" type="checkbox"/> XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<p>H320 - Causes eye irritation.</p> <p>No known significant effects or critical hazards.</p> <p>H317 - May cause an allergic skin reaction.</p> <p>H318 - Causes serious eye damage.</p> <p>H361 - Suspected of damaging fertility or the unborn child.</p> <p>H373 - May cause damage to organs through prolonged or repeated exposure.</p> <p>H412 - Harmful to aquatic life with long lasting effects.</p>
<u>Precautionary statements</u>		
Prevention	<ul style="list-style-type: none"> : <input checked="" type="checkbox"/> XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<p>Not applicable.</p> <p>Not applicable.</p> <p>P201 - Obtain special instructions before use.</p> <p>P280 - Wear protective gloves, protective clothing and eye or face protection.</p> <p>P273 - Avoid release to the environment.</p> <p>P260 - Do not breathe vapor.</p>
Response	<ul style="list-style-type: none"> : <input checked="" type="checkbox"/> XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<p>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P337 + P313 - If eye irritation persists: Get medical advice or attention.</p> <p>Not applicable.</p> <p>P308 + P313 - IF exposed or concerned: Get medical advice or attention.</p> <p>P362 + P364 - Take off contaminated clothing and wash it before reuse.</p> <p>P302 + P352 - IF ON SKIN: Wash with plenty of water.</p> <p>P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention.</p> <p>P305 + P351 + P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.</p>
Storage	<ul style="list-style-type: none"> : XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<p>Not applicable.</p> <p>Not applicable.</p> <p>Not applicable.</p>
Disposal	<ul style="list-style-type: none"> : XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<p>Not applicable.</p> <p>Not applicable.</p> <p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p>
Supplemental label elements	<ul style="list-style-type: none"> : XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol <input checked="" type="checkbox"/> XL10-Gold Kan (r) ultracompetent cells 	<p>None known.</p> <p>None known.</p> <p>None known.</p> <p>Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 5%</p>

Section 2. Hazard identification

Other hazards which do not result in classification :

XL10-Gold Kan (r) ultracompetent cells	None known.
pUC 18 DNA Control Plasmid	None known.
XL10-Gold	None known.
2-Mercaptoethanol	

Section 3. Composition/information on ingredients

Substance/mixture :

XL10-Gold Kan (r) ultracompetent cells	Mixture
pUC 18 DNA Control Plasmid	Mixture
XL10-Gold	Mixture
2-Mercaptoethanol	

Ingredient name	Synonyms	% (w/w)	CAS number
XL10-Gold Kan (r) ultracompetent cells			
Glycerol	Glycerol	≥10 - ≤30	56-81-5
Dimethyl sulfoxide	Dimethyl sulfoxide	≥5 - ≤10	67-68-5
Potassium chloride	Potassium Chloride	≥1 - ≤5	7447-40-7
XL10-Gold 2-Mercaptoethanol			
2-Mercaptoethanol	ethanol, 2-mercapto-	≥1 - ≤5	60-24-2

Ranges if listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.

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

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

Section 4. First-aid measures

Description of necessary first aid measures

Eye contact :

XL10-Gold Kan (r) ultracompetent cells	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
pUC 18 DNA Control Plasmid	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
XL10-Gold 2-Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Section 4. First-aid measures

Inhalation

: XL10-Gold Kan (r)
ultracompetent cells

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

pUC 18 DNA Control Plasmid

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

XL10-Gold
2-Mercaptoethanol

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

Skin contact

: XL10-Gold Kan (r)
ultracompetent cells

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

pUC 18 DNA Control Plasmid

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

XL10-Gold
2-Mercaptoethanol

Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion

:  XL10-Gold Kan (r)
ultracompetent cells

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

pUC 18 DNA Control Plasmid Wash out mouth with water. If material has been

Section 4. First-aid measures

XL10-Gold
2-Mercaptoethanol

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. 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	: XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Causes eye irritation. No known significant effects or critical hazards. Causes serious eye damage.
Inhalation	: XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards. No known significant effects or critical hazards. May cause an allergic skin reaction.
Ingestion	: XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: XL10-Gold Kan (r) ultracompetent cells	Adverse symptoms may include the following: irritation watering redness
	pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No specific data. Adverse symptoms may include the following: pain watering redness

Section 4. First-aid measures

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

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

Notes to physician	: XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No specific treatment. No specific treatment. No specific treatment.
Protection of first-aiders	: XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. 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.

Section 4. First-aid measures

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	: XL10-Gold Kan (r) 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.
	XL10-Gold	Use an extinguishing agent suitable for the surrounding fire.
	2-Mercaptoethanol	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: XL10-Gold Kan (r) ultracompetent cells	None known.
	pUC 18 DNA Control Plasmid	None known.
	XL10-Gold	None known.
	2-Mercaptoethanol	None known.
Specific hazards arising from the chemical	: XL10-Gold Kan (r) 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.
	XL10-Gold 2-Mercaptoethanol	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous thermal decomposition products	: XL10-Gold Kan (r) 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	No specific data.
	XL10-Gold	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
	2-Mercaptoethanol	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
Special protective actions for fire-fighters	: XL10-Gold Kan (r) 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.
	XL10-Gold 2-Mercaptoethanol	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Section 5. Fire-fighting measures

Special protective equipment for fire-fighters	: XL10-Gold Kan (r) 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.
	XL10-Gold 2-Mercaptoethanol	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: XL10-Gold Kan (r) ultracompetent cells	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	pUC 18 DNA Control Plasmid	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
	XL10-Gold 2-Mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	: XL10-Gold Kan (r) ultracompetent cells	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	pUC 18 DNA Control Plasmid	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	XL10-Gold 2-Mercaptoethanol	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
Environmental precautions	: XL10-Gold Kan (r) ultracompetent cells	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	pUC 18 DNA Control Plasmid	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has

Section 6. Accidental release measures

XL10-Gold
2-Mercaptoethanol

caused environmental pollution (sewers, waterways, soil or air).
Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Methods for cleaning up : XL10-Gold Kan (r)
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.

XL10-Gold
2-Mercaptoethanol

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : XL10-Gold Kan (r)
ultracompetent cells

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

pUC 18 DNA Control Plasmid

Put on appropriate personal protective equipment (see Section 8).

XL10-Gold
2-Mercaptoethanol

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

Section 7. Handling and storage

Advice on general occupational hygiene

: XL10-Gold Kan (r) 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.

XL10-Gold
2-Mercaptoethanol

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

Conditions for safe storage, including any incompatibilities

: XL10-Gold Kan (r) ultracompetent cells

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

XL10-Gold
2-Mercaptoethanol

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

Section 8. Exposure controls/personal protection

[Control parameters](#)

[Occupational exposure limits](#)

Ingredient name	Exposure limits
<p>XL10-Gold Kan (r) ultracompetent cells Glycerol</p> <p>Dimethyl sulfoxide</p> <p>XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol</p>	<p>CA Alberta Provincial (Canada, 6/2018). 8 hrs OEL: 10 mg/m³ 8 hours. Form: Mist</p> <p>CA Quebec Provincial (Canada, 6/2022). TWAEV: 10 mg/m³ 8 hours. Form: mist</p> <p>CA Saskatchewan Provincial (Canada, 7/2013). STEL: 20 mg/m³ 15 minutes. Form: mist TWA: 10 mg/m³ 8 hours. Form: mist</p> <p>CA British Columbia Provincial (Canada, 6/2022). TWA: 3 mg/m³ 8 hours. Form: respirable mist TWA: 10 mg/m³ 8 hours. Form: total mist</p> <p>OARS WEEL (United States, 4/2022). TWA: 250 ppm 8 hours.</p> <p>OARS WEEL (United States, 4/2022). Absorbed through skin. TWA: 0.2 ppm 8 hours.</p>

[Biological exposure indices](#)

No exposure indices known.

[Appropriate engineering controls](#)

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

[Environmental exposure controls](#)

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

[Individual protection measures](#)

[Hygiene measures](#)

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

[Eye/face protection](#)

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

[Skin protection](#)

Section 8. Exposure controls/personal protection

- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

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

Appearance

- Physical state** : XL10-Gold Kan (r) Liquid.
ultracompetent cells
pUC 18 DNA Control Plasmid Liquid.
XL10-Gold Liquid.
2-Mercaptoethanol
- Color** : XL10-Gold Kan (r) Not available.
ultracompetent cells
pUC 18 DNA Control Plasmid Not available.
XL10-Gold Not available.
2-Mercaptoethanol
- Odor** : XL10-Gold Kan (r) Not available.
ultracompetent cells
pUC 18 DNA Control Plasmid Not available.
XL10-Gold Not available.
2-Mercaptoethanol
- Odor threshold** : XL10-Gold Kan (r) Not available.
ultracompetent cells
pUC 18 DNA Control Plasmid Not available.
XL10-Gold Not available.
2-Mercaptoethanol
- pH** : XL10-Gold Kan (r) 6.4
ultracompetent cells
pUC 18 DNA Control Plasmid 7.5
XL10-Gold Not available.
2-Mercaptoethanol
- Melting point/freezing point** : XL10-Gold Kan (r) Not available.
ultracompetent cells
pUC 18 DNA Control Plasmid 0°C (32°F)
XL10-Gold Not available.
2-Mercaptoethanol

Section 9. Physical and chemical properties and safety characteristics

Boiling point, initial boiling point, and boiling range : XL10-Gold Kan (r) ultracompetent cells Not available.
 pUC 18 DNA Control Plasmid 100°C (212°F)
 XL10-Gold Not available.
 2-Mercaptoethanol

Flash point :

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
<input checked="" type="checkbox"/> XL10-Gold Kan (r) ultracompetent cells						
Dimethyl sulfoxide	87	188.6	ASTM D 93	87	188.6	-
Glycerol	-	-	-	177	350.6	-
XL10-Gold 2-Mercaptoethanol						
2-Mercaptoethanol	74	165.2	-	74	165.2	-

Evaporation rate : XL10-Gold Kan (r) ultracompetent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold Not available.
 2-Mercaptoethanol

Flammability : XL10-Gold Kan (r) ultracompetent cells Not applicable.
 pUC 18 DNA Control Plasmid Not applicable.
 XL10-Gold Not applicable.
 2-Mercaptoethanol

Lower and upper explosion limit/flammability limit : XL10-Gold Kan (r) ultracompetent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold Not available.
 2-Mercaptoethanol

Vapor pressure :

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
<input checked="" type="checkbox"/> XL10-Gold Kan (r) ultracompetent cells						
water	17.5	2.3	-	92.258	12.3	-
Dimethyl sulfoxide	0.42	0.056	EU A.4	-	-	-
pUC 18 DNA Control Plasmid						
water	17.5	2.3	-	92.258	12.3	-
XL10-Gold 2-Mercaptoethanol						

Section 9. Physical and chemical properties and safety characteristics

water	17.5	2.3	-	92.258	12.3	-
2-Mercaptoethanol	0.98	0.13	-	-	-	-

Relative vapor density : XL10-Gold Kan (r) ultracompetent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold Not available.
 2-Mercaptoethanol

Relative density : XL10-Gold Kan (r) ultracompetent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold Not available.
 2-Mercaptoethanol

Solubility(ies) :

Media	Result
<input checked="" type="checkbox"/> XL10-Gold Kan (r) ultracompetent cells	
water	Soluble
pUC 18 DNA Control Plasmid	
water	Soluble
XL10-Gold 2-Mercaptoethanol	
water	Soluble

Partition coefficient: n-octanol/water : XL10-Gold Kan (r) ultracompetent cells Not applicable.
 pUC 18 DNA Control Plasmid Not applicable.
 XL10-Gold Not applicable.
 2-Mercaptoethanol

Auto-ignition temperature :

Ingredient name	°C	°F	Method
<input checked="" type="checkbox"/> XL10-Gold Kan (r) ultracompetent cells			
Dimethyl sulfoxide	300 to 302	572 to 575.6	-
Glycerol	370	698	-
XL10-Gold 2-Mercaptoethanol			
2-Mercaptoethanol	295	563	-

Decomposition temperature : XL10-Gold Kan (r) ultracompetent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold Not available.
 2-Mercaptoethanol

Viscosity : XL10-Gold Kan (r) ultracompetent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold Not available.
 2-Mercaptoethanol

Particle characteristics

Median particle size : XL10-Gold Kan (r) ultracompetent cells Not applicable.
 pUC 18 DNA Control Plasmid Not applicable.
 XL10-Gold Not applicable.
 2-Mercaptoethanol

Section 10. Stability and reactivity

Reactivity	<ul style="list-style-type: none"> : XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> : XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<ul style="list-style-type: none"> The product is stable. The product is stable. The product is stable.
Possibility of hazardous reactions	<ul style="list-style-type: none"> : XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<ul style="list-style-type: none"> Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	<ul style="list-style-type: none"> : XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<ul style="list-style-type: none"> No specific data. No specific data. No specific data.
Incompatible materials	<ul style="list-style-type: none"> : XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<ul style="list-style-type: none"> May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials.
Hazardous decomposition products	<ul style="list-style-type: none"> : XL10-Gold Kan (r) ultracompetent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol 	<ul style="list-style-type: none"> Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
XL10-Gold Kan (r) ultracompetent cells				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
XL10-Gold				
2-Mercaptoethanol				

Section 11. Toxicological information

2-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-
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Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
XL10-Gold Kan (r) ultracompetent cells Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	100 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
Potassium chloride	Skin - Mild irritant	Rabbit	-	100 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	24 hours 500 mg	-
	Eyes - Severe irritant	Rabbit	-	2 mg	-

Sensitization

Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

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

Aspiration hazard

Not available.

Information on the likely routes of exposure

: XL10-Gold Kan (r) ultracompetent cells
pUC 18 DNA Control Plasmid
XL10-Gold
2-Mercaptoethanol

Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
Not available.
Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Section 11. Toxicological information

Potential acute health effects

Eye contact	: XL10-Gold Kan (r) ultracompetent cells	Causes eye irritation.
	pUC 18 DNA Control Plasmid XL10-Gold	No known significant effects or critical hazards. Causes serious eye damage.
	2-Mercaptoethanol	
Inhalation	: XL10-Gold Kan (r) ultracompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid XL10-Gold	No known significant effects or critical hazards. No known significant effects or critical hazards.
	2-Mercaptoethanol	
Skin contact	: XL10-Gold Kan (r) ultracompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid XL10-Gold	No known significant effects or critical hazards. May cause an allergic skin reaction.
	2-Mercaptoethanol	
Ingestion	: XL10-Gold Kan (r) ultracompetent cells	No known significant effects or critical hazards.
	pUC 18 DNA Control Plasmid XL10-Gold	No known significant effects or critical hazards. No known significant effects or critical hazards.
	2-Mercaptoethanol	

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: XL10-Gold Kan (r) ultracompetent cells	Adverse symptoms may include the following: irritation watering redness
	pUC 18 DNA Control Plasmid XL10-Gold	No specific data. Adverse symptoms may include the following:
	2-Mercaptoethanol	pain watering redness
Inhalation	: XL10-Gold Kan (r) ultracompetent cells	No specific data.
	pUC 18 DNA Control Plasmid XL10-Gold	No specific data. Adverse symptoms may include the following:
	2-Mercaptoethanol	reduced fetal weight increase in fetal deaths skeletal malformations
Skin contact	: XL10-Gold Kan (r) ultracompetent cells	No specific data.
	pUC 18 DNA Control Plasmid XL10-Gold	No specific data. Adverse symptoms may include the following:
	2-Mercaptoethanol	pain or irritation redness blistering may occur reduced fetal weight increase in fetal deaths skeletal malformations

Section 11. Toxicological information

Ingestion : XL10-Gold Kan (r) ultracompetent cells No specific data.
 pUC 18 DNA Control Plasmid No specific data.
 XL10-Gold Adverse symptoms may include the following:
 2-Mercaptoethanol
 stomach pains
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : XL10-Gold Kan (r) ultracompetent cells No known significant effects or critical hazards.
 pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 XL10-Gold May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
 2-Mercaptoethanol

Carcinogenicity : XL10-Gold Kan (r) ultracompetent cells No known significant effects or critical hazards.
 pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 XL10-Gold No known significant effects or critical hazards.
 2-Mercaptoethanol

Mutagenicity : XL10-Gold Kan (r) ultracompetent cells No known significant effects or critical hazards.
 pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 XL10-Gold No known significant effects or critical hazards.
 2-Mercaptoethanol

Reproductive toxicity : XL10-Gold Kan (r) ultracompetent cells No known significant effects or critical hazards.
 pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
 XL10-Gold Suspected of damaging fertility or the unborn child.
 2-Mercaptoethanol

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)

Section 11. Toxicological information

XL10-Gold Kan (r) ultracompetent cells					
XL10-Gold Kan (r) ultracompetent cells	136842.1	N/A	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
Dimethyl sulfoxide	14500	40000	N/A	N/A	N/A
Potassium chloride	2600	N/A	N/A	N/A	N/A
XL10-Gold 2-Mercaptoethanol					
XL10-Gold 2-Mercaptoethanol	4615.5	4545.5	N/A	60.7	N/A
2-Mercaptoethanol	244	200	N/A	3	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
XL10-Gold Kan (r) ultracompetent cells			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - <i>Oncorhynchus mykiss</i>	96 hours
Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - <i>Pimephales promelas</i>	96 hours
	Chronic NOEC 100 µl/L Marine water	Algae - <i>Ulva lactuca</i>	72 hours
	Chronic NOEC 100 µl/L Fresh water	Daphnia - <i>Daphnia magna</i> - Juvenile (Fledgling, Hatchling, Weanling)	21 days
Potassium chloride	Acute EC50 9.24 g/L Fresh water	Algae - <i>Desmodesmus subspicatus</i>	72 hours
	Acute EC50 1337000 µg/l Fresh water	Algae - <i>Navicula seminulum</i>	96 hours
	Acute LC50 9.68 mg/l Fresh water	Crustaceans - <i>Pseudosida ramosa</i> - Neonate	48 hours
	Acute LC50 93000 µg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 509.65 mg/l Fresh water	Fish - <i>Danio rerio</i>	96 hours

Persistence and degradability

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

Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
XL10-Gold Kan (r) ultracompetent cells			
Dimethyl sulfoxide	-	-	Not readily
Potassium chloride	-	-	Readily
XL10-Gold 2-Mercaptoethanol			
2-Mercaptoethanol	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
XL10-Gold Kan (r) ultracompetent cells			
Glycerol	-1.76	-	Low
Dimethyl sulfoxide	-1.35	3.16	Low
Potassium chloride	-0.46	-	Low
XL10-Gold 2-Mercaptoethanol			
2-Mercaptoethanol	-0.056	-	Low

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

Section 14. Transport information

TDG / IMDG / IATA : Not regulated.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Canada : All components are listed or exempted.

United States : All components are active or exempted.

Section 16. Other information

History

Date of issue/Date of revision : 06/30/2023

Date of previous issue : 12/03/2020

Version : 8

Key to abbreviations

: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 HPR = Hazardous Products Regulations
 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)
 N/A = Not available
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
XL10-Gold Kan (r) ultracompetent cells EYE IRRITATION - Category 2B	Calculation method
XL10-Gold 2-Mercaptoethanol SERIOUS EYE DAMAGE - Category 1	Calculation method
SKIN SENSITIZATION - Category 1A	Calculation method
TOXIC TO REPRODUCTION - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method
AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method

☑ Indicates information that has changed from previously issued version.

Section 16. Other information

[Notice to reader](#)

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