Conforms to US OSHA Hazard Communication 29CFR1910.1200

SAFETY DATA SHEET

BacterioMatch II Screening Reporter Competent Cells, Part Number 200190

Section 1. Identification

1.1 Product identifier

Product name : BacterioMatch II Screening Reporter Competent Cells, Part Number 200190

Part No. (Chemical Kit) : 200190

Part No. :

pUC 18 DNA Control Plasmid	200231-42
BacterioMatch II Screening Reporter competent cells	200190-41
2-mercaptoethanol	200190-43

Validation date : 12/29/2017

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

Material uses : Analytical reagent.

pUC 18 DNA Control Plasmid	0.01 ml (0.1 ng/µl)
BacterioMatch II Screening Reporter competent cells	2 ml (6 x 0.5 ml)
2-mercaptoethanol	0.075 ml

1.3 Details of the supplier of the safety data sheet

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

1.4 Emergency telephone number

In case of emergency : CHEMTREC®: 1-800-424-9300

Section 2. Hazards identification

2.1 Classification of the substance or mixture

OSHA/HCS status :

pUC 18 DNA Control Plasmid	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910. 1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
BacterioMatch II Screening Reporter competent cells	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
2-mercaptoethanol	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

BacterioMatch II Screening Reporter competent cells

H320	EYE IRRITATION - Category 2B

2-mercaptoethanol

H312	ACUTE TOXICITY (dermal) - Category 4
H332	ACUTE TOXICITY (inhalation) - Category 4
H315	SKIN IRRITATION - Category 2
H318	SERIOUS EYE DAMAGE - Category 1
H317	SKIN SENSITIZATION - Category 1

Section 2. Hazards identification

Ingredients of unknown toxicity	:	BacterioMatch II Screening Reporter competent cells	Percentage of the mixture consisting of ingredient (s) of unknown dermal toxicity: 1 - 10% Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 10 - 30%

2.2 GHS label elements

Hazard pictograms	:	2-mercaptoethanol	
Signal word	:	pUC 18 DNA Control Plasmid BacterioMatch II Screening Reporter competent cells 2-mercaptoethanol	No signal word. Warning Danger
Hazard statements	:	pUC 18 DNA Control Plasmid BacterioMatch II Screening Reporter competent cells 2-mercaptoethanol	No known significant effects or critical hazards. H320 - Causes eye irritation. H312 + H332 - Harmful in contact with skin or if inhaled. H318 - Causes serious eye damage. H315 - Causes skin irritation. H317 - May cause an allergic skin reaction.

Precautionary statements

Prevention	:	pUC 18 DNA Control Plasmid BacterioMatch II Screening Reporter competent cells 2-mercaptoethanol	Not applicable. P264 - Wash hands thoroughly after handling. P280 - Wear protective gloves. Wear eye or face protection. Wear protective clothing. P271 - Use only outdoors or in a well-ventilated area. P261 - Avoid breathing vapor. P264 - Wash hands thoroughly after handling. P272 (OSHA) - Contaminated work clothing must not be allowed out of the workplace.
Response	:	pUC 18 DNA Control Plasmid BacterioMatch II Screening Reporter competent cells 2-mercaptoethanol	Not applicable. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical attention. P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. P302 + P352 + P312 + P363 - IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. 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.

Section 2. Hazards identification

Storage	:	pUC 18 DNA Control Plasmid	Not applicable.
		BacterioMatch II Screening Reporter competent cells	Not applicable.
		2-mercaptoethanol	Not applicable.
Disposal	:	pUC 18 DNA Control Plasmid	Not applicable.
		BacterioMatch II Screening Reporter competent cells	Not applicable.
		2-mercaptoethanol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Supplemental label elements	:	pUC 18 DNA Control Plasmid	None known.
		BacterioMatch II Screening Reporter competent cells	None known.
		2-mercaptoethanol	None known.

2.3 Other hazards

Hazards not otherwise classified	:	pUC 18 DNA Control Plasmid	None known.
		BacterioMatch II Screening Reporter competent cells	None known.
		2-mercaptoethanol	None known.

Section 3. Composition/information on ingredients

Substance/mixture	:	pUC 18 DNA Control Plasmid	Mixture
		BacterioMatch II Screening Reporter competent cells	Mixture
		2-mercaptoethanol	Mixture

Ingredient name	%	CAS number
BacterioMatch II Screening Reporter competent cells		
Glycerol	≥10 - ≤25	56-81-5
Dimethyl sulfoxide	≤10	67-68-5
Potassium chloride	≤3	7447-40-7
2-mercaptoethanol		
2-Mercaptoethanol	≤12	60-24-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

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

4.1 Description of necessary first aid measures

Eye contact	:	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.
		BacterioMatch II Screening Reporter competent cells	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
		2-mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with

Section 4. First aid measures

			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	:	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.
		BacterioMatch II Screening Reporter competent cells	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
		2-mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Skin contact	:	pUC 18 DNA Control Plasmid	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		BacterioMatch II Screening Reporter competent cells	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
		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.

Section 4. First aid measures

Ingestion	:	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.
		BacterioMatch II Screening Reporter competent cells	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. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
		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.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	Causes eye irritation.
		2-mercaptoethanol	Causes serious eye damage.
Inhalation	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	Harmful if inhaled.
Skin contact	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.

Section 4. First aid measures

Ingestion	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	:	pUC 18 DNA Control Plasmid	No specific data.
		BacterioMatch II Screening Reporter competent cells	Adverse symptoms may include the following: irritation watering redness
		2-mercaptoethanol	Adverse symptoms may include the following: pain watering redness
Inhalation	:	pUC 18 DNA Control Plasmid	No specific data.
		BacterioMatch II Screening Reporter competent cells	No specific data.
		2-mercaptoethanol	No specific data.
Skin contact	:	pUC 18 DNA Control Plasmid	No specific data.
		BacterioMatch II Screening Reporter competent cells	No specific data.
		2-mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur
Ingestion	:	pUC 18 DNA Control Plasmid	No specific data.
		BacterioMatch II Screening Reporter competent cells	No specific data.
		2-mercaptoethanol	Adverse symptoms may include the following: stomach pains

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

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

Section 4. First aid measures

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. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	pUC 18 DNA Control Plasmid	Use an extinguishing agent suitable for the surrounding fire.
		BacterioMatch II Screening Reporter competent cells	Use an extinguishing agent suitable for the surrounding fire.
		2-mercaptoethanol	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	:	pUC 18 DNA Control Plasmid	None known.
		BacterioMatch II Screening Reporter competent cells	None known.
		2-mercaptoethanol	None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	:	pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
		BacterioMatch II Screening Reporter competent cells	In a fire or if heated, a pressure increase will occur and the container may burst.
		2-mercaptoethanol	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	:	pUC 18 DNA Control Plasmid	No specific data.
		BacterioMatch II Screening Reporter competent cells	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

5.3 Advice for firefighters

Special protective actions for fire-fighters	:	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.
		BacterioMatch II Screening Reporter 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.
		2-mercaptoethanol	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Section 5. Fire-fighting measures

Special protective equipment for fire-fighters :	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.
	BacterioMatch II Screening Reporter 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.
	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

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel :	pUC 18 DNA Control Plasmid	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
	BacterioMatch II Screening Reporter 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 spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	2-mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders :	pUC 18 DNA Control Plasmid	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	BacterioMatch II Screening Reporter competent cells	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	2-mercaptoethanol	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Section 6. Accidental release measures

6.2 Environmental precautions	:	pUC 18 DNA Control Plasmid	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
		BacterioMatch II Screening Reporter competent cells	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
		2-mercaptoethanol	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up	:	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.
		BacterioMatch II Screening Reporter 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.
		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

7.1 Precautions for safe handling

Protective measures	:	pUC 18 DNA Control Plasmid	Put on appropriate personal protective equipment (see Section 8).
		BacterioMatch II Screening Reporter competent cells	Potentially biohazardous material. Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
		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 vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original

Section 7. Handling and storage

			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.
Advice on general occupational hygiene	:	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.
		BacterioMatch II Screening Reporter 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.
		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	:	pUC 18 DNA Control Plasmid	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
		BacterioMatch II Screening Reporter 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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
		2-mercaptoethanol	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate

Section 7. Handling and storage

containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

Recommendations	:	pUC 18 DNA Control Plasmid	Industrial applications, Professional applications.
		BacterioMatch II Screening Reporter competent cells	Industrial applications, Professional applications.
		2-mercaptoethanol	Industrial applications, Professional applications.
Industrial sector specific solutions	:	pUC 18 DNA Control Plasmid	Not applicable.
		BacterioMatch II Screening Reporter competent cells	Not applicable.
		2-mercaptoethanol	Not applicable.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
BacterioMatch II Screening Reporter competent cells	
Glycerol	**OSHA PEL 1989 (United States, 3/1989).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust **OSHA PEL (United States, 6/2016).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust
Dimethyl sulfoxide	**AIHA WEEL (United States, 10/2011).** TWA: 250 ppm 8 hours.
Potassium chloride	None.
2-mercaptoethanol	
2-Mercaptoethanol	**AIHA WEEL (United States, 10/2011).** **Absorbed through skin.** TWA: 0.2 ppm 8 hours.

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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

Individual protection measures

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

Section 8. Exposure controls/personal protection

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

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: pUC 18 DNA Control Plasmid	Liquid.
	BacterioMatch II Screening Reporter competent cells	Liquid.
	2-mercaptoethanol	Liquid.
Color	: pUC 18 DNA Control Plasmid	Not available.
	BacterioMatch II Screening Reporter competent cells	Not available.
	2-mercaptoethanol	Not available.
Odor	: pUC 18 DNA Control Plasmid	Not available.
	BacterioMatch II Screening Reporter competent cells	Not available.
	2-mercaptoethanol	Not available.
Odor threshold	: pUC 18 DNA Control Plasmid	Not available.
	BacterioMatch II Screening Reporter competent cells	Not available.
	2-mercaptoethanol	Not available.
pH	: pUC 18 DNA Control Plasmid	7.5
	BacterioMatch II Screening Reporter competent cells	6.4
	2-mercaptoethanol	Not available.
Melting point	: pUC 18 DNA Control Plasmid	0°C (32°F)
	BacterioMatch II Screening Reporter competent cells	Not available.
	2-mercaptoethanol	Not available.
Boiling point	: pUC 18 DNA Control Plasmid	100°C (212°F)
	BacterioMatch II Screening Reporter competent cells	Not available.
	2-mercaptoethanol	Not available.

Section 9. Physical and chemical properties

Flash point	:	pUC 18 DNA Control Plasmid	Not available.
		BacterioMatch II Screening Reporter competent cells	Not available.
		2-mercaptoethanol	Not available.
Evaporation rate	:	pUC 18 DNA Control Plasmid	Not available.
		BacterioMatch II Screening Reporter competent cells	Not available.
		2-mercaptoethanol	Not available.
Flammability (solid, gas)	:	pUC 18 DNA Control Plasmid	Not applicable.
		BacterioMatch II Screening Reporter competent cells	Not applicable.
		2-mercaptoethanol	Not applicable.
Lower and upper explosive (flammable) limits	:	pUC 18 DNA Control Plasmid	Not available.
		BacterioMatch II Screening Reporter competent cells	Not available.
		2-mercaptoethanol	Not available.
Vapor pressure	:	pUC 18 DNA Control Plasmid	Not available.
		BacterioMatch II Screening Reporter competent cells	Not available.
		2-mercaptoethanol	0.13 kPa (1 mm Hg) [room temperature]
Vapor density	:	pUC 18 DNA Control Plasmid	Not available.
		BacterioMatch II Screening Reporter competent cells	Not available.
		2-mercaptoethanol	Not available.
Relative density	:	pUC 18 DNA Control Plasmid	Not available.
		BacterioMatch II Screening Reporter competent cells	Not available.
		2-mercaptoethanol	Not available.
Solubility	:	pUC 18 DNA Control Plasmid	Easily soluble in the following materials: cold water and hot water.
		BacterioMatch II Screening Reporter competent cells	Soluble in the following materials: cold water and hot water.
		2-mercaptoethanol	Easily soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	:	pUC 18 DNA Control Plasmid	Not available.
		BacterioMatch II Screening Reporter competent cells	Not available.
		2-mercaptoethanol	Not available.
Auto-ignition temperature	:	pUC 18 DNA Control Plasmid	Not available.
		BacterioMatch II Screening Reporter competent cells	Not available.
		2-mercaptoethanol	Not available.
Decomposition temperature	:	pUC 18 DNA Control Plasmid	Not available.
		BacterioMatch II Screening Reporter competent cells	Not available.
		2-mercaptoethanol	Not available.
Viscosity	:	pUC 18 DNA Control Plasmid	Not available.
		BacterioMatch II Screening Reporter competent cells	Not available.
		2-mercaptoethanol	Not available.

Section 10. Stability and reactivity

10.1 Reactivity	:	pUC 18 DNA Control Plasmid	No specific test data related to reactivity available for this product or its ingredients.
		BacterioMatch II Screening Reporter competent cells	No specific test data related to reactivity available for this product or its ingredients.
		2-mercaptoethanol	No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	:	pUC 18 DNA Control Plasmid	The product is stable.
		BacterioMatch II Screening Reporter competent cells	The product is stable.
		2-mercaptoethanol	The product is stable.
10.3 Possibility of hazardous reactions	:	pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous reactions will not occur.
		BacterioMatch II Screening Reporter competent cells	Under normal conditions of storage and use, hazardous reactions will not occur.
		2-mercaptoethanol	Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	:	pUC 18 DNA Control Plasmid	No specific data.
		BacterioMatch II Screening Reporter competent cells	No specific data.
		2-mercaptoethanol	No specific data.
10.5 Incompatible materials	:	pUC 18 DNA Control Plasmid	May react or be incompatible with oxidizing materials.
		BacterioMatch II Screening Reporter competent cells	May react or be incompatible with oxidizing materials.
		2-mercaptoethanol	May react or be incompatible with oxidizing materials.
10.6 Hazardous decomposition products	:	pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		BacterioMatch II Screening Reporter competent cells	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

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
BacterioMatch II Screening Reporter competent cells				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
2-mercaptoethanol				
2-Mercaptoethanol	LD50 Dermal	Rabbit	200 mg/kg	-

Section 11. Toxicological information

	LD50 Oral	Rat	244 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
BacterioMatch II Screening Reporter 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 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 milligrams	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
2-mercaptoethanol					
2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 milligrams	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
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 the likely routes of exposure :

pUC 18 DNA Control Plasmid	Not available.
BacterioMatch II Screening Reporter competent cells	Routes of entry anticipated: Oral, Dermal, Inhalation.
2-mercaptoethanol	Routes of entry anticipated: Oral, Dermal, Inhalation.

Section 11. Toxicological information

Potential acute health effects

Eye contact	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	Causes eye irritation.
		2-mercaptoethanol	Causes serious eye damage.
Inhalation	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	Harmful if inhaled.
Skin contact	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.
Ingestion	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	:	pUC 18 DNA Control Plasmid	No specific data.
		BacterioMatch II Screening Reporter competent cells	Adverse symptoms may include the following: irritation watering redness
		2-mercaptoethanol	Adverse symptoms may include the following: pain watering redness
Inhalation	:	pUC 18 DNA Control Plasmid	No specific data.
		BacterioMatch II Screening Reporter competent cells	No specific data.
		2-mercaptoethanol	No specific data.
Skin contact	:	pUC 18 DNA Control Plasmid	No specific data.
		BacterioMatch II Screening Reporter competent cells	No specific data.
		2-mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur
Ingestion	:	pUC 18 DNA Control Plasmid	No specific data.
		BacterioMatch II Screening Reporter competent cells	No specific data.
		2-mercaptoethanol	Adverse symptoms may include the following: stomach pains

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Section 11. Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	No known significant effects or critical hazards.
Mutagenicity	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	No known significant effects or critical hazards.
Teratogenicity	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	No known significant effects or critical hazards.
Developmental effects	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	No known significant effects or critical hazards.
Fertility effects	:	pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		BacterioMatch II Screening Reporter competent cells	No known significant effects or critical hazards.
		2-mercaptoethanol	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
BacterioMatch II Screening Reporter competent cells	
Oral	136842.1 mg/kg
2-mercaptoethanol	
Oral	2440 mg/kg
Dermal	2000 mg/kg
Inhalation (vapors)	20 mg/l

Section 12. Ecological information

12.1 Toxicity

Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
BacterioMatch II Screening Reporter competent cells			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Dimethyl sulfoxide	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 100 ul/L Marine water	Algae - Ulva lactuca	72 hours
Potassium chloride	Acute EC50 1337000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 9.24 g/L Fresh water	Algae - Desmodesmus subspicatus	72 hours
	Acute EC50 141460 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 12.92 mg/l Fresh water	Crustaceans - Pseudosida ramosa - Neonate	48 hours
	Acute LC50 880 mg/l Fresh water	Fish - Pimephales promelas	96 hours

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
BacterioMatch II Screening Reporter competent cells				
Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
BacterioMatch II Screening Reporter competent cells			
Potassium chloride	-	-	Readily

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
BacterioMatch II Screening Reporter competent cells			
Glycerol	-1.76	-	low
Dimethyl sulfoxide	-1.35	3.16	low
Potassium chloride	-0.46	-	low
2-mercaptoethanol			
2-Mercaptoethanol	-0.056	-	low

12.4 Mobility in soil

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

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

Section 13. Disposal considerations

13.1 Waste treatment methods

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

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

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

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

Section 14. Transport information

DOT / TDG / Mexico / IMDG / IATA : Not regulated.

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

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

Section 15. Regulatory information

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

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Water Act (CWA) 311: Edetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

Section 15. Regulatory information

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification :

pUC 18 DNA Control Plasmid	Not applicable.
BacterioMatch II Screening Reporter competent cells	EYE IRRITATION - Category 2B
2-mercaptoethanol	ACUTE TOXICITY (dermal) - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1

Composition/information on ingredients

Name	%	Classification
BacterioMatch II Screening Reporter competent cells		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2A
Dimethyl sulfoxide	≤10	FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2A
Potassium chloride	≤3	EYE IRRITATION - Category 2A
2-mercaptoethanol		
2-Mercaptoethanol	≤12	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 3 ACUTE TOXICITY (dermal) - Category 2 ACUTE TOXICITY (inhalation) - Category 2 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

State regulations

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

New York : None of the components are listed.

New Jersey : The following components are listed: DIMETHYL SULFOXIDE; METHANE, SULFINYLBIS-; GLYCERIN; 1,2,3-PROPANETRIOL

Pennsylvania : The following components are listed: .ALPHA.-D-GLUCOPYRANOSIDE, .BETA.-D-FRUCTOFURANOSYL; 1,2,3-PROPANETRIOL

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

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

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 15. Regulatory information

Inventory list

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

Section 16. Other information

History

Date of issue	:	12/29/2017
Date of previous issue	:	08/19/2015.
Version	:	2

Indicates information that has changed from previously issued version.

Notice to reader

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