

Material Safety Data Sheet

XL10-Gold Ultracompetent Cells

1. Product and company identification

Product name	: XL10-Gold Ultracompetent Cells
Material uses	: Analytical reagent.
	XL10-Gold Ultracompetent cells 1 ml (10 x 0.1 ml)
	pUC18 Control Plasmid DNA 0.01 ml
	XL10-Gold 2-mercaptoethanol mix 0.05 ml
Supplier/Manufacturer	: Agilent Technologies, Inc. 1834 State Highway 71 West Cedar Creek, TX 78612 800-227-9770
Part No. (Chemical Kit)	: 200315
Part No.	: XL10-Gold Ultracompetent cells 200315-41 pUC18 Control Plasmid DNA 200231-42 XL10-Gold 2-mercaptoethanol mix 200314-43
Validation date	: 06/03/2013
In case of emergency	: Chemtrec: 1-800-424-9300

2. Hazards identification

Physical state	: XL10-Gold Ultracompetent cells Liquid. pUC18 Control Plasmid DNA Liquid. XL10-Gold 2-mercaptoethanol mix Liquid.
Odor	: XL10-Gold Ultracompetent cells Not available. pUC18 Control Plasmid DNA Not available. XL10-Gold 2-mercaptoethanol mix Not available.
OSHA/HCS status	: XL10-Gold Ultracompetent cells This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). pUC18 Control Plasmid DNA While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product. XL10-Gold 2-mercaptoethanol mix This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview	
Signal word	: XL10-Gold Ultracompetent cells DANGER! pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix
Hazard statements	: XL10-Gold Ultracompetent cells MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. pUC18 Control Plasmid DNA NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED. XL10-Gold 2-mercaptoethanol mix MAY BE FATAL IF ABSORBED THROUGH SKIN. HARMFUL IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON

2. Hazards identification

Precautions	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>ANIMAL DATA.</p> <p>Avoid breathing vapor or mist. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.</p> <p>No known significant effects or critical hazards. Avoid prolonged contact with eyes, skin and clothing.</p> <p>Do not breathe vapor or mist. Do not ingest. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.</p>
Routes of entry	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>Not available.</p> <p>Not available.</p> <p>Not available.</p>
<u>Potential acute health effects</u>		
Inhalation	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>Slightly irritating to the respiratory system.</p> <p>No known significant effects or critical hazards.</p> <p>Irritating to respiratory system.</p>
Ingestion	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>Toxic if swallowed.</p>
Skin	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>Slightly irritating to the skin.</p> <p>No known significant effects or critical hazards.</p> <p>Very toxic in contact with skin. Irritating to skin.</p> <p>May cause sensitization by skin contact.</p>
Eyes	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>Slightly irritating to the eyes.</p> <p>No known significant effects or critical hazards.</p> <p>Severely irritating to eyes. Risk of serious damage to eyes.</p>
<u>Potential chronic health effects</u>		
Chronic effects	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>Contains material that may cause target organ damage, based on animal data.</p> <p>No known significant effects or critical hazards.</p> <p>Contains material that may cause target organ damage, based on animal data. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.</p>
Carcinogenicity	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p>
Mutagenicity	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p>
Teratogenicity	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p>
Developmental effects	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p>
Fertility effects	<p>: XL10-Gold Ultracompetent cells</p> <p>pUC18 Control Plasmid DNA</p> <p>XL10-Gold 2-mercaptoethanol mix</p>	<p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p> <p>No known significant effects or critical hazards.</p>

2. Hazards identification

Target organs : XL10-Gold Ultracompetent cells
 Contains material which may cause damage to the following organs: kidneys, liver, gastrointestinal tract, upper respiratory tract, skin, eye, lens or cornea, teeth.
 pUC18 Control Plasmid DNA
 Not available.
 XL10-Gold 2-mercaptoethanol mix
 Contains material which may cause damage to the following organs: liver, upper respiratory tract, skin, eyes, central nervous system (CNS), stomach.

Over-exposure signs/symptoms

Inhalation : XL10-Gold Ultracompetent cells
 Adverse symptoms may include the following:
 respiratory tract irritation
 coughing
 pUC18 Control Plasmid DNA
 No specific data.
 XL10-Gold 2-mercaptoethanol mix
 Adverse symptoms may include the following:
 respiratory tract irritation
 coughing

Ingestion : XL10-Gold Ultracompetent cells
 No specific data.
 pUC18 Control Plasmid DNA
 No specific data.
 XL10-Gold 2-mercaptoethanol mix
 No specific data.

Skin : XL10-Gold Ultracompetent cells
 Adverse symptoms may include the following:
 irritation
 redness
 pUC18 Control Plasmid DNA
 No specific data.
 XL10-Gold 2-mercaptoethanol mix
 Adverse symptoms may include the following:
 irritation
 redness

Eyes : XL10-Gold Ultracompetent cells
 Adverse symptoms may include the following:
 irritation
 watering
 redness
 pUC18 Control Plasmid DNA
 No specific data.
 XL10-Gold 2-mercaptoethanol mix
 Adverse symptoms may include the following:
 pain or irritation
 watering
 redness

Medical conditions aggravated by over-exposure : XL10-Gold Ultracompetent cells
 Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.
 pUC18 Control Plasmid DNA
 None known.
 XL10-Gold 2-mercaptoethanol mix
 Pre-existing skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

3. Composition/information on ingredients

3. Composition/information on ingredients

Name	CAS number	%
XL10-Gold Ultracompetent cells		
Glycerol	56-81-5	5 - 10
Dimethyl sulfoxide	67-68-5	5 - 10
Sucrose	57-50-1	1 - 5
Potassium chloride	7447-40-7	1 - 5
XL10-Gold 2-mercaptoethanol mix		
Sodium chloride	7647-14-5	10 - 30
2-Mercaptoethanol	60-24-2	1 - 5

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.

4. First aid measures

Eye contact	: XL10-Gold Ultracompetent cells	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
	pUC18 Control Plasmid DNA	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.
	XL10-Gold 2-mercaptoethanol mix	Call medical doctor or poison control center immediately. Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
Skin contact	: XL10-Gold Ultracompetent cells	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
	pUC18 Control Plasmid DNA	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.
	XL10-Gold 2-mercaptoethanol mix	Call medical doctor or poison control center immediately. In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
Inhalation	: XL10-Gold Ultracompetent cells	Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
	pUC18 Control Plasmid DNA	Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.

4. First aid measures

	XL10-Gold 2-mercaptoethanol mix	Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
Ingestion	: XL10-Gold Ultracompetent cells	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
	pUC18 Control Plasmid DNA	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.
	XL10-Gold 2-mercaptoethanol mix	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Protection of first-aiders	: XL10-Gold Ultracompetent cells	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.
	pUC18 Control Plasmid DNA	No action shall be taken involving any personal risk or without suitable training.
	XL10-Gold 2-mercaptoethanol mix	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.
Notes to physician	: XL10-Gold Ultracompetent cells	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	pUC18 Control Plasmid DNA	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XL10-Gold 2-mercaptoethanol mix	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

Flammability of the product	: XL10-Gold Ultracompetent cells	In a fire or if heated, a pressure increase will occur and the container may burst.
	pUC18 Control Plasmid DNA	In a fire or if heated, a pressure increase will occur and the container may burst.
	XL10-Gold 2-mercaptoethanol mix	In a fire or if heated, a pressure increase will occur and the container may burst.
Extinguishing media Suitable	: XL10-Gold Ultracompetent cells	Use an extinguishing agent suitable for the surrounding fire.
	pUC18 Control Plasmid DNA	Use an extinguishing agent suitable for the surrounding fire.
	XL10-Gold 2-mercaptoethanol mix	Use an extinguishing agent suitable for the surrounding fire.

5. Fire-fighting measures

Not suitable	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	None known. None known. None known.
Special exposure hazards	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	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.
Hazardous thermal decomposition products	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides No specific data. Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
Special protective equipment for fire-fighters	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.	

6. Accidental release measures

Personal precautions	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	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 (see Section 8). 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 (see Section 8). 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 (see Section 8).
Environmental precautions	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA	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). Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6. Accidental release measures

	XL10-Gold 2-mercaptoethanol mix	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).
Methods for cleaning up	: XL10-Gold 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.
	pUC18 Control Plasmid DNA	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 mix	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.

7. Handling and storage

Handling	: XL10-Gold Ultracompetent cells	Potentially biohazardous material. Put on appropriate personal protective equipment (see Section 8). 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. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.
	pUC18 Control Plasmid DNA	Put on appropriate personal protective equipment (see Section 8). 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.
	XL10-Gold 2-mercaptoethanol mix	Put on appropriate personal protective equipment (see Section 8). 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. 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 vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an

7. Handling and storage

Storage

: XL10-Gold Ultracompetent cells

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.

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.

pUC18 Control Plasmid DNA

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.

XL10-Gold 2-mercaptoethanol mix

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.

8. Exposure controls/personal protection

Ingredient	Exposure limits
XL10-Gold Ultracompetent cells Glycerol Dimethyl sulfoxide Sucrose XL10-Gold 2-mercaptoethanol mix	<p>ACGIH TLV (United States, 3/2012). TWA: 10 mg/m³ 8 hours. Form: Mist</p> <p>OSHA PEL (United States, 6/2010). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>AIHA WEEL (United States, 10/2011). TWA: 250 ppm 8 hours.</p> <p>ACGIH TLV (United States, 3/2012). TWA: 10 mg/m³ 8 hours.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>NIOSH REL (United States, 6/2009). TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total</p> <p>OSHA PEL (United States, 6/2010). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p>

8. Exposure controls/personal protection

2-Mercaptoethanol	AIHA WEEL (United States, 10/2011). Absorbed through skin. TWA: 0.2 ppm 8 hours.
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- 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 appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.
- Engineering measures** : Use only with adequate ventilation. 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.
- 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.
- Personal protection**
 - Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
 - Hands** : 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.
 - Eyes** : 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 or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
 - Skin** : 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.
 - 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.
 - Other protection** : Not available.

9. Physical and chemical properties

- Physical state** : XL10-Gold Ultracompetent cells Liquid.
pUC18 Control Plasmid DNA Liquid.
XL10-Gold 2-mercaptoethanol mix Liquid.
- Flash point** : XL10-Gold Ultracompetent cells Not available.
pUC18 Control Plasmid DNA Not available.
XL10-Gold 2-mercaptoethanol mix Not available.
- Auto-ignition temperature** : XL10-Gold Ultracompetent cells Not available.
pUC18 Control Plasmid DNA Not available.
XL10-Gold 2-mercaptoethanol mix Not available.
- Flammable limits** : XL10-Gold Ultracompetent cells Not available.
pUC18 Control Plasmid DNA Not available.
XL10-Gold 2-mercaptoethanol mix Not available.

9. Physical and chemical properties

Color	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. Not available. Not available.
Odor	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. Not available. Not available.
pH	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	6.4 7.5 Not available.
Boiling/condensation point	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. 100°C (212°F) Not available.
Melting/freezing point	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. 0°C (32°F) Not available.
Specific gravity	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. Not available. Not available.
Vapor pressure	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. Not available. Not available.
Vapor density	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. Not available. Not available.
Volatility	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. Not available. Not available.
Odor threshold	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. Not available. Not available.
Evaporation rate	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. Not available. Not available.
Viscosity	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	Not available. Not available. Not available.
Solubility	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	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.

10. Stability and reactivity

Chemical stability	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	The product is stable. The product is stable. The product is stable.
Conditions to avoid	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	No specific data. No specific data. No specific data.
Materials to avoid	: XL10-Gold Ultracompetent cells pUC18 Control Plasmid DNA XL10-Gold 2-mercaptoethanol mix	No specific data. No specific data. No specific data.

10. Stability and reactivity

Hazardous decomposition products	: XL10-Gold Ultracompetent cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	pUC18 Control Plasmid DNA	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	XL10-Gold 2-mercaptoethanol mix	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Possibility of hazardous reactions	: XL10-Gold Ultracompetent cells	Under normal conditions of storage and use, hazardous reactions will not occur.
	pUC18 Control Plasmid DNA	Under normal conditions of storage and use, hazardous reactions will not occur.
	XL10-Gold 2-mercaptoethanol mix	Under normal conditions of storage and use, hazardous reactions will not occur.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
XL10-Gold Ultracompetent cells				
Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
Sucrose	LD50 Oral	Rat	29700 mg/kg	-
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
XL10-Gold 2-mercaptoethanol mix				
Sodium chloride	LC50 Inhalation Dusts and mists	Rat	>42 g/m ³	1 hours
	LD50 Oral	Rat	3000 mg/kg	-
2-Mercaptoethanol	LD50 Dermal	Rabbit	200 mg/kg	-
	LD50 Oral	Rat	244 mg/kg	-

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
XL10-Gold 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	-
Glycerol	Skin - Mild irritant	Rabbit	-	100 milligrams	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
XL10-Gold 2-mercaptoethanol mix					
Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 milligrams	-

11. Toxicological information

Sensitizer

Conclusion/Summary : Not available.

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
XL10-Gold Ultracompetent cells Sucrose	A4	-	-	-	-	-

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Other adverse symptoms : XL10-Gold Ultracompetent cells Not available.
 pUC18 Control Plasmid DNA Not available.
 XL10-Gold 2-mercaptoethanol mix Not available.

12. Ecological information

Ecotoxicity : May cause long-term adverse effects in the aquatic environment.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
XL10-Gold Ultracompetent cells	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Dimethyl sulfoxide	Chronic NOEC 0.1 g/L Fresh water	Fish - Danio rerio - Embryo	30 days
	Acute EC50 1337000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 83000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 9.68 mg/l Fresh water	Crustaceans - Pseudosida ramosa - Neonate	48 hours
	Acute LC50 435000 µg/l Fresh water	Fish - Gambusia affinis - Adult	96 hours
Potassium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
		Crustaceans - Ceriodaphnia dubia	48 hours
	Acute LC50 1042 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
		Fish - Morone saxatilis - Larvae	96 hours
		Daphnia - Daphnia pulex	21 days
		Chronic NOEC 0.314 g/L Fresh water	Fish - Gambusia holbrooki - Adult
XL10-Gold 2-mercaptoethanol mix	Chronic NOEC 100 mg/l Fresh water		
Sodium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute LC50 1042 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia	48 hours

Partition coefficient: n-octanol/water : XL10-Gold Ultracompetent cells Not available.
 pUC18 Control Plasmid DNA Not available.
 XL10-Gold 2-mercaptoethanol mix Not available.

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

13. Disposal considerations

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

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

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

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

14. Transport information

Regulatory information

DOT / IMDG / IATA / : Not regulated.

15. Regulatory information

HCS Classification : XL10-Gold Ultracompetent cells Target organ effects
 pUC18 Control Plasmid DNA Not regulated.
 XL10-Gold 2-mercaptoethanol mix Highly toxic material
 Irritating material
 Sensitizing material
 Target organ effects

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Immediate (acute) health hazard, Delayed (chronic) health hazard
Clean Water Act (CWA) 311: Edetic acid

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

State regulations

Massachusetts : The following components are listed: SUCROSE DUST; GLYCERINE MIST; 2-MERCAPTOETHANOL

15. Regulatory information

- New York** : None of the components are listed.
- New Jersey** : The following components are listed: DIMETHYL SULFOXIDE; METHANE, SULFINYLBIIS-; GLYCERIN; 1,2,3-PROPANETRIOL; THIOGLYCOL; 2-MERCAPTOETHANOL
- Pennsylvania** : The following components are listed: .ALPHA.-D-GLUCOPYRANOSIDE, .BETA.-D-FRUCTOFURANOSYL; 1,2,3-PROPANETRIOL; ETHANOL, 2-MERCAPTO-

California Prop. 65

No products were found.

16. Other information

Label requirements	: XL10-Gold Ultracompetent cells	MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
	pUC18 Control Plasmid DNA	NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
	XL10-Gold 2-mercaptoethanol mix	MAY BE FATAL IF ABSORBED THROUGH SKIN. HARMFUL IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

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☑ Indicates information that has changed from previously issued version.

Notice to reader

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