

SAFETY DATA SHEET

Lambda FIX II Undigested Vector Kit, Part Number 248201

Section 1. Identification

1.1 Product identifier

Product name : Lambda FIX II Undigested Vector Kit, Part Number 248201
Part No. (Chemical Kit) : 248201
Part No. : L1-Blue MRA E.coli Strain 200302-81
 XL1-Blue MRA (p2) E.coli Strain 200303-81
 Lambda FIX II Uncut DNA 248201-51
Validation date : 1/22/2018

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

Material uses : Analytical reagent.
 L1-Blue MRA E.coli Strain 500 µl
 XL1-Blue MRA (p2) E.coli Strain 500 µl
 Lambda FIX II Uncut DNA 0.01 ml (10 µg 1 µg/µl)

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 : L1-Blue MRA E.coli Strain This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 XL1-Blue MRA (p2) E.coli Strain This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 Lambda FIX II Uncut DNA 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.

Classification of the substance or mixture



L1-Blue MRA E.coli Strain
 H319 EYE IRRITATION - Category 2A

XL1-Blue MRA (p2) E.coli Strain
 H319 EYE IRRITATION - Category 2A

Ingredients of unknown toxicity : L1-Blue MRA E.coli Strain Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 10 - 30%
 XL1-Blue MRA (p2) E.coli Strain Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 10 - 30%

2.2 GHS label elements

Section 2. Hazards identification

Hazard pictograms	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain	 
Signal word	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Warning Warning No signal word.
Hazard statements	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	H319 - Causes serious eye irritation. H319 - Causes serious eye irritation. No known significant effects or critical hazards.
<u>Precautionary statements</u>		
Prevention	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	P280 - Wear eye or face protection. P264 - Wash hands thoroughly after handling. P280 - Wear eye or face protection. P264 - Wash hands thoroughly after handling. Not applicable.
Response	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	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. 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. Not applicable.
Storage	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not applicable. Not applicable. Not applicable.
Disposal	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not applicable. Not applicable. Not applicable.
Supplemental label elements	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	None known. None known. None known.
<u>2.3 Other hazards</u>		
Hazards not otherwise classified	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	None known. None known. None known.

Section 3. Composition/information on ingredients

Substance/mixture	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	Mixture
	XL1-Blue MRA (p2) E.coli Strain	Mixture
	Lambda FIX II Uncut DNA	Mixture

Ingredient name	%	CAS number
<input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain		
Glycerol	≥10 - ≤25	56-81-5
Sodium chloride	≤3	7647-14-5
XL1-Blue MRA (p2) E.coli Strain		
Glycerol	≥10 - ≤25	56-81-5
Sodium chloride	≤3	7647-14-5

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	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	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. Get medical attention.
	XL1-Blue MRA (p2) E.coli Strain	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. Get medical attention.
	Lambda FIX II Uncut DNA	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.
Inhalation	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	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.
	XL1-Blue MRA (p2) E.coli Strain	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

Section 4. First aid measures

Skin contact

- Lambda FIX II Uncut DNA
 and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
- : XL1-Blue MRA E.coli Strain
 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.
- XL1-Blue MRA (p2) E.coli Strain
 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.
- Lambda FIX II Uncut DNA
 Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion

- : XL1-Blue MRA E.coli Strain
 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.
- XL1-Blue MRA (p2) E.coli Strain
 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.
- Lambda FIX II Uncut DNA
 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.

Section 4. First aid measures

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Causes serious eye irritation. Causes serious eye irritation. No known significant effects or critical hazards.
Inhalation	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	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	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Adverse symptoms may include the following: pain or irritation watering redness Adverse symptoms may include the following: pain or irritation watering redness No specific data.
Inhalation	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No specific data. No specific data. No specific data.
Skin contact	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No specific data. No specific data. No specific data.
Ingestion	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No specific data. No specific data. No specific data.

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

Notes to physician	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	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	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No specific treatment. No specific treatment. No specific treatment.

Section 4. First aid measures

Protection of first-aiders	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	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.
	XL1-Blue MRA (p2) E.coli Strain	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.
	Lambda FIX II Uncut DNA	No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	Use an extinguishing agent suitable for the surrounding fire.
	XL1-Blue MRA (p2) E.coli Strain	Use an extinguishing agent suitable for the surrounding fire.
	Lambda FIX II Uncut DNA	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	None known.
	XL1-Blue MRA (p2) E.coli Strain	None known.
	Lambda FIX II Uncut DNA	None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	In a fire or if heated, a pressure increase will occur and the container may burst.
	XL1-Blue MRA (p2) E.coli Strain	In a fire or if heated, a pressure increase will occur and the container may burst.
	Lambda FIX II Uncut DNA	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
	XL1-Blue MRA (p2) E.coli Strain	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
	Lambda FIX II Uncut DNA	No specific data.

5.3 Advice for firefighters

Special protective actions for fire-fighters	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	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.
	XL1-Blue MRA (p2) E.coli Strain	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

	Lambda FIX II Uncut DNA	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	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	XL1-Blue MRA (p2) E.coli Strain	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Lambda FIX II Uncut DNA	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	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	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.
	XL1-Blue MRA (p2) E.coli Strain	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.
	Lambda FIX II Uncut DNA	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.
For emergency responders	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	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".
	XL1-Blue MRA (p2) E.coli Strain	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".
	Lambda FIX II Uncut DNA	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

:  XL1-Blue MRA E.coli Strain

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).

XL1-Blue MRA (p2) E.coli Strain

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).

Lambda FIX II Uncut DNA

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up

:  XL1-Blue MRA E.coli Strain

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.

XL1-Blue MRA (p2) E.coli Strain

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.

Lambda FIX II Uncut DNA

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

Section 7. Handling and storage

7.1 Precautions for safe handling

Protective measures

:  XL1-Blue MRA E.coli Strain

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.

XL1-Blue MRA (p2) E.coli Strain

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.

Lambda FIX II Uncut DNA

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

Section 7. Handling and storage

Advice on general occupational hygiene	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	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.
	XL1-Blue MRA (p2) E.coli Strain	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.
	Lambda FIX II Uncut DNA	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	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	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.
	XL1-Blue MRA (p2) E.coli Strain	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.
	Lambda FIX II Uncut DNA	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 7. Handling and storage

7.3 Specific end use(s)

Recommendations	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
Industrial sector specific solutions	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not applicable. Not applicable. Not applicable.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain Glycerol Sodium chloride	OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 10 mg/m ³ 8 hours. Form: Total dust OSHA PEL (United States, 6/2016). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust None.
XL1-Blue MRA (p2) E.coli Strain Glycerol Sodium chloride	OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 10 mg/m ³ 8 hours. Form: Total dust OSHA PEL (United States, 6/2016). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust None.

8.2 Exposure controls

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

Individual protection measures

Hygiene measures	: <input checked="" type="checkbox"/> 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. 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

Section 8. Exposure controls/personal protection

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

Section 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	:	<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	Liquid.
		XL1-Blue MRA (p2) E.coli Strain	Liquid.
		Lambda FIX II Uncut DNA	Liquid.
Color	:	<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	Not available.
		XL1-Blue MRA (p2) E.coli Strain	Not available.
		Lambda FIX II Uncut DNA	Not available.
Odor	:	<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	Not available.
		XL1-Blue MRA (p2) E.coli Strain	Not available.
		Lambda FIX II Uncut DNA	Not available.
Odor threshold	:	<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	Not available.
		XL1-Blue MRA (p2) E.coli Strain	Not available.
		Lambda FIX II Uncut DNA	Not available.
pH	:	<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	7
		XL1-Blue MRA (p2) E.coli Strain	7
		Lambda FIX II Uncut DNA	7.5
Melting point	:	<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	Not available.
		XL1-Blue MRA (p2) E.coli Strain	Not available.
		Lambda FIX II Uncut DNA	0°C (32°F)
Boiling point	:	<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	Not available.
		XL1-Blue MRA (p2) E.coli Strain	Not available.
		Lambda FIX II Uncut DNA	100°C (212°F)
Flash point	:	<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	Not available.
		XL1-Blue MRA (p2) E.coli Strain	Not available.
		Lambda FIX II Uncut DNA	Not available.
Evaporation rate	:	<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	Not available.
		XL1-Blue MRA (p2) E.coli Strain	Not available.
		Lambda FIX II Uncut DNA	Not available.
Flammability (solid, gas)	:	<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	Not applicable.
		XL1-Blue MRA (p2) E.coli Strain	Not applicable.
		Lambda FIX II Uncut DNA	Not applicable.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not available. Not available. Not available.
Vapor pressure	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not available. Not available. Not available.
Vapor density	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not available. Not available. Not available.
Relative density	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not available. Not available. Not available.
Solubility	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Soluble in the following materials: cold water and hot water. Soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not available. Not available. Not available.
Auto-ignition temperature	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not available. Not available. Not available.
Decomposition temperature	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not available. Not available. Not available.
Viscosity	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Not available. Not available. Not available.

Section 10. Stability and reactivity

10.1 Reactivity	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	The product is stable. The product is stable. The product is stable.
10.3 Possibility of hazardous reactions	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	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	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No specific data. No specific data. No specific data.

Section 10. Stability and reactivity

10.5 Incompatible materials	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials.
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10.6 Hazardous decomposition products	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	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.
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Section 11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	Glycerol	Rat	12600 mg/kg	-
	Sodium chloride	Rat	3000 mg/kg	-
XL1-Blue MRA (p2) E.coli Strain	Glycerol	Rat	12600 mg/kg	-
	Sodium chloride	Rat	3000 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain	Glycerol	Rabbit	-	24 hours 500 milligrams	-
		Rabbit	-	24 hours 500 milligrams	-
Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
		Rabbit	-	24 hours 500 milligrams	-
XL1-Blue MRA (p2) E.coli Strain	Glycerol	Rabbit	-	24 hours 500 milligrams	-
		Rabbit	-	24 hours 500 milligrams	-
Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
		Rabbit	-	24 hours 500 milligrams	-

Sensitization

Section 11. Toxicological information

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Routes of entry anticipated: Oral, Dermal, Inhalation. Routes of entry anticipated: Oral, Dermal, Inhalation. Not available.
<u>Potential acute health effects</u>		
Eye contact	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Causes serious eye irritation. Causes serious eye irritation. No known significant effects or critical hazards.
Inhalation	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	Adverse symptoms may include the following: pain or irritation watering redness Adverse symptoms may include the following: pain or irritation watering redness No specific data.
Inhalation	: <input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No specific data. No specific data. No specific data.

Section 11. Toxicological information

Skin contact	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	No specific data.
	XL1-Blue MRA (p2) E.coli Strain	No specific data.
	Lambda FIX II Uncut DNA	No specific data.
Ingestion	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain	No specific data.
	XL1-Blue MRA (p2) E.coli Strain	No specific data.
	Lambda FIX II Uncut DNA	No specific data.

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

Short term exposure

Potential immediate effects	: Not available.
Potential delayed effects	: Not available.

Long term exposure

Potential immediate effects	: Not available.
Potential delayed effects	: Not available.

Potential chronic health effects

General	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Carcinogenicity	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Mutagenicity	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Teratogenicity	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Developmental effects	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Fertility effects	: <input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain XL1-Blue MRA (p2) E.coli Strain Lambda FIX II Uncut DNA	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
<input checked="" type="checkbox"/> L1-Blue MRA E.coli Strain Oral	300000 mg/kg
XL1-Blue MRA (p2) E.coli Strain Oral	300000 mg/kg

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
XL1-Blue MRA E.coli Strain Glycerol Sodium chloride XL1-Blue MRA (p2) E.coli Strain Glycerol Sodium chloride	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Acute EC50 4.74 g/L Fresh water	Algae - Chlamydomonas reinhardtii	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute EC50 402600 µg/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
	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Acute EC50 4.74 g/L Fresh water	Algae - Chlamydomonas reinhardtii	96 hours
Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours	
Acute EC50 402600 µg/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
XL1-Blue MRA E.coli Strain Glycerol XL1-Blue MRA (p2) E.coli Strain Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-

12.3 Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
XL1-Blue MRA E.coli Strain Glycerol	-1.76	-	low
XL1-Blue MRA (p2) E.coli Strain Glycerol	-1.76	-	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) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : XL1-Blue MRA E.coli Strain EYE IRRITATION - Category 2A
 XL1-Blue MRA (p2) E.coli Strain EYE IRRITATION - Category 2A
 Lambda FIX II Uncut DNA Not applicable.

Composition/information on ingredients

Name	%	Classification
<input checked="" type="checkbox"/> XL1-Blue MRA E.coli Strain		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2A
Sodium chloride	≤3	EYE IRRITATION - Category 2A
XL1-Blue MRA (p2) E.coli Strain		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2A
Sodium chloride	≤3	EYE IRRITATION - Category 2A

State regulations

Massachusetts : The following components are listed: GLYCERINE MIST

New York : None of the components are listed.

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

Pennsylvania : The following components are listed: 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.

Section 15. Regulatory information

[Rotterdam Convention on Prior Informed Consent \(PIC\)](#)

Not listed.

[UNECE Aarhus Protocol on POPs and Heavy Metals](#)

Not listed.

[Inventory list](#)

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

Section 16. Other information

[History](#)

Date of issue	: 01/22/2018
Date of previous issue	: 10/28/2015.
Version	: 4

Indicates information that has changed from previously issued version.

[Notice to reader](#)

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