

BL21-CodonPlus-RP Competent Cells, Part Number 230250

SECTION 2: Hazards identification

Ingredients of unknown toxicity	: BL21-CodonPlus-RP competent cells	Percentage of the mixture consisting of ingredient(s) of unknown acute dermal toxicity: 1 - 10%
	XL10-Gold	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 10 - 30%
	2-Mercaptoethanol	Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 10 - 30%
Ingredients of unknown ecotoxicity	: BL21-CodonPlus-RP competent cells	Contains 5% of components with unknown hazards to the aquatic environment

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

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

2.2 Label elements

Hazard pictograms : XL10-Gold
2-Mercaptoethanol



Signal word : BL21-CodonPlus-RP competent cells No signal word.
pUC 18 DNA Control Plasmid No signal word.
XL10-Gold Danger
2-Mercaptoethanol

Hazard statements : BL21-CodonPlus-RP competent cells No known significant effects or critical hazards.
pUC 18 DNA Control Plasmid No known significant effects or critical hazards.
XL10-Gold H317 - May cause an allergic skin reaction.
2-Mercaptoethanol H318 - Causes serious eye damage.
H361f - Suspected of damaging fertility.
H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : BL21-CodonPlus-RP competent cells Not applicable.
pUC 18 DNA Control Plasmid Not applicable.
XL10-Gold P201 - Obtain special instructions before use.
2-Mercaptoethanol P280 - Wear protective gloves, protective clothing and eye or face protection.
P273 - Avoid release to the environment.

Response : BL21-CodonPlus-RP competent cells Not applicable.
pUC 18 DNA Control Plasmid Not applicable.
XL10-Gold 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.
2-Mercaptoethanol

Storage : BL21-CodonPlus-RP competent cells Not applicable.
pUC 18 DNA Control Plasmid Not applicable.
XL10-Gold Not applicable.
2-Mercaptoethanol

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SECTION 2: Hazards identification

Disposal	: BL21-CodonPlus-RP 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.
Hazardous ingredients	: XL10-Gold 2-Mercaptoethanol	- 2-Mercaptoethanol
Supplemental label elements	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Not applicable. Not applicable. Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Not applicable. Not applicable. Not applicable.
Special packaging requirements		
Tactile warning of danger	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Not applicable. Not applicable. Not applicable.

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
Other hazards which do not result in classification	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	None known. None known. None known.

SECTION 3: Composition/information on ingredients

3.1 Substances	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Mixture Mixture Mixture
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Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
BL21-CodonPlus-RP competent cells				
Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sucrose	REACH #: Annex IV EC: 200-334-9 CAS: 57-50-1	≤10	Not classified.	[2]
XL10-Gold 2-Mercaptoethanol				

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SECTION 3: Composition/information on ingredients

Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≥10 - ≤25	Eye Irrit. 2, H319	[1]
2-Mercaptoethanol	EC: 200-464-6 CAS: 60-24-2	≤5	Acute Tox. 3, H301 Acute Tox. 2, H310 Acute Tox. 3, H331 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1A, H317 Repr. 2, H361f STOT RE 2, H373 (heart, liver) (oral) Aquatic Acute 1, H400 (M=1) Aquatic Chronic 2, H411 See Section 16 for the full text of the H statements declared above.	[1]

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type

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

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs. Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
Inhalation	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

SECTION 4: First aid measures

Skin contact	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated 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-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur. Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Protection of first-aiders	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact	: BL21-CodonPlus-RP 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. Causes serious eye damage.
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SECTION 4: First aid measures

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

Over-exposure signs/symptoms

Eye contact	: BL21-CodonPlus-RP 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-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No specific data. No specific data. Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Skin contact	: BL21-CodonPlus-RP 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 reduced foetal weight increase in foetal deaths skeletal malformations
Ingestion	: BL21-CodonPlus-RP 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 reduced foetal weight increase in foetal deaths skeletal malformations

4.3 Indication of any immediate medical attention and special treatment needed

SECTION 4: First aid measures

Notes to physician	: BL21-CodonPlus-RP competent 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	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No specific treatment. No specific treatment. No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	None known. None known. None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous combustion products	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	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

5.3 Advice for firefighters

SECTION 5: Firefighting measures

Special precautions for fire-fighters	: BL21-CodonPlus-RP 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-RP 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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	pUC 18 DNA Control Plasmid	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: BL21-CodonPlus-RP 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-RP 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

6.2 Environmental precautions	: BL21-CodonPlus-RP 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.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	: BL21-CodonPlus-RP 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.

6.4 Reference to other sections	: See Section 1 for emergency contact information. See Section 8 for information on appropriate personal protective equipment. See Section 13 for additional waste treatment information.
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SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures	: BL21-CodonPlus-RP 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. 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 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-RP 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.

7.2 Conditions for safe storage, including any incompatibilities

Storage	: BL21-CodonPlus-RP 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.

7.3 Specific end use(s)

Recommendations	: BL21-CodonPlus-RP competent cells	Industrial applications, Professional applications.
	pUC 18 DNA Control Plasmid	Industrial applications, Professional applications.
	XL10-Gold 2-Mercaptoethanol	Industrial applications, Professional applications.

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SECTION 7: Handling and storage

Industrial sector specific solutions	BL21-CodonPlus-RP competent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
BL21-CodonPlus-RP competent cells	EH40/2005 WELs (United Kingdom (UK), 1/2020). TWA: 10 mg/m ³ 8 hours. Form: Mist
Glycerol	
Sucrose	EH40/2005 WELs (United Kingdom (UK), 1/2020). STEL: 20 mg/m ³ 15 minutes. TWA: 10 mg/m ³ 8 hours.

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

DNELs/DMELs

Product/ingredient name	Type	Exposure	Value	Population	Effects
XL10-Gold 2-Mercaptoethanol Sodium chloride	DNEL	Short term Oral	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Long term Oral	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	295.52 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Dermal	295.52 mg/kg bw/day	Workers	Systemic
	DNEL	Short term Inhalation	443.28 mg/m ³	General population	Systemic
	DNEL	Long term Inhalation	443.28 mg/m ³	General population	Systemic
	DNEL	Short term Inhalation	2068.62 mg/m ³	Workers	Systemic
	DNEL	Long term Inhalation	2068.62 mg/m ³	Workers	Systemic
2-Mercaptoethanol	DNEL	Long term Dermal	0.6 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	4 mg/m ³	Workers	Systemic

PNECs

No PNECs available

SECTION 8: Exposure controls/personal protection

8.2 Exposure controls

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

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.

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.

SECTION 9: Physical and chemical properties

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

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: BL21-CodonPlus-RP competent cells	Liquid.
	pUC 18 DNA Control Plasmid	Liquid.
	XL10-Gold	Liquid.
	2-Mercaptoethanol	
Colour	: BL21-CodonPlus-RP competent cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	XL10-Gold	Not available.
	2-Mercaptoethanol	

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SECTION 9: Physical and chemical properties

Odour : BL21-CodonPlus-RP competent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold Not available.
 2-Mercaptoethanol

Odour threshold : BL21-CodonPlus-RP competent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold Not available.
 2-Mercaptoethanol

Melting point/freezing point : BL21-CodonPlus-RP competent cells Not available.
 pUC 18 DNA Control Plasmid 0°C
 XL10-Gold Not available.
 2-Mercaptoethanol

Initial boiling point and boiling range : BL21-CodonPlus-RP competent cells Not available.
 pUC 18 DNA Control Plasmid 100°C (212°F)
 XL10-Gold Not available.
 2-Mercaptoethanol

Flammability (solid, gas) : BL21-CodonPlus-RP competent cells Not applicable.
 pUC 18 DNA Control Plasmid Not applicable.
 XL10-Gold Not applicable.
 2-Mercaptoethanol

Upper/lower flammability or explosive limits : BL21-CodonPlus-RP competent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold Not available.
 2-Mercaptoethanol

Flash point :

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
BL21-CodonPlus-RP competent cells						
Dimethyl sulfoxide	87	188.6	ASTM D 93	87	188.6	
Glycerol			Pensky-Martens	177	350.6	
pUC 18 DNA Control Plasmid						
Edetic acid	>100	>212	DIN 51758			
XL10-Gold 2-Mercaptoethanol						
2-Mercaptoethanol	74	165.2		74	165.2	

Auto-ignition temperature :

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SECTION 9: Physical and chemical properties

Ingredient name	°C	°F	Method
BL21-CodonPlus-RP competent cells			
Dimethyl sulfoxide	300 to 302	572 to 575.6	
Glycerol	370	698	
pUC 18 DNA Control Plasmid			
Edetic acid	>400	>752	VDI 2263
XL10-Gold 2-Mercaptoethanol			
2-Mercaptoethanol	295	563	

Decomposition temperature	:	BL21-CodonPlus-RP competent cells	Not available.
		pUC 18 DNA Control Plasmid	Not available.
		XL10-Gold	Not available.
		2-Mercaptoethanol	
pH	:	BL21-CodonPlus-RP competent cells	6.4
		pUC 18 DNA Control Plasmid	7.5
		XL10-Gold	Not available.
		2-Mercaptoethanol	
Viscosity	:	BL21-CodonPlus-RP competent cells	Not available.
		pUC 18 DNA Control Plasmid	Not available.
		XL10-Gold	Not available.
		2-Mercaptoethanol	
Solubility(ies)	:	BL21-CodonPlus-RP competent cells	Soluble in the following materials: cold water and hot water.
		pUC 18 DNA Control Plasmid	Easily soluble in the following materials: cold water and hot water.
		XL10-Gold	Easily soluble in the following materials: cold water and hot water.
		2-Mercaptoethanol	
Partition coefficient: n-octanol/water	:	BL21-CodonPlus-RP competent cells	Not applicable.
		pUC 18 DNA Control Plasmid	Not applicable.
		XL10-Gold	Not applicable.
		2-Mercaptoethanol	
Vapour pressure	:		

Ingredient name	Vapour Pressure at 20°C			Vapour pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
BL21-CodonPlus-RP competent cells						
Water	23.8	3.2		92.258	12.3	
Dimethyl sulfoxide	0.42	0.056	EU A.4			
pUC 18 DNA Control Plasmid						
Water	23.8	3.2		92.258	12.3	
2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	0	0		0.000007501	0.000001	

SECTION 9: Physical and chemical properties

XL10-Gold 2-Mercaptoethanol						
Water	23.8	3.2		92.258	12.3	
2-Mercaptoethanol	0.98	0.13				

- Evaporation rate** : BL21-CodonPlus-RP competent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold 2-Mercaptoethanol Not available.
- Relative density** : BL21-CodonPlus-RP competent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold 2-Mercaptoethanol Not available.
- Vapour density** : BL21-CodonPlus-RP competent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold 2-Mercaptoethanol Not available.
- Oxidising properties** : BL21-CodonPlus-RP competent cells Not available.
 pUC 18 DNA Control Plasmid Not available.
 XL10-Gold 2-Mercaptoethanol Not available.

Particle characteristics

- Median particle size** : BL21-CodonPlus-RP competent cells Not applicable.
 pUC 18 DNA Control Plasmid Not applicable.
 XL10-Gold 2-Mercaptoethanol Not applicable.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

- 10.1 Reactivity** : BL21-CodonPlus-RP competent cells No specific test data related to reactivity available for this product or its ingredients.
 pUC 18 DNA Control Plasmid No specific test data related to reactivity available for this product or its ingredients.
 XL10-Gold 2-Mercaptoethanol No specific test data related to reactivity available for this product or its ingredients.
- 10.2 Chemical stability** : BL21-CodonPlus-RP competent cells The product is stable.
 pUC 18 DNA Control Plasmid The product is stable.
 XL10-Gold 2-Mercaptoethanol The product is stable.

SECTION 10: Stability and reactivity

10.3 Possibility of hazardous reactions	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	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.
10.4 Conditions to avoid	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No specific data. No specific data. No specific data.
10.5 Incompatible materials	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.
10.6 Hazardous decomposition products	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	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

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
XL10-Gold				
2-Mercaptoethanol				
Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
2-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
XL10-Gold 2-Mercaptoethanol					
XL10-Gold 2-Mercaptoethanol	5545.5	4545.5	N/A	60.7	N/A
Sodium chloride	3000	N/A	N/A	N/A	N/A
2-Mercaptoethanol	244	200	N/A	3	N/A

Irritation/Corrosion

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

Sensitiser

SECTION 11: Toxicological information

Conclusion/Summary : 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)

Not available.

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	Category 2	oral	heart, liver

Aspiration hazard

Not available.

Information on likely routes of exposure

: BL21-CodonPlus-RP competent cells
pUC 18 DNA Control Plasmid
XL10-Gold 2-Mercaptoethanol

Routes of entry anticipated: Oral, Dermal, Inhalation.

Not available.

Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Inhalation

: BL21-CodonPlus-RP 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.

Ingestion

: BL21-CodonPlus-RP 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.

Skin contact

: BL21-CodonPlus-RP 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.

May cause an allergic skin reaction.

Eye contact

: BL21-CodonPlus-RP 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.

Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

SECTION 11: Toxicological information

Inhalation	: BL21-CodonPlus-RP competent cells pUC 18 DNA Control Plasmid XL10-Gold 2-Mercaptoethanol	No specific data. No specific data. Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Ingestion	: BL21-CodonPlus-RP 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 reduced foetal weight increase in foetal deaths skeletal malformations
Skin contact	: BL21-CodonPlus-RP 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 reduced foetal weight increase in foetal deaths skeletal malformations
Eye contact	: BL21-CodonPlus-RP 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

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-RP 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.
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SECTION 11: Toxicological information

Carcinogenicity	: BL21-CodonPlus-RP 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-RP 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.
Reproductive toxicity	: BL21-CodonPlus-RP 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. Suspected of damaging fertility.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
XL10-Gold 2-Mercaptoethanol Sodium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute EC50 402.6 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - Morone saxatilis - Larvae	96 hours
	Chronic LC10 781 mg/l Fresh water	Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Chronic NOEC 0.314 g/L Fresh water	Daphnia - Daphnia pulex	21 days
	Chronic NOEC 100 mg/l Fresh water	Fish - Gambusia holbrooki - Adult	8 weeks

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	OECD 310 Ready Biodegradability - CO2 in Sealed Vessels (Headspace Test)	69 % - Not readily - 60 days	20 mg/l	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	-	-	Not readily

12.3 Bioaccumulative potential

SECTION 12: Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
XL10-Gold 2-Mercaptoethanol 2-Mercaptoethanol	-0.056	-	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

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

Packaging

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

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-
14.3 Transport hazard class(es)	-	-	-
14.4 Packing group	-	-	-
14.5 Environmental hazards	No.	No.	No.

Additional information

BL21-CodonPlus-RP Competent Cells, Part Number 230250

SECTION 14: Transport information

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

14.7 Transport in bulk according to IMO instruments : Not available.

SECTION 15: Regulatory information

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

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

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Label	:	BL21-CodonPlus-RP competent cells	Not applicable.
		pUC 18 DNA Control Plasmid	Not applicable.
		XL10-Gold 2-Mercaptoethanol	Not applicable.

Other EU regulations

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

Ozone depleting substances (1005/2009/EU)

Not listed.

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

Not listed.

Persistent Organic Pollutants

Not listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

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.

SECTION 15: Regulatory information

China	: Not determined.
Europe	: All components are listed or exempted.
Japan	: Japan inventory (CSCL) : Not determined. Japan inventory (ISHL) : All components are listed or exempted.
New Zealand	: Not determined.
Philippines	: Not determined.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: Not determined.
Turkey	: Not determined.
United States	: All components are active or exempted.
Viet Nam	: Not determined.

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

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms	: ATE = Acute Toxicity Estimate CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008] DMEL = Derived Minimal Effect Level DNEL = Derived No Effect Level EUH statement = CLP-specific Hazard statement N/A = Not available PBT = Persistent, Bioaccumulative and Toxic PNEC = Predicted No Effect Concentration RRN = REACH Registration Number vPvB = Very Persistent and Very Bioaccumulative
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Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
XL10-Gold 2-Mercaptoethanol Eye Dam. 1, H318 Skin Sens. 1, H317 Repr. 2, H361f Aquatic Chronic 3, H412	Calculation method Calculation method Calculation method Calculation method

Full text of abbreviated H statements

XL10-Gold 2-Mercaptoethanol H301 H310 H315 H317 H318 H319 H331 H361f H373 H400 H411 H412	Toxic if swallowed. Fatal in contact with skin. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Causes serious eye irritation. Toxic if inhaled. Suspected of damaging fertility. May cause damage to organs through prolonged or repeated exposure. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects. Harmful to aquatic life with long lasting effects.
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Full text of classifications [CLP/GHS]

SECTION 16: Other information

<p>XL10-Gold 2-Mercaptoethanol Acute Tox. 2 Acute Tox. 3 Aquatic Acute 1 Aquatic Chronic 2 Aquatic Chronic 3 Eye Dam. 1 Eye Irrit. 2 Repr. 2 Skin Irrit. 2 Skin Sens. 1 Skin Sens. 1A STOT RE 2</p>	<p>ACUTE TOXICITY - Category 2 ACUTE TOXICITY - Category 3 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 REPRODUCTIVE TOXICITY - Category 2 SKIN CORROSION/IRRITATION - Category 2 SKIN SENSITISATION - Category 1 SKIN SENSITISATION - Category 1A SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2</p>
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