

SAFETY DATA SHEET

BL21-CodonPlus(DE3)-RIL-X Competent Cells, Part Number 230265

Section 1. Identification

Product identifier : BL21-CodonPlus(DE3)-RIL-X Competent Cells, Part Number 230265
Part no. (chemical kit) : 230265
Part no. : BL21-CodonPlus(DE3)-RIL-X competent 230265-41
 cells
 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

Material uses : Analytical reagent.
 BL21-CodonPlus(DE3)-RIL-X competent 1000 µl (10 x 0.1 µl)
 cells
 pUC 18 DNA Control Plasmid 10 µl (0.1 ng/µl)
 XL10-Gold 2-Mercaptoethanol 50 µl

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

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

Section 2. Hazard(s) identification

Classification of the substance or mixture

XL10-Gold

2-Mercaptoethanol

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

BL21-CodonPlus(DE3)-RIL-X competent cells
 Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10%

XL10-Gold
 2-Mercaptoethanol
 Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30%

GHS label elements

Hazard pictograms

XL10-Gold
 2-Mercaptoethanol



Signal word

BL21-CodonPlus(DE3)-RIL-X competent cells No signal word.
 pUC 18 DNA Control Plasmid No signal word.
 XL10-Gold DANGER
 2-Mercaptoethanol

Section 2. Hazard(s) identification

| | | |
|--|---|---|
| Hazard statements | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | No known significant effects or critical hazards. No known significant effects or critical hazards. H318 - Causes serious eye damage. H317 - May cause an allergic skin reaction. H412 - Harmful to aquatic life with long lasting effects. |
| | | |
| Precautionary statements | | |
| Prevention | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not applicable. Not applicable. P280 - Wear protective gloves. Wear eye or face protection. P273 - Avoid release to the environment. P261 - Avoid breathing vapour. P272 - Contaminated work clothing should not be allowed out of the workplace. |
| Response | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not applicable. Not applicable. P302 + P352 + P363 - IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. P333 + P313 - If skin irritation or rash occurs: Get medical attention. P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician. |
| Storage | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not applicable. Not applicable. Not applicable. |
| Disposal | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not applicable. Not applicable. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. |
| | | |
| Supplemental label elements | | |
| Additional warning phrases | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not applicable. Not applicable. Not applicable. |
| Other hazards which do not result in classification | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | None known. None known. None known. |

Section 3. Composition and ingredient information

Substance/mixture : BL21-CodonPlus(DE3)-RIL- Mixture
X competent cells
pUC 18 DNA Control Plasmid Mixture
XL10-Gold Mixture
2-Mercaptoethanol

CAS number/other identifiers

| Ingredient name | % (w/w) | CAS number |
|--|-----------|------------|
| BL21-CodonPlus(DE3)-RIL-X competent cells | | |
| Glycerol | ≥10 - ≤30 | 56-81-5 |
| Dimethyl sulfoxide | ≤10 | 67-68-5 |
| Sucrose | ≤10 | 57-50-1 |
| XL10-Gold 2-Mercaptoethanol | | |
| 2-Mercaptoethanol | ≤5 | 60-24-2 |

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

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

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : BL21-CodonPlus(DE3)-RIL- 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.
X competent cells

pUC 18 DNA Control Plasmid Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

XL10-Gold Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
2-Mercaptoethanol

Inhalation : BL21-CodonPlus(DE3)-RIL- Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
X competent cells

pUC 18 DNA Control Plasmid Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

XL10-Gold Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
2-Mercaptoethanol

Section 4. First aid measures

| | | |
|---------------------|---|--|
| Skin contact | : BL21-CodonPlus(DE3)-RIL-X competent cells | Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. |
| | pUC 18 DNA Control Plasmid | Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. |
| | 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 | : BL21-CodonPlus(DE3)-RIL-X competent cells | Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur. |
| | pUC 18 DNA Control Plasmid | Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur. |
| | XL10-Gold 2-Mercaptoethanol | Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. |

Most important symptoms/effects, acute and delayed

Potential acute health effects

| | | |
|--------------------|---|---|
| Eye contact | : BL21-CodonPlus(DE3)-RIL-X competent cells | No known significant effects or critical hazards. |
| | pUC 18 DNA Control Plasmid | No known significant effects or critical hazards. |
| | XL10-Gold 2-Mercaptoethanol | Causes serious eye damage. |
| Inhalation | : BL21-CodonPlus(DE3)-RIL-X competent cells | No known significant effects or critical hazards. |
| | pUC 18 DNA Control Plasmid | No known significant effects or critical hazards. |
| | XL10-Gold 2-Mercaptoethanol | No known significant effects or critical hazards. |

Section 4. First aid measures

| | | |
|---------------------|---|---|
| Skin contact | : BL21-CodonPlus(DE3)-RIL-X competent cells | No known significant effects or critical hazards. |
| | pUC 18 DNA Control Plasmid | No known significant effects or critical hazards. |
| | XL10-Gold | May cause an allergic skin reaction. |
| | 2-Mercaptoethanol | |
| Ingestion | : BL21-CodonPlus(DE3)-RIL-X competent 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 | |

Over-exposure signs/symptoms

| | | |
|---------------------|---|---|
| Eye contact | : BL21-CodonPlus(DE3)-RIL-X competent cells | No specific data. |
| | pUC 18 DNA Control Plasmid | No specific data. |
| | XL10-Gold | Adverse symptoms may include the following: |
| | 2-Mercaptoethanol | pain watering redness |
| Inhalation | : BL21-CodonPlus(DE3)-RIL-X competent cells | No specific data. |
| | pUC 18 DNA Control Plasmid | No specific data. |
| | XL10-Gold | No specific data. |
| | 2-Mercaptoethanol | |
| Skin contact | : BL21-CodonPlus(DE3)-RIL-X competent cells | No specific data. |
| | pUC 18 DNA Control Plasmid | No specific data. |
| | XL10-Gold | Adverse symptoms may include the following: |
| | 2-Mercaptoethanol | pain or irritation redness blistering may occur |
| Ingestion | : BL21-CodonPlus(DE3)-RIL-X competent cells | No specific data. |
| | pUC 18 DNA Control Plasmid | No specific data. |
| | XL10-Gold | Adverse symptoms may include the following: |
| | 2-Mercaptoethanol | stomach pains |

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

| | | |
|----------------------------|---|---|
| Notes to physician | : BL21-CodonPlus(DE3)-RIL-X competent 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. |
| | XL10-Gold | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
| | 2-Mercaptoethanol | |
| Specific treatments | : BL21-CodonPlus(DE3)-RIL-X competent cells | No specific treatment. |
| | pUC 18 DNA Control Plasmid | No specific treatment. |
| | XL10-Gold | No specific treatment. |
| | 2-Mercaptoethanol | |

Section 4. First aid measures

| | | |
|-----------------------------------|---|--|
| Protection of first-aiders | : BL21-CodonPlus(DE3)-RIL-X competent cells | No action shall be taken involving any personal risk or without suitable training. |
| | pUC 18 DNA Control Plasmid | No action shall be taken involving any personal risk or without suitable training. |
| | XL10-Gold | No action shall be taken involving any personal risk or without suitable training. |
| | 2-Mercaptoethanol | 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. |

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

| | | |
|-------------------------------------|---|---|
| Suitable extinguishing media | : BL21-CodonPlus(DE3)-RIL-X competent 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 | : BL21-CodonPlus(DE3)-RIL-X competent cells | None known. |
| | pUC 18 DNA Control Plasmid | None known. |
| | XL10-Gold | None known. |
| | 2-Mercaptoethanol | None known. |

Specific hazards arising from the chemical

| | | |
|---|---|---|
| : | BL21-CodonPlus(DE3)-RIL-X competent 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

| | | |
|---|---|--|
| : | BL21-CodonPlus(DE3)-RIL-X competent 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 |

Section 5. Firefighting measures

| | | |
|---|---|---|
| Special protective actions for fire-fighters | : BL21-CodonPlus(DE3)-RIL-X competent cells | Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. |
| | 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. |
| Special protective equipment for fire-fighters | : BL21-CodonPlus(DE3)-RIL-X competent cells | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. |
| | 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 | : BL21-CodonPlus(DE3)-RIL-X competent cells | No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment. |
| | pUC 18 DNA Control Plasmid | No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment. |
| | XL10-Gold 2-Mercaptoethanol | No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. |
| For emergency responders | : BL21-CodonPlus(DE3)-RIL-X competent cells | If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". |
| | pUC 18 DNA Control Plasmid | If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". |
| | XL10-Gold 2-Mercaptoethanol | If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". |

Section 6. Accidental release measures

| | | |
|----------------------------------|---|--|
| Environmental precautions | : BL21-CodonPlus(DE3)-RIL-X competent cells | Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |
| | pUC 18 DNA Control Plasmid | Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |
| | XL10-Gold 2-Mercaptoethanol | Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. |

Methods and material for containment and cleaning up

| | | |
|--------------------------------|---|---|
| Methods for cleaning up | : BL21-CodonPlus(DE3)-RIL-X competent cells | Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. |
| | 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 | : BL21-CodonPlus(DE3)-RIL-X competent cells | Put on appropriate personal protective equipment (see Section 8). |
| | pUC 18 DNA Control Plasmid | Put on appropriate personal protective equipment (see Section 8). |
| | XL10-Gold 2-Mercaptoethanol | Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. |

Section 7. Handling and storage

Advice on general occupational hygiene

- : BL21-CodonPlus(DE3)-RIL-X competent cells Potentially biohazardous material. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- 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

- : BL21-CodonPlus(DE3)-RIL-X competent cells Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
- pUC 18 DNA Control Plasmid Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
- XL10-Gold
2-Mercaptoethanol Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls and personal protection

[Control parameters](#)

[Occupational exposure limits](#)

| Ingredient name | Exposure limits |
|--|--|
| <input checked="" type="checkbox"/> BL21-CodonPlus(DE3)-RIL-X competent cells Glycerol Dimethyl sulfoxide Sucrose | Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours. DFG MAC-values list (Germany, 7/2017). Absorbed through skin. PEAK: 320 mg/m ³ , 4 times per shift, 15 minutes. TWA: 160 mg/m ³ 8 hours. PEAK: 100 ppm, 4 times per shift, 15 minutes. TWA: 50 ppm 8 hours. Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours. |

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

[Individual protection measures](#)

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

Section 9. Physical and chemical properties

Appearance

| | | | |
|---|---|--|-----------------|
| Physical state | : | BL21-CodonPlus(DE3)-RIL- X competent cells | Liquid. |
| | | pUC 18 DNA Control Plasmid | Liquid. |
| | | XL10-Gold | Liquid. |
| | | 2-Mercaptoethanol | |
| Colour | : | BL21-CodonPlus(DE3)-RIL- X competent cells | Not available. |
| | | pUC 18 DNA Control Plasmid | Not available. |
| | | XL10-Gold | Not available. |
| | | 2-Mercaptoethanol | |
| Odour | : | BL21-CodonPlus(DE3)-RIL- X competent cells | Not available. |
| | | pUC 18 DNA Control Plasmid | Not available. |
| | | XL10-Gold | Not available. |
| | | 2-Mercaptoethanol | |
| Odour threshold | : | BL21-CodonPlus(DE3)-RIL- X competent cells | Not available. |
| | | pUC 18 DNA Control Plasmid | Not available. |
| | | XL10-Gold | Not available. |
| | | 2-Mercaptoethanol | |
| pH | : | BL21-CodonPlus(DE3)-RIL- X competent cells | 6.4 |
| | | pUC 18 DNA Control Plasmid | 7.5 |
| | | XL10-Gold | Not available. |
| | | 2-Mercaptoethanol | |
| Melting point | : | BL21-CodonPlus(DE3)-RIL- X competent cells | Not available. |
| | | pUC 18 DNA Control Plasmid | 0°C (32°F) |
| | | XL10-Gold | Not available. |
| | | 2-Mercaptoethanol | |
| Boiling point | : | BL21-CodonPlus(DE3)-RIL- X competent cells | Not available. |
| | | pUC 18 DNA Control Plasmid | 100°C (212°F) |
| | | XL10-Gold | Not available. |
| | | 2-Mercaptoethanol | |
| Flash point | : | BL21-CodonPlus(DE3)-RIL- X competent cells | Not available. |
| | | pUC 18 DNA Control Plasmid | Not available. |
| | | XL10-Gold | Not available. |
| | | 2-Mercaptoethanol | |
| Evaporation rate | : | BL21-CodonPlus(DE3)-RIL- X competent cells | Not available. |
| | | pUC 18 DNA Control Plasmid | Not available. |
| | | XL10-Gold | Not available. |
| | | 2-Mercaptoethanol | |
| Flammability (solid, gas) | : | BL21-CodonPlus(DE3)-RIL- X competent cells | Not applicable. |
| | | pUC 18 DNA Control Plasmid | Not applicable. |
| | | XL10-Gold | Not applicable. |
| | | 2-Mercaptoethanol | |
| Lower and upper explosive (flammable) limits | : | BL21-CodonPlus(DE3)-RIL- X competent cells | Not available. |
| | | pUC 18 DNA Control Plasmid | Not available. |
| | | XL10-Gold | Not available. |
| | | 2-Mercaptoethanol | |

Section 9. Physical and chemical properties

| | | | |
|---|---|--|--|
| Vapour pressure | : | BL21-CodonPlus(DE3)-RIL- X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not available. Not available. Not available. |
| Vapour density | : | BL21-CodonPlus(DE3)-RIL- X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not available. Not available. Not available. |
| Relative density | : | BL21-CodonPlus(DE3)-RIL- X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not available. Not available. Not available. |
| Solubility | : | BL21-CodonPlus(DE3)-RIL- X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Easily soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. |
| Partition coefficient: n-octanol/water | : | BL21-CodonPlus(DE3)-RIL- X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not available. Not available. Not available. |
| Auto-ignition temperature | : | BL21-CodonPlus(DE3)-RIL- X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not available. Not available. Not available. |
| Decomposition temperature | : | BL21-CodonPlus(DE3)-RIL- X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not available. Not available. Not available. |
| Viscosity | : | BL21-CodonPlus(DE3)-RIL- X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | Not available. Not available. Not available. |

Section 10. Stability and reactivity

| | | | |
|---------------------------|---|--|--|
| Reactivity | : | BL21-CodonPlus(DE3)-RIL- X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | 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 | : | BL21-CodonPlus(DE3)-RIL- X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | The product is stable. The product is stable. The product is stable. |

Section 10. Stability and reactivity

| | | |
|---|---|--|
| Possibility of hazardous reactions | : BL21-CodonPlus(DE3)-RIL-X competent 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. |
| | XL10-Gold 2-Mercaptoethanol | Under normal conditions of storage and use, hazardous reactions will not occur. |
| Conditions to avoid | : BL21-CodonPlus(DE3)-RIL-X competent cells | No specific data. |
| | pUC 18 DNA Control Plasmid | No specific data. |
| | XL10-Gold | No specific data. |
| | 2-Mercaptoethanol | |
| Incompatible materials | : BL21-CodonPlus(DE3)-RIL-X competent cells | May react or be incompatible with oxidising materials. |
| | pUC 18 DNA Control Plasmid | May react or be incompatible with oxidising materials. |
| | XL10-Gold | May react or be incompatible with oxidising materials. |
| | 2-Mercaptoethanol | |
| Hazardous decomposition products | : BL21-CodonPlus(DE3)-RIL-X competent 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. |
| | XL10-Gold | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
| | 2-Mercaptoethanol | 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 |
|--|-------------|---------|-------------|----------|
| BL21-CodonPlus(DE3)-RIL-X competent cells | | | | |
| Glycerol | LD50 Oral | Rat | 12600 mg/kg | - |
| Dimethyl sulfoxide | LD50 Dermal | Rat | 40000 mg/kg | - |
| | LD50 Oral | Rat | 14500 mg/kg | - |
| Sucrose | LD50 Oral | Rat | 29700 mg/kg | - |
| XL10-Gold | | | | |
| 2-Mercaptoethanol | | | | |
| 2-Mercaptoethanol | LD50 Dermal | Rabbit | 167.1 mg/kg | - |
| | LD50 Oral | Rat | 244 mg/kg | - |

Irritation/Corrosion

| Product/ingredient name | Result | Species | Score | Exposure | Observation |
|--|----------------------|---------|-------|-------------------------|-------------|
| BL21-CodonPlus(DE3)-RIL-X competent cells | | | | | |
| Glycerol | Eyes - Mild irritant | Rabbit | - | 24 hours 500 milligrams | - |
| | Skin - Mild irritant | Rabbit | - | 24 hours 500 milligrams | - |
| Dimethyl sulfoxide | Eyes - Mild irritant | Rabbit | - | 24 hours 500 milligrams | - |
| | Eyes - Mild irritant | Rabbit | - | 100 milligrams | - |
| | Skin - Mild irritant | Rabbit | - | 24 hours 500 | - |

Section 11. Toxicological information

| | | | | | |
|---|------------------------|--------|---|---------------------------------|---|
| XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol | Skin - Mild irritant | Rabbit | - | milligrams 100 milligrams | - |
| | Eyes - Severe irritant | Rabbit | - | 2 milligrams | - |

Sensitisation

Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

| Name | Category | Route of exposure | Target organs |
|--|------------|-------------------|------------------------------|
| XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol | Category 3 | Not applicable. | Respiratory tract irritation |

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure : BL21-CodonPlus(DE3)-RIL- X competent cells Routes of entry anticipated: Oral, Dermal, Inhalation.
pUC 18 DNA Control Plasmid Not available.
XL10-Gold Routes of entry anticipated: Oral, Dermal, Inhalation.
2-Mercaptoethanol

Potential acute health effects

Eye contact : BL21-CodonPlus(DE3)-RIL- X competent cells No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
XL10-Gold Causes serious eye damage.
2-Mercaptoethanol

Inhalation : BL21-CodonPlus(DE3)-RIL- X competent 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

Skin contact : BL21-CodonPlus(DE3)-RIL- X competent cells No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
XL10-Gold May cause an allergic skin reaction.
2-Mercaptoethanol

Ingestion : BL21-CodonPlus(DE3)-RIL- X competent 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

Section 11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

| | | |
|---------------------|---|--|
| Eye contact | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | No specific data. No specific data. Adverse symptoms may include the following: pain watering redness |
| Inhalation | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | No specific data. No specific data. No specific data. |
| Skin contact | : BL21-CodonPlus(DE3)-RIL-X competent 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 |
| Ingestion | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | No specific data. No specific data. Adverse symptoms may include the following: stomach pains |

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

| | | |
|------------------------|---|---|
| General | : BL21-CodonPlus(DE3)-RIL-X competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol | 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. |
| Carcinogenicity | : BL21-CodonPlus(DE3)-RIL-X competent 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. |
| Mutagenicity | : BL21-CodonPlus(DE3)-RIL-X competent 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. |

Section 11. Toxicological information

| | | |
|------------------------------|---|---|
| Teratogenicity | : BL21-CodonPlus(DE3)-RIL-X competent 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 | |
| Developmental effects | : BL21-CodonPlus(DE3)-RIL-X competent 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 | |
| Fertility effects | : BL21-CodonPlus(DE3)-RIL-X competent 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 | |

Numerical measures of toxicity

Acute toxicity estimates

| Route | ATE value |
|------------------------------------|--------------|
| XL10-Gold 2-Mercaptoethanol | |
| Oral | 5545.5 mg/kg |
| Dermal | 3797.7 mg/kg |
| Inhalation (vapours) | 40.5 mg/l |

Section 12. Ecological information

Toxicity

| Product/ingredient name | Result | Species | Exposure |
|--|--------------------------------------|-----------------------------------|----------|
| BL21-CodonPlus(DE3)-RIL-X competent cells | | | |
| Glycerol | Acute LC50 54000 mg/l Fresh water | Fish - Oncorhynchus mykiss | 96 hours |
| 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 |

Persistence and degradability

| Product/ingredient name | Test | Result | Dose | Inoculum |
|--|---|---------------------------|---------|----------|
| BL21-CodonPlus(DE3)-RIL-X competent cells | | | | |
| Glycerol | 301D Ready Biodegradability - Closed Bottle Test | 93 % - 30 days | - | - |
| XL10-Gold 2-Mercaptoethanol | | | | |
| 2-Mercaptoethanol | OECD 310 Ready Biodegradability - CO2 in Sealed Vessels (Headspace) | 69 % - Inherent - 60 days | 20 mg/l | - |

Section 12. Ecological information

| | | | |
|--|-------|--|--|
| | Test) | | |
|--|-------|--|--|

Bioaccumulative potential

| Product/ingredient name | LogP _{ow} | BCF | Potential |
|--|--------------------|------|-----------|
| BL21-CodonPlus(DE3)-RIL-X competent cells | | | |
| Glycerol | -1.76 | - | low |
| Dimethyl sulfoxide | -1.35 | 3.16 | low |
| Sucrose | -3.7 | - | 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 minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

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

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

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

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons

6

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Section 15. Regulatory information

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

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

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

Section 16. Any other relevant information

History

| | |
|---------------------------------------|--------------|
| Date of issue/Date of revision | : 19/11/2018 |
| Date of previous issue | : 14/10/2016 |
| Version | : 5 |

Key to abbreviations

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

Procedure used to derive the classification

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

References : Not available.

Section 16. Any other relevant information

✔ Indicates information that has changed from previously issued version.

[Notice to reader](#)

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