

SAFETY DATA SHEET

Lambda ZAP II Predigested Vector Kit, Part Number 236211

Section 1. Identification

1.1 Product identifier

Product name : Lambda ZAP II Predigested Vector Kit, Part Number 236211
Part no. (chemical kit) : 236211
Part no. : Lambda ZAP II Vector Predigested With 236211-51
 EcoR I
 pRho/EcoR I Test Insert 210200-51
 XL1-Blue MRF' E.coli Strain 200301-81
 ExAssist Interference-Resistant Helper Phage 200253-81
 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.
 Lambda ZAP II Vector Predigested With EcoR I 0.01 ml (10 µg 1 µg/µl)
 pRho/EcoR I Test Insert 0.01 ml (1.25 µg 0.25 µg/µl)
 XL1-Blue MRF' E.coli Strain 0.5 ml
 ExAssist Interference-Resistant Helper Phage 1 ml (>1 x E10 pfu/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

OSHA/HCS status :	<p><input checked="" type="checkbox"/> Lambda ZAP II Vector Predigested With EcoR I</p> <p>pRho/EcoR I Test Insert</p> <p>XL1-Blue MRF' E.coli Strain</p> <p>ExAssist Interference-Resistant Helper Phage</p>	<p>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.</p> <p>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.</p> <p>This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). 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</p>
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Section 2. Hazards identification

SDS should be retained and available for employees and other users of this product.
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SOLR Bacterial Strain

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

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

SOLR Bacterial Strain

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

: Lambda ZAP II Vector
Predigested With EcoR I
pRho/EcoR I Test Insert
XL1-Blue MRF' E.coli Strain
ExAssist Interference-Resistant
Helper Phage
SOLR Bacterial Strain

No signal word.

No signal word.

Warning

No signal word.

Warning

Hazard statements

: Lambda ZAP II Vector
Predigested With EcoR I
pRho/EcoR I Test Insert
XL1-Blue MRF' E.coli Strain
ExAssist Interference-Resistant
Helper Phage
SOLR Bacterial Strain

No known significant effects or critical hazards.

No known significant effects or critical hazards.

H319 - Causes serious eye irritation.

No known significant effects or critical hazards.

H319 - Causes serious eye irritation.

Precautionary statements

Prevention

: Lambda ZAP II Vector
Predigested With EcoR I
pRho/EcoR I Test Insert
XL1-Blue MRF' E.coli Strain

Not applicable.

Not applicable.

P280 - Wear eye or face protection.

P264 - Wash hands thoroughly after handling.

Not applicable.

ExAssist Interference-Resistant
Helper Phage

P280 - Wear eye or face protection.

P264 - Wash hands thoroughly after handling.

SOLR Bacterial Strain

Section 2. Hazards identification

Response	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain	Not applicable.
	ExAssist Interference-Resistant Helper Phage	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.
	SOLR Bacterial Strain	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.
Storage	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain	Not applicable.
	ExAssist Interference-Resistant Helper Phage	Not applicable.
	SOLR Bacterial Strain	Not applicable.
Disposal	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain	Not applicable.
	ExAssist Interference-Resistant Helper Phage	Not applicable.
	SOLR Bacterial Strain	Not applicable.
Supplemental label elements	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain	None known.
	ExAssist Interference-Resistant Helper Phage	None known.
	SOLR Bacterial Strain	None known.
2.3 Other hazards		
Hazards not otherwise classified	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain	None known.
	ExAssist Interference-Resistant Helper Phage	None known.
	SOLR Bacterial Strain	None known.

Section 3. Composition/information on ingredients

Substance/mixture	: Lambda ZAP II Vector Predigested With EcoR I	Mixture
	pRho/EcoR I Test Insert	Mixture
	XL1-Blue MRF' E.coli Strain	Mixture
	ExAssist Interference-Resistant Helper Phage	Mixture
	SOLR Bacterial Strain	Mixture

Section 3. Composition/information on ingredients

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

: Lambda ZAP II Vector Predigested With EcoR I	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.
pRheo/EcoR I Test Insert	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.
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.
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

: Lambda ZAP II Vector Predigested With EcoR I	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
pRheo/EcoR I Test Insert	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 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.

Section 4. First aid measures

	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.
	SOLR Bacterial 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.
Skin contact	: Lambda ZAP II Vector Predigested With EcoR I	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	pRheo/EcoR I Test Insert	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	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.
	ExAssist Interference-Resistant Helper Phage	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	SOLR Bacterial 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	: Lambda ZAP II Vector Predigested With EcoR I	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.
	pRheo/EcoR I Test Insert	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.
	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

Section 4. First aid measures

ExAssist Interference-Resistant
Helper Phage

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 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.

SOLR Bacterial 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.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	No known significant effects or critical hazards. No known significant effects or critical hazards. Causes serious eye irritation. No known significant effects or critical hazards. Causes serious eye irritation.
Inhalation	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
Skin contact	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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

Ingestion	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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

Eye contact	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	No specific data. No specific data. Adverse symptoms may include the following: pain or irritation watering redness No specific data. Adverse symptoms may include the following: pain or irritation watering redness
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Inhalation	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	No specific data. No specific data. No specific data. No specific data. No specific data.
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Skin contact	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	No specific data. No specific data. No specific data. No specific data. No specific data.
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Ingestion	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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

Notes to physician	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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

Specific treatments	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
Protection of first-aiders	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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. 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. 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

Suitable extinguishing media	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
Unsuitable extinguishing media	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	None known. None known. None known. None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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
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Section 5. Fire-fighting measures

Hazardous thermal decomposition products

: Lambda ZAP II Vector
Predigested With EcoR I
pRho/EcoR I Test Insert
XL1-Blue MRF' E.coli Strain

and the container may burst.

No specific data.

No specific data.

Decomposition products may include the following materials:

carbon dioxide
carbon monoxide
halogenated compounds
metal oxide/oxides

No specific data.

ExAssist Interference-Resistant
Helper Phage
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

: Lambda ZAP II Vector
Predigested With EcoR I

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.

pRho/EcoR I Test Insert

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.

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

: Lambda ZAP II Vector
Predigested With EcoR I

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

pRho/EcoR I Test Insert

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.

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

For non-emergency personnel

: Lambda ZAP II Vector
Predigested With EcoR I

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.

pRheo/EcoR I Test Insert

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.

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.

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.

For emergency responders

: Lambda ZAP II Vector
Predigested With EcoR I

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".

pRheo/EcoR I Test Insert

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".

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".

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

: Lambda ZAP II Vector
Predigested With EcoR I

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).

pRheo/EcoR I Test Insert

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).

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

: Lambda ZAP II Vector
Predigested With EcoR I

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.

pRheo/EcoR I Test Insert

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.

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

: Lambda ZAP II Vector
Predigested With EcoR I
pRheo/EcoR I Test Insert

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

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.

ExAssist Interference-Resistant
Helper Phage
SOLR Bacterial Strain

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

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

: Lambda ZAP II Vector
Predigested With EcoR I

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.

pRheo/EcoR I Test Insert

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.

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.

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>7.2 Conditions for safe storage, including any incompatibilities</p>	<p>:  Lambda ZAP II Vector Predigested With EcoR I</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>pRheo/EcoR I Test Insert</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>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>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)

Recommendations	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
Industrial sector specific solutions	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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
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.
SOLR Bacterial Strain Glycerol Sodium chloride	OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 10 mg/m ³ 8 hours. Form: Total dust OSHA PEL (United States, 6/2016). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust None.

8.2 Exposure controls

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

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

Physical state	: Lambda ZAP II Vector	Liquid.
	Predigested With EcoR I	
	pRho/EcoR I Test Insert	Liquid.
	XL1-Blue MRF' E.coli Strain	Liquid.
	ExAssist Interference-Resistant	Liquid.
	Helper Phage	
Color	: Lambda ZAP II Vector	Not available.
	Predigested With EcoR I	
	pRho/EcoR I Test Insert	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	ExAssist Interference-Resistant	Not available.
	Helper Phage	
	SOLR Bacterial Strain	Not available.

Section 9. Physical and chemical properties

Odor	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available. Not available.
Odor threshold	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available. Not available.
pH	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	7.5 7.5 7 7.5 7
Melting point	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	0°C (32°F) 0°C (32°F) Not available. 0°C (32°F) Not available.
Boiling point	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	100°C (212°F) 100°C (212°F) Not available. 100°C (212°F) Not available.
Flash point	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
Evaporation rate	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
Flammability (solid, gas)	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
Vapor pressure	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
Vapor density	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
Relative density	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
Solubility	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Easily soluble in the following materials: cold water and hot water. Easily 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. Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.
Auto-ignition temperature	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Not available. Not available. Not available.

Section 9. Physical and chemical properties

Decomposition temperature	: Lambda ZAP II Vector	Not available.
	Predigested With EcoR I	
	pRho/EcoR I Test Insert	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
Viscosity	: Lambda ZAP II Vector	Not available.
	Predigested With EcoR I	
	pRho/EcoR I Test Insert	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	SOLR Bacterial Strain	Not available.

Section 10. Stability and reactivity

10.1 Reactivity	: Lambda ZAP II Vector	No specific test data related to reactivity available for this product or its ingredients.
	Predigested With EcoR I	
	pRho/EcoR I Test Insert	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.
	ExAssist Interference-Resistant Helper Phage	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.
10.2 Chemical stability	: Lambda ZAP II Vector	The product is stable.
	Predigested With EcoR I	
	pRho/EcoR I Test Insert	The product is stable.
	XL1-Blue MRF' E.coli Strain	The product is stable.
	ExAssist Interference-Resistant Helper Phage	The product is stable.
	SOLR Bacterial Strain	The product is stable.
10.3 Possibility of hazardous reactions	: Lambda ZAP II Vector	Under normal conditions of storage and use, hazardous reactions will not occur.
	Predigested With EcoR I	
	pRho/EcoR I Test Insert	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.
	ExAssist Interference-Resistant Helper Phage	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.
10.4 Conditions to avoid	: Lambda ZAP II Vector	No specific data.
	Predigested With EcoR I	
	pRho/EcoR I Test Insert	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	SOLR Bacterial Strain	No specific data.

Section 10. Stability and reactivity

10.5 Incompatible materials	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
10.6 Hazardous decomposition products	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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
XL1-Blue MRF' E.coli Strain Glycerol	LD50 Oral	Rat	12600 mg/kg	-
	Sodium chloride LD50 Oral	Rat	3000 mg/kg	-
SOLR Bacterial 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
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 Skin - Mild irritant	Rabbit Rabbit	- -	10 milligrams 24 hours 500 milligrams	- -
SOLR Bacterial Strain 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

: Lambda ZAP II Vector Predigested With EcoR I pRheo/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	Not available. Not available. Routes of entry anticipated: Oral, Dermal, Inhalation. Not available. Routes of entry anticipated: Oral, Dermal, Inhalation.
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Potential acute health effects

Eye contact

: Lambda ZAP II Vector Predigested With EcoR I pRheo/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	No known significant effects or critical hazards. No known significant effects or critical hazards. Causes serious eye irritation. No known significant effects or critical hazards. Causes serious eye irritation.
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Inhalation

: Lambda ZAP II Vector Predigested With EcoR I pRheo/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
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Section 11. Toxicological information

Skin contact	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
Ingestion	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	No specific data. No specific data. Adverse symptoms may include the following: pain or irritation watering redness No specific data. Adverse symptoms may include the following: pain or irritation watering redness
Inhalation	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	No specific data. No specific data. No specific data. No specific data.
Skin contact	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	No specific data. No specific data. No specific data. No specific data.
Ingestion	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage SOLR Bacterial Strain	No specific data. No specific data. No specific data. 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

General	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
Carcinogenicity	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
Mutagenicity	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
Teratogenicity	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
Developmental effects	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.
Fertility effects	: Lambda ZAP II Vector Predigested With EcoR I pRho/EcoR I Test Insert XL1-Blue MRF' E.coli Strain ExAssist Interference-Resistant Helper Phage 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.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

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

Section 12. Ecological information

12.1 Toxicity

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

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
XL1-Blue MRF' E.coli Strain Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
SOLR Bacterial Strain 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 _{ow}	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_{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 14. Transport information

Clean Water Act (CWA) 311. 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

Classification	: <input checked="" type="checkbox"/> Lambda ZAP II Vector	Not applicable.
	Predigested With EcoR I	Not applicable.
	pRho/EcoR I Test Insert	EYE IRRITATION - Category 2A
	XL1-Blue MRF' E.coli Strain	Not applicable.
	ExAssist Interference-Resistant	Not applicable.
	Helper Phage	
	SOLR Bacterial Strain	EYE IRRITATION - Category 2A

Composition/information on ingredients

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

State regulations

Massachusetts : The following components are listed: GLYCERINE MIST

New York : None of the components are listed.

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

Pennsylvania : The following components are listed: 1,2,3-PROPANETRIOL

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

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

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

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](#)

Australia	: Not determined.
Canada	: Not determined.
China	: Not determined.
Europe	: All components are listed or exempted.
Japan	: <input checked="" type="checkbox"/> Japan inventory (ENCS) : Not determined. Japan inventory (ISHL) : All components are listed or exempted.
Malaysia	: Not determined.
New Zealand	: Not determined.
Philippines	: Not determined.
Republic of Korea	: Not determined.
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	: 08/23/2018
Date of previous issue	: 03/30/2017
Version	: 5

[Procedure used to derive the classification](#)

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

Indicates information that has changed from previously issued version.

[Notice to reader](#)

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