

SAFETY DATA SHEET

ExAssist Interference-Resistant Helper Phage with XOLR strain, Part Number 211203

Section 1. Identification

1.1 Product identifier

Product name : ExAssist Interference-Resistant Helper Phage with XOLR strain, Part Number 211203
Part No. (Chemical Kit) : 211203
Part No. : LOLR E. coli Strain 200304-81
 XL1-Blue MRF' E.coli Strain 200301-81
 ExAssist Interference-Resistant Helper Phage 200253-81
Validation date : 8/21/2017

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

Material uses : Analytical reagent.
 LOLR E. coli Strain 0.5 ml
 XL1-Blue MRF' E.coli Strain 0.5 ml
 ExAssist Interference-Resistant Helper Phage 1 ml >1 X E10 pfu/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 : LOLR E. coli Strain This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 XL1-Blue MRF' E.coli Strain This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 ExAssist Interference-Resistant Helper Phage 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



LOLR E. coli Strain
 H319 EYE IRRITATION - Category 2A

XL1-Blue MRF' E.coli Strain
 H319 EYE IRRITATION - Category 2A

Ingredients of unknown toxicity : LOLR E. coli Strain Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 10 - 30%
 XL1-Blue MRF' 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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain	 
Signal word	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Warning Warning No signal word.
Hazard statements	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not applicable. Not applicable. Not applicable.
Disposal	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not applicable. Not applicable. Not applicable.
Supplemental label elements	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	None known. None known. None known.
<u>2.3 Other hazards</u>		
Hazards not otherwise classified	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	None known. None known. None known.

Section 3. Composition/information on ingredients

Substance/mixture	:	<input checked="" type="checkbox"/> LOLR E. coli Strain	Mixture
		XL1-Blue MRF' E.coli Strain	Mixture
		ExAssist Interference-Resistant	Mixture
		Helper Phage	

Ingredient name	%	CAS number
<input checked="" type="checkbox"/> LOLR E. coli Strain		
Glycerol	≥10 - ≤25	56-81-5
Sodium chloride	≤3	7647-14-5
XL1-Blue MRF' 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"/> LOLR 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 MRF' 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.
		ExAssist Interference-Resistant Helper Phage	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"/> LOLR 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 MRF' 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

Section 4. First aid measures

	ExAssist Interference-Resistant Helper Phage	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. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Skin contact	: <input checked="" type="checkbox"/> XOLR 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 MRF' 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.
Ingestion	ExAssist Interference-Resistant Helper Phage	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	: <input checked="" type="checkbox"/> XOLR 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 MRF' 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.
	ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Causes serious eye irritation. Causes serious eye irritation. No known significant effects or critical hazards.
Inhalation	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	No specific data. No specific data. No specific data.
Skin contact	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	No specific data. No specific data. No specific data.
Ingestion	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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.
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Section 4. First aid measures

Specific treatments	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	No specific treatment. No specific treatment. No specific treatment.
Protection of first-aiders	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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. 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. 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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	None known. None known. None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides No specific data.

5.3 Advice for firefighters

Section 5. Fire-fighting measures

Special protective actions for fire-fighters

: LOLR 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 MRF' 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.

ExAssist Interference-Resistant Helper Phage

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

: LOLR 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 MRF' 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.

ExAssist Interference-Resistant Helper Phage

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

: LOLR 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 MRF' 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.

ExAssist Interference-Resistant Helper Phage

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.

Section 6. Accidental release measures

For emergency responders :	<input checked="" type="checkbox"/> LOLR 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". 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". 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 MRF' E.coli Strain	
	ExAssist Interference-Resistant Helper Phage	

6.2 Environmental precautions	:	<input checked="" type="checkbox"/> LOLR 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 MRF' 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).
		ExAssist Interference-Resistant Helper Phage	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	:	<input checked="" type="checkbox"/> LOLR 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 MRF' 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.
		ExAssist Interference-Resistant Helper Phage	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

Section 7. Handling and storage

<p>Protective measures</p>	<p>: <input checked="" type="checkbox"/> LOLR E. coli Strain</p> <p>XL1-Blue MRF' E.coli Strain</p> <p>ExAssist Interference-Resistant Helper Phage</p>	<p>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.</p> <p>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.</p> <p>Put on appropriate personal protective equipment (see Section 8).</p>
<p>Advice on general occupational hygiene</p>	<p>: <input checked="" type="checkbox"/> LOLR E. coli Strain</p> <p>XL1-Blue MRF' E.coli Strain</p> <p>ExAssist Interference-Resistant Helper Phage</p>	<p>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.</p> <p>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.</p> <p>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.</p>
<p>7.2 Conditions for safe storage, including any incompatibilities</p>	<p>: <input checked="" type="checkbox"/> LOLR E. coli Strain</p> <p>XL1-Blue MRF' E.coli Strain</p>	<p>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.</p> <p>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</p>

Section 7. Handling and storage

ExAssist Interference-Resistant
Helper Phage

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. 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.

7.3 Specific end use(s)

Recommendations	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
Industrial sector specific solutions	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain Glycerol Sodium chloride XL1-Blue MRF' 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. 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

Section 8. Exposure controls/personal protection

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

Section 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

- | | | |
|-----------------------|---|----------------|
| Physical state | : <input checked="" type="checkbox"/> LOLR E. coli Strain | Liquid. |
| | XL1-Blue MRF' E.coli Strain | Liquid. |
| | ExAssist Interference-Resistant Helper Phage | Liquid. |
| Color | : <input checked="" type="checkbox"/> LOLR E. coli Strain | Not available. |
| | XL1-Blue MRF' E.coli Strain | Not available. |
| | ExAssist Interference-Resistant Helper Phage | Not available. |
| Odor | : <input checked="" type="checkbox"/> LOLR E. coli Strain | Not available. |
| | XL1-Blue MRF' E.coli Strain | Not available. |
| | ExAssist Interference-Resistant Helper Phage | Not available. |

Section 9. Physical and chemical properties

Odor threshold	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.
pH	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	7 7 7.5
Melting point	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. 0°C (32°F)
Boiling point	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. 100°C (212°F)
Flash point	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.
Evaporation rate	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.
Flammability (solid, gas)	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not applicable. Not applicable. Not applicable.
Lower and upper explosive (flammable) limits	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.
Vapor pressure	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.
Vapor density	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.
Relative density	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.
Solubility	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.

Section 9. Physical and chemical properties

Auto-ignition temperature	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.
Decomposition temperature	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.
Viscosity	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Not available. Not available. Not available.

Section 10. Stability and reactivity

10.1 Reactivity	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	The product is stable. The product is stable. The product is stable.
10.3 Possibility of hazardous reactions	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	No specific data. No specific data. No specific data.
10.5 Incompatible materials	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials.
10.6 Hazardous decomposition products	: <input checked="" type="checkbox"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
XLCLR E. coli Strain				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
XL1-Blue MRF' E.coli Strain				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
XLCLR E. coli Strain					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	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	-
XL1-Blue MRF' E.coli Strain					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	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	-

Sensitization

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

Section 11. Toxicological information

Not available.

Information on the likely routes of exposure	: <input checked="" type="checkbox"/> LOLR E. coli Strain	Routes of entry anticipated: Oral, Dermal, Inhalation.
	XL1-Blue MRF' E.coli Strain	Routes of entry anticipated: Oral, Dermal, Inhalation.
	ExAssist Interference-Resistant Helper Phage	Not available.
<u>Potential acute health effects</u>		
Eye contact	: <input checked="" type="checkbox"/> LOLR E. coli Strain	Causes serious eye irritation.
	XL1-Blue MRF' E.coli Strain	Causes serious eye irritation.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
Inhalation	: <input checked="" type="checkbox"/> LOLR E. coli Strain	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
Skin contact	: <input checked="" type="checkbox"/> LOLR E. coli Strain	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
Ingestion	: <input checked="" type="checkbox"/> LOLR E. coli Strain	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: <input checked="" type="checkbox"/> LOLR E. coli Strain	Adverse symptoms may include the following: pain or irritation watering redness
	XL1-Blue MRF' E.coli Strain	Adverse symptoms may include the following: pain or irritation watering redness
	ExAssist Interference-Resistant Helper Phage	No specific data.
Inhalation	: <input checked="" type="checkbox"/> LOLR E. coli Strain	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
Skin contact	: <input checked="" type="checkbox"/> LOLR E. coli Strain	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
Ingestion	: <input checked="" type="checkbox"/> LOLR E. coli Strain	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	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.

Section 11. Toxicological information

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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage	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"/> LOLR E. coli Strain Oral	300000 mg/kg
XL1-Blue MRF' E.coli Strain Oral	300000 mg/kg

Section 12. Ecological information

12.1 Toxicity

Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
XLOLR E. coli Strain Glycerol Sodium chloride	Acute LC50 54000 mg/l Fresh water Acute EC50 4.74 g/L Fresh water Acute EC50 519.6 mg/l Fresh water Acute EC50 402600 µg/l Fresh water Acute IC50 6.87 g/L Fresh water Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Fish - Oncorhynchus mykiss Algae - Chlamydomonas reinhardtii Crustaceans - Cypris subglobosa Daphnia - Daphnia magna Aquatic plants - Lemna minor Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling) Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 96 hours 48 hours 48 hours 96 hours 96 hours 3 weeks 96 hours 21 days 8 weeks
XL1-Blue MRF' E.coli Strain Glycerol Sodium chloride	Acute LC50 54000 mg/l Fresh water Acute EC50 4.74 g/L Fresh water Acute EC50 519.6 mg/l Fresh water Acute EC50 402600 µg/l Fresh water Acute IC50 6.87 g/L Fresh water Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Fish - Oncorhynchus mykiss Algae - Chlamydomonas reinhardtii Crustaceans - Cypris subglobosa Daphnia - Daphnia magna Aquatic plants - Lemna minor Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling) Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 96 hours 48 hours 48 hours 96 hours 96 hours 3 weeks 96 hours 21 days 8 weeks

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
XLOLR E. coli Strain Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
XL1-Blue MRF' E.coli Strain Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
XLOLR E. coli Strain Glycerol	-1.76	-	low
XL1-Blue MRF' E.coli Strain Glycerol	-1.76	-	low

Section 12. Ecological information

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

Clean Air Act Section 602 Class I Substances : Not listed

Section 15. Regulatory information

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 : LOLR E. coli Strain Immediate (acute) health hazard
 XL1-Blue MRF' E.coli Strain Immediate (acute) health hazard
 ExAssist Interference-Resistant Helper Phage Not applicable.

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
<input checked="" type="checkbox"/> LOLR E. coli Strain						
Glycerol	≥10 - ≤25	No.	No.	No.	Yes.	No.
Sodium chloride	≤3	No.	No.	No.	Yes.	No.
XL1-Blue MRF' E.coli Strain						
Glycerol	≥10 - ≤25	No.	No.	No.	Yes.	No.
Sodium chloride	≤3	No.	No.	No.	Yes.	No.

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

California Prop. 65

WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
<input checked="" type="checkbox"/> LOLR E. coli Strain				
Tetracycline	No.	Yes.	-	-
XL1-Blue MRF' E.coli Strain				
Tetracycline	No.	Yes.	-	-

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

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

Section 15. Regulatory information

Not listed.

[Stockholm Convention on Persistent Organic Pollutants](#)

Not listed.

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

Not listed.

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

Not listed.

[Inventory list](#)

Australia	: All components are listed or exempted.
Canada	: Not determined.
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	: Not determined.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: <input checked="" type="checkbox"/> Not determined.
Turkey	: Not determined.
United States	: All components are listed or exempted.
Viet Nam	: <input checked="" type="checkbox"/> Not determined.

Section 16. Other information

[History](#)

Date of issue	: 08/21/2017
Date of previous issue	: 01/21/2016.
Version	: 6

Indicates information that has changed from previously issued version.

[Notice to reader](#)

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