

# SAFETY DATA SHEET

Lambda Zap II Undigested Vector Kit, Part Number 236201

## Section 1. Identification

### 1.1 Product identifier

**Product name** : Lambda Zap II Undigested Vector Kit, Part Number 236201  
**Part no. (chemical kit)** : 236201  
**Part no.** : Undigested Lambda Zap II DNA 236201-51  
 VCSM13 Interference-Resistant Helper Phage 200251-81  
 ExAssist Interference-Resistant Helper Phage 200253-81  
 XL1-Blue MRF' E.coli Strain 200301-81  
 SOLR Bacterial Strain 200298-81

**Validation date** : 8/23/2018

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

**Material uses** : Analytical reagent.  
 Undigested Lambda Zap II DNA 0.02 ml (20 µg 1 µg/µl)  
 VCSM13 Interference-Resistant Helper Phage 1 ml (>1 x 10e11 pfu/ml)  
 ExAssist Interference-Resistant Helper Phage 1 ml (>1 x E10 pfu/ml)  
 XL1-Blue MRF' E.coli Strain 0.5 ml  
 SOLR Bacterial Strain 0.5 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

<b>OSHA/HCS status</b> : <input checked="" type="checkbox"/> Undigested Lambda Zap II 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.
VCSM13 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.
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.

## Section 2. Hazards identification

XL1-Blue MRF' E.coli Strain This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
 SOLR Bacterial Strain This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

### Classification of the substance or mixture

**XL1-Blue MRF' E.coli Strain**  
 H319

EYE IRRITATION - Category 2A

**SOLR Bacterial Strain**  
 H319

EYE IRRITATION - Category 2A

**Ingredients of unknown toxicity**

:  XL1-Blue MRF' E.coli Strain  
 SOLR Bacterial Strain

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

### 2.2 GHS label elements

**Hazard pictograms**

:  XL1-Blue MRF' E.coli Strain  
 SOLR Bacterial Strain



**Signal word**

: Undigested Lambda Zap II DNA  
 VCSM13 Interference-Resistant  
 Helper Phage  
 ExAssist Interference-Resistant  
 Helper Phage  
 XL1-Blue MRF' E.coli Strain  
 SOLR Bacterial Strain

No signal word.  
 No signal word.  
 No signal word.  
 Warning  
 Warning

**Hazard statements**

:  Undigested Lambda Zap II DNA  
 VCSM13 Interference-Resistant  
 Helper Phage  
 ExAssist Interference-Resistant  
 Helper Phage  
 XL1-Blue MRF' E.coli Strain  
 SOLR Bacterial Strain

No known significant effects or critical hazards.  
 No known significant effects or critical hazards.  
 No known significant effects or critical hazards.  
 H319 - Causes serious eye irritation.  
 H319 - Causes serious eye irritation.

### Precautionary statements

**Prevention**

:  Undigested Lambda Zap II DNA  
 VCSM13 Interference-Resistant  
 Helper Phage  
 ExAssist Interference-Resistant  
 Helper Phage  
 XL1-Blue MRF' E.coli Strain  
 SOLR Bacterial Strain

Not applicable.  
 Not applicable.  
 Not applicable.  
 P280 - Wear eye or face protection.  
 P264 - Wash hands thoroughly after handling.  
 P280 - Wear eye or face protection.  
 P264 - Wash hands thoroughly after handling.

## Section 2. Hazards identification

<b>Response</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain	Not applicable. Not applicable.  Not applicable.  P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical attention. 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.
	SOLR Bacterial Strain	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.
<b>Storage</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Not applicable. Not applicable.  Not applicable.  Not applicable. Not applicable.
<b>Disposal</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Not applicable. Not applicable.  Not applicable.  Not applicable. Not applicable.
<b>Supplemental label elements</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	None known. None known.  None known.  None known. None known.
<b>2.3 Other hazards</b>		
<b>Hazards not otherwise classified</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	None known. None known.  None known.  None known. None known.

## Section 3. Composition/information on ingredients

<b>Substance/mixture</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Mixture Mixture  Mixture  Mixture Mixture
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### Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
<b>XL1-Blue MRF' E.coli Strain</b> Glycerol Sodium chloride	≥10 - ≤25 ≤3	56-81-5 7647-14-5
<b>SOLR Bacterial Strain</b> Glycerol Sodium chloride	≥10 - ≤25 ≤3	56-81-5 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

- : Undigested Lambda Zap II 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.
- VCSM13 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.
- 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.
- 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.
- SOLR Bacterial 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.

##### Inhalation

- : Undigested Lambda Zap II DNA  
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
- VCSM13 Interference-Resistant Helper Phage  
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
- ExAssist Interference-Resistant Helper Phage  
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
- 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

	SOLR Bacterial Strain	<p>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.</p> <p>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.</p>
<b>Skin contact</b>	: Undigested Lambda Zap II DNA	<p>Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.</p>
	VCSM13 Interference-Resistant Helper Phage	<p>Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.</p>
	ExAssist Interference-Resistant Helper Phage	<p>Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.</p>
	XL1-Blue MRF' E.coli Strain	<p>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.</p>
	SOLR Bacterial Strain	<p>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.</p>
<b>Ingestion</b>	: Undigested Lambda Zap II DNA	<p>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.</p>
	VCSM13 Interference-Resistant Helper Phage	<p>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.</p>
	ExAssist Interference-Resistant Helper Phage	<p>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.</p>
	XL1-Blue MRF' E.coli Strain	<p>Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in</p>

## Section 4. First aid measures

SOLR Bacterial Strain

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.

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.

### 4.2 Most important symptoms/effects, acute and delayed

#### Potential acute health effects

<b>Eye contact</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No known significant effects or critical hazards. No known significant effects or critical hazards.  No known significant effects or critical hazards.
<b>Inhalation</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Causes serious eye irritation. Causes serious eye irritation.  No known significant effects or critical hazards. No known significant effects or critical hazards.  No known significant effects or critical hazards.
<b>Skin contact</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No known significant effects or critical hazards. No known significant effects or critical hazards.  No known significant effects or critical hazards. No known significant effects or critical hazards.  No known significant effects or critical hazards. No known significant effects or critical hazards.

## Section 4. First aid measures

<b>Ingestion</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No known significant effects or critical hazards. No known significant effects or critical hazards.  No known significant effects or critical hazards.  No known significant effects or critical hazards. No known significant effects or critical hazards.
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### Over-exposure signs/symptoms

<b>Eye contact</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain  SOLR Bacterial Strain	No specific data. No specific data.  No specific data.  Adverse symptoms may include the following: pain or irritation watering redness  Adverse symptoms may include the following: pain or irritation watering redness
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<b>Inhalation</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No specific data. No specific data.  No specific data.  No specific data. No specific data.
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<b>Skin contact</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No specific data. No specific data.  No specific data.  No specific data. No specific data.
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<b>Ingestion</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No specific data. No specific data.  No specific data.  No specific data. No specific data.
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### 4.3 Indication of immediate medical attention and special treatment needed, if necessary

<b>Notes to physician</b>	: Undigested Lambda Zap II DNA  VCSM13 Interference-Resistant Helper Phage  ExAssist Interference-Resistant Helper Phage  XL1-Blue MRF' E.coli Strain  SOLR Bacterial Strain	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.  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

<b>Specific treatments</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	specialist immediately if large quantities have been ingested or inhaled. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment.
<b>Protection of first-aiders</b>	: Undigested Lambda Zap II DNA  VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain   SOLR Bacterial Strain	No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. 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.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### 5.1 Extinguishing media

<b>Suitable extinguishing media</b>	: Undigested Lambda Zap II DNA  VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain  SOLR Bacterial Strain	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. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	None known. None known. None known. None known. None known.

### 5.2 Special hazards arising from the substance or mixture

<b>Specific hazards arising from the chemical</b>	: Undigested Lambda Zap II DNA  VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain  SOLR Bacterial Strain	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. 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.
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## Section 5. Fire-fighting measures

### Hazardous thermal decomposition products

: Undigested Lambda Zap II DNA  
VCSM13 Interference-Resistant Helper Phage  
ExAssist Interference-Resistant Helper Phage  
XL1-Blue MRF' E.coli Strain

and the container may burst.

No specific data.

No specific data.

No specific data.

Decomposition products may include the following materials:

carbon dioxide  
carbon monoxide  
halogenated compounds  
metal oxide/oxides

SOLR Bacterial Strain

Decomposition products may include the following materials:

carbon dioxide  
carbon monoxide  
halogenated compounds  
metal oxide/oxides

### 5.3 Advice for firefighters

#### Special protective actions for fire-fighters

: Undigested Lambda Zap II 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.

VCSM13 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.

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.

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.

SOLR Bacterial 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.

#### Special protective equipment for fire-fighters

: Undigested Lambda Zap II DNA

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

VCSM13 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.

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.

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.

SOLR Bacterial Strain

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus

## Section 5. Fire-fighting measures

(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

<b>For non-emergency personnel</b>	: Undigested Lambda Zap II 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.
	VCSM13 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.
	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.
	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.
	SOLR Bacterial 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.
<b>For emergency responders</b>	: Undigested Lambda Zap II 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".
	VCSM13 Interference-Resistant Helper Phage	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".
	ExAssist Interference-Resistant Helper Phage	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	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".
	SOLR Bacterial Strain	If specialized clothing is required to deal with the

## Section 6. Accidental release measures

spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

### 6.2 Environmental precautions

: Undigested Lambda Zap II 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).

VCSM13 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).

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).

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).

SOLR Bacterial 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).

### 6.3 Methods and materials for containment and cleaning up

#### Methods for cleaning up

: Undigested Lambda Zap II 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.

VCSM13 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.

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.

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.

SOLR Bacterial Strain

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble.

## Section 6. Accidental release measures

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

: Undigested Lambda Zap II DNA

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

VCSM13 Interference-Resistant Helper Phage

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

ExAssist Interference-Resistant Helper Phage

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

XL1-Blue MRF' 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.

SOLR Bacterial 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.

#### Advice on general occupational hygiene

: Undigested Lambda Zap II 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.

VCSM13 Interference-Resistant Helper Phage

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.


ExAssist Interference-Resistant Helper Phage

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 MRF' 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.

## Section 7. Handling and storage

	<p>SOLR Bacterial Strain</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><b>7.2 Conditions for safe storage, including any incompatibilities</b></p>	<p>:  Undigested Lambda Zap II DNA</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>VCSM13 Interference-Resistant Helper Phage</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>ExAssist Interference-Resistant Helper Phage</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>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>SOLR Bacterial 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</p>

## Section 7. Handling and storage

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)

<b>Recommendations</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
<b>Industrial sector specific solutions</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.

## Section 8. Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
<b>XL1-Blue MRF' E.coli Strain</b> Glycerol  Sodium chloride	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>OSHA PEL (United States, 6/2016).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> 8 hours. Form: Total dust None.
<b>SOLR Bacterial Strain</b> Glycerol  Sodium chloride	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>OSHA PEL (United States, 6/2016).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> 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.



## Section 8. Exposure controls/personal protection

**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

<b>Physical state</b>	Undigested Lambda Zap II DNA	Liquid.
	VCSM13 Interference-Resistant Helper Phage	Liquid.
	ExAssist Interference-Resistant Helper Phage	Liquid.
	XL1-Blue MRF' E.coli Strain	Liquid.
	SOLR Bacterial Strain	Liquid.
	<b>Color</b>	Undigested Lambda Zap II DNA
	VCSM13 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	SOLR Bacterial Strain	Not available.



## Section 9. Physical and chemical properties

<b>Odor</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
<b>Odor threshold</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
<b>pH</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	7.5 7.5 7.5 7 7
<b>Melting point</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	0°C (32°F) 0°C (32°F) 0°C (32°F) Not available. Not available.
<b>Boiling point</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	100°C (212°F) 100°C (212°F) 100°C (212°F) Not available. Not available.
<b>Flash point</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
<b>Evaporation rate</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
<b>Flammability (solid, gas)</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.

## Section 9. Physical and chemical properties

<b>Lower and upper explosive (flammable) limits</b>	: Undigested Lambda Zap II DNA	Not available.
	VCSM13 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
<b>Vapor pressure</b>	SOLR Bacterial Strain	Not available.
	: Undigested Lambda Zap II DNA	Not available.
	VCSM13 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
<b>Vapor density</b>	XL1-Blue MRF' E.coli Strain	Not available.
	SOLR Bacterial Strain	Not available.
	: Undigested Lambda Zap II DNA	Not available.
	VCSM13 Interference-Resistant Helper Phage	Not available.
<b>Relative density</b>	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	SOLR Bacterial Strain	Not available.
	: Undigested Lambda Zap II DNA	Not available.
<b>Solubility</b>	VCSM13 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	SOLR Bacterial Strain	Not available.
<b>Partition coefficient: n-octanol/water</b>	: Undigested Lambda Zap II DNA	Easily soluble in the following materials: cold water and hot water.
	VCSM13 Interference-Resistant Helper Phage	Easily soluble in the following materials: cold water and hot water.
	ExAssist Interference-Resistant Helper Phage	Easily soluble in the following materials: cold water and hot water.
	XL1-Blue MRF' E.coli Strain	Soluble in the following materials: cold water and hot water.
<b>Auto-ignition temperature</b>	SOLR Bacterial Strain	Soluble in the following materials: cold water and hot water.
	: Undigested Lambda Zap II DNA	Not available.
	VCSM13 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
<b>Auto-ignition temperature</b>	XL1-Blue MRF' E.coli Strain	Not available.
	SOLR Bacterial Strain	Not available.
	: Undigested Lambda Zap II DNA	Not available.
	VCSM13 Interference-Resistant Helper Phage	Not available.
<b>Auto-ignition temperature</b>	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	SOLR Bacterial Strain	Not available.
	: Undigested Lambda Zap II DNA	Not available.

## Section 9. Physical and chemical properties

<b>Decomposition temperature</b>	: Undigested Lambda Zap II DNA	Not available.
	VCSM13 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	SOLR Bacterial Strain	Not available.
<b>Viscosity</b>	: Undigested Lambda Zap II DNA	Not available.
	VCSM13 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	SOLR Bacterial Strain	Not available.

## Section 10. Stability and reactivity

<b>10.1 Reactivity</b>	: Undigested Lambda Zap II DNA	No specific test data related to reactivity available for this product or its ingredients.
	VCSM13 Interference-Resistant Helper Phage	No specific test data related to reactivity available for this product or its ingredients.
	ExAssist Interference-Resistant Helper Phage	No specific test data related to reactivity available for this product or its ingredients.
	XL1-Blue MRF' E.coli Strain	No specific test data related to reactivity available for this product or its ingredients.
	SOLR Bacterial Strain	No specific test data related to reactivity available for this product or its ingredients.
<b>10.2 Chemical stability</b>	: Undigested Lambda Zap II DNA	The product is stable.
	VCSM13 Interference-Resistant Helper Phage	The product is stable.
	ExAssist Interference-Resistant Helper Phage	The product is stable.
	XL1-Blue MRF' E.coli Strain	The product is stable.
	SOLR Bacterial Strain	The product is stable.
<b>10.3 Possibility of hazardous reactions</b>	: Undigested Lambda Zap II DNA	Under normal conditions of storage and use, hazardous reactions will not occur.
	VCSM13 Interference-Resistant Helper Phage	Under normal conditions of storage and use, hazardous reactions will not occur.
	ExAssist Interference-Resistant Helper Phage	Under normal conditions of storage and use, hazardous reactions will not occur.
	XL1-Blue MRF' E.coli Strain	Under normal conditions of storage and use, hazardous reactions will not occur.
	SOLR Bacterial Strain	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>10.4 Conditions to avoid</b>	: Undigested Lambda Zap II DNA	No specific data.
	VCSM13 Interference-Resistant Helper Phage	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	SOLR Bacterial Strain	No specific data.

## Section 10. Stability and reactivity

<b>10.5 Incompatible materials</b>	: Undigested Lambda Zap II DNA  VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain  SOLR Bacterial Strain	May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials.
<b>10.6 Hazardous decomposition products</b>	: Undigested Lambda Zap II DNA  VCSM13 Interference-Resistant Helper Phage  ExAssist Interference-Resistant Helper Phage  XL1-Blue MRF' E.coli Strain  SOLR Bacterial Strain	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. 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
<b>XL1-Blue MRF' E.coli Strain</b> Glycerol Sodium chloride	LD50 Oral	Rat	12600 mg/kg	-
	LD50 Oral	Rat	3000 mg/kg	-
<b>SOLR Bacterial Strain</b> Glycerol Sodium chloride	LD50 Oral	Rat	12600 mg/kg	-
	LD50 Oral	Rat	3000 mg/kg	-

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>XL1-Blue MRF' E.coli Strain</b> 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 Skin - Mild irritant	Rabbit Rabbit	- -	10 milligrams 24 hours 500 milligrams	- -
<b>SOLR Bacterial Strain</b> Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500	-

## Section 11. Toxicological information

Sodium chloride	Eyes - Moderate irritant	Rabbit	-	milligrams 24 hours 100	-
	Eyes - Moderate irritant	Rabbit	-	milligrams 10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

### Sensitization

Not available.

### Mutagenicity

**Conclusion/Summary** : Not available.

### Carcinogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Specific target organ toxicity (single exposure)

Not available.

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

### Information on the likely routes of exposure

Undigested Lambda Zap II DNA	Not available.
VCSM13 Interference-Resistant Helper Phage	Not available.
ExAssist Interference-Resistant Helper Phage	Not available.
XL1-Blue MRF' E.coli Strain	Routes of entry anticipated: Oral, Dermal, Inhalation.
SOLR Bacterial Strain	Routes of entry anticipated: Oral, Dermal, Inhalation.

### Potential acute health effects

#### Eye contact

Undigested Lambda Zap II DNA	No known significant effects or critical hazards.
VCSM13 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
XL1-Blue MRF' E.coli Strain	Causes serious eye irritation.
SOLR Bacterial Strain	Causes serious eye irritation.

#### Inhalation

Undigested Lambda Zap II DNA	No known significant effects or critical hazards.
VCSM13 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
SOLR Bacterial Strain	No known significant effects or critical hazards.

## Section 11. Toxicological information

<b>Skin contact</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	: ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	: XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	: SOLR Bacterial Strain	No known significant effects or critical hazards.
<b>Ingestion</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	: ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	: XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	: SOLR Bacterial Strain	No known significant effects or critical hazards.

### Symptoms related to the physical, chemical and toxicological characteristics

<b>Eye contact</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage	No specific data.
	: ExAssist Interference-Resistant Helper Phage	No specific data.
	: XL1-Blue MRF' E.coli Strain	Adverse symptoms may include the following: pain or irritation watering redness
	: SOLR Bacterial Strain	Adverse symptoms may include the following: pain or irritation watering redness
<b>Inhalation</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage	No specific data.
	: ExAssist Interference-Resistant Helper Phage	No specific data.
	: XL1-Blue MRF' E.coli Strain	No specific data.
	: SOLR Bacterial Strain	No specific data.
<b>Skin contact</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage	No specific data.
	: ExAssist Interference-Resistant Helper Phage	No specific data.
	: XL1-Blue MRF' E.coli Strain	No specific data.
	: SOLR Bacterial Strain	No specific data.
<b>Ingestion</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage	No specific data.
	: ExAssist Interference-Resistant Helper Phage	No specific data.
	: XL1-Blue MRF' E.coli Strain	No specific data.
	: SOLR Bacterial Strain	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.

## Section 11. Toxicological information

### Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

### Potential chronic health effects

<b>General</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Mutagenicity</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Teratogenicity</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Developmental effects</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Fertility effects</b>	: Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	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



## Section 11. Toxicological information

Route	ATE value
<b>XL1-Blue MRF' E.coli Strain</b> Oral	300000 mg/kg
<b>SOLR Bacterial Strain</b> Oral	300000 mg/kg

## Section 12. Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<b>XL1-Blue MRF' E.coli Strain</b> 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
<b>SOLR Bacterial Strain</b> 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

### 12.2 Persistence and degradability

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

## Section 12. Ecological information

	Test			
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### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
XL1-Blue MRF' E.coli Strain Glycerol	-1.76	-	low
SOLR Bacterial Strain Glycerol	-1.76	-	low

### 12.4 Mobility in soil

Soil/water partition coefficient (K<sub>oc</sub>) : 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 14. Transport information

Clean Water Act (CWA) 511. Ethetic 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

<b>Classification</b>	:	Undigested Lambda Zap II DNA VCSM13 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain SOLR Bacterial Strain	Not applicable. Not applicable. Not applicable. EYE IRRITATION - Category 2A EYE IRRITATION - Category 2A
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#### Composition/information on ingredients

Name	%	Classification
<b>XL1-Blue MRF' E.coli Strain</b>		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2A
Sodium chloride	≤3	EYE IRRITATION - Category 2A
<b>SOLR Bacterial Strain</b>		
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.

#### Rotterdam Convention on Prior Informed Consent (PIC)

## Section 15. Regulatory information

Not listed.

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

Not listed.

### [Inventory list](#)

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

## Section 16. Other information

### [History](#)

<b>Date of issue</b>	: 08/23/2018
<b>Date of previous issue</b>	: 04/21/2017
<b>Version</b>	: 5

### [Procedure used to derive the classification](#)

Classification	Justification
<b>XL1-Blue MRF' E.coli Strain</b> EYE IRRITATION - Category 2A	Calculation method
<b>SOLR Bacterial Strain</b> EYE IRRITATION - Category 2A	Calculation method

Indicates information that has changed from previously issued version.

### [Notice to reader](#)

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