

SAFETY DATA SHEET

ZAP Express Undigested Vector Kit, Part Number 239201

Section 1. Identification

Product identifier	: ZAP Express Undigested Vector Kit, Part Number 239201
Part no. (chemical kit)	: 239201
Part no.	: ZAP Express Undigested Vector 239201-51 XL1-Blue MRF' E.coli Strain 200301-81 XLOLR E. coli Strain 200304-81 ExAssist Interference-Resistant Helper Phage 200253-81 R408 Interference-Resistant Helper Phage 200252-81
Material uses	: Analytical reagent. ZAP Express Undigested Vector 0.02 ml (20 µg 1 µg/µl) XL1-Blue MRF' E.coli Strain 0.5 ml XLOLR E. coli Strain 0.5 ml ExAssist Interference-Resistant Helper Phage 1 ml (>1 x E10 pfu/ml) R408 Interference-Resistant Helper Phage 1 ml
Supplier/Manufacturer	: Agilent Technologies, Inc. 5301 Stevens Creek Blvd Santa Clara, CA 95051, USA 800-227-9770
Emergency telephone number (with hours of operation)	: CHEMTREC®: 1-800-424-9300

Section 2. Hazard identification

Classification of the substance or mixture

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

GHS label elements

Hazard pictograms : XL1-Blue MRF' E.coli Strain



XLOLR E. coli Strain



Signal word	: ZAP Express Undigested Vector No signal word.
	: XL1-Blue MRF' E.coli Strain Warning
	: XLOLR E. coli Strain Warning
	: ExAssist Interference-Resistant Helper Phage No signal word.
	: R408 Interference-Resistant Helper Phage No signal word.

Section 2. Hazard identification

Hazard statements	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. H319 - Causes serious eye irritation. H319 - Causes serious eye irritation. No known significant effects or critical hazards. No known significant effects or critical hazards.
Precautionary statements		
Prevention	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not applicable. P280 - Wear eye or face protection. P280 - Wear eye or face protection. Not applicable. Not applicable.
Response	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 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 advice or 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 advice or attention. Not applicable. Not applicable.
Storage	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Disposal	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Supplemental label elements	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	None known. None known. None known. None known. None known.

Section 2. Hazard identification

Other hazards which do not result in classification	: ZAP Express Undigested Vector	None known.
	XL1-Blue MRF' E.coli Strain	None known.
	XLOLR E. coli Strain	None known.
	ExAssist Interference-Resistant Helper Phage	None known.
	R408 Interference-Resistant Helper Phage	None known.

Section 3. Composition/information on ingredients

Substance/mixture	: ZAP Express Undigested Vector	Mixture
	XL1-Blue MRF' E.coli Strain	Mixture
	XLOLR E. coli Strain	Mixture
	ExAssist Interference-Resistant Helper Phage	Mixture
	R408 Interference-Resistant Helper Phage	Mixture

Ingredient name	% (w/w)	CAS number
XL1-Blue MRF' E.coli Strain		
Glycerol	10 - 30	56-81-5
Sodium chloride	0.1 - 1	7647-14-5
XLOLR E. coli Strain		
Glycerol	10 - 30	56-81-5
Sodium chloride	0.1 - 1	7647-14-5

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

Description of necessary first aid measures

Eye contact	: ZAP Express Undigested Vector	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.
	XLOLR 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.
	R408 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.

Section 4. First-aid measures

Inhalation	: ZAP Express Undigested Vector	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.
	XLOLR 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.
	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.
	R408 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.
Skin contact	: ZAP Express Undigested Vector	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.
	XLOLR 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.
	R408 Interference-Resistant Helper Phage	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: ZAP Express Undigested Vector	Wash out mouth with water. 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. 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

Section 4. First-aid measures

XLOLR E. coli Strain	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. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
ExAssist Interference-Resistant Helper Phage	Wash out mouth with water. 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.
R408 Interference-Resistant Helper Phage	Wash out mouth with water. 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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. Causes serious eye irritation. Causes serious eye irritation. No known significant effects or critical hazards. No known significant effects or critical hazards.
Inhalation	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

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Ingestion	: ZAP Express Undigested Vector	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	Adverse symptoms may include the following: pain or irritation watering redness
	XLOLR E. coli Strain	Adverse symptoms may include the following: pain or irritation watering redness
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.

Inhalation	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.

Skin contact	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.

Ingestion	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.

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

Notes to physician	: ZAP Express Undigested Vector	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XL1-Blue MRF' E.coli Strain	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	XLOLR E. coli Strain	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

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	ExAssist Interference-Resistant Helper Phage	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	R408 Interference-Resistant Helper Phage	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: ZAP Express Undigested Vector	No specific treatment.
	XL1-Blue MRF' E.coli Strain	No specific treatment.
	XLOLR E. coli Strain	No specific treatment.
	ExAssist Interference-Resistant Helper Phage	No specific treatment.
	R408 Interference-Resistant Helper Phage	No specific treatment.
Protection of first-aiders	: ZAP Express Undigested Vector	No action shall be taken involving any personal risk or without suitable training.
	XL1-Blue MRF' E.coli Strain	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
	XLOLR E. coli Strain	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
	ExAssist Interference-Resistant Helper Phage	No action shall be taken involving any personal risk or without suitable training.
	R408 Interference-Resistant Helper Phage	No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	: ZAP Express Undigested Vector	Use an extinguishing agent suitable for the surrounding fire.
	XL1-Blue MRF' E.coli Strain	Use an extinguishing agent suitable for the surrounding fire.
	XLOLR E. coli Strain	Use an extinguishing agent suitable for the surrounding fire.
	ExAssist Interference-Resistant Helper Phage	Use an extinguishing agent suitable for the surrounding fire.
	R408 Interference-Resistant Helper Phage	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: ZAP Express Undigested Vector	None known.
	XL1-Blue MRF' E.coli Strain	None known.
	XLOLR E. coli Strain	None known.
	ExAssist Interference-Resistant Helper Phage	None known.
	R408 Interference-Resistant Helper Phage	None known.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical	: ZAP Express Undigested Vector	In a fire or if heated, a pressure increase will occur and the container may burst.
	XL1-Blue MRF' E.coli Strain	In a fire or if heated, a pressure increase will occur and the container may burst.
	XLOLR E. coli Strain	In a fire or if heated, a pressure increase will occur and the container may burst.
	ExAssist Interference-Resistant Helper Phage	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
	XLOLR E. coli Strain	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
	ExAssist Interference-Resistant Helper Phage	No specific data.
Special protective actions for fire-fighters	: ZAP Express Undigested Vector	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.
	XLOLR 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.
	R408 Interference-Resistant Helper Phage	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	: ZAP Express Undigested Vector	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.
	XLOLR E. coli Strain	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus

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ExAssist Interference-Resistant Helper Phage	(SCBA) with a full face-piece operated in positive pressure mode. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
R408 Interference-Resistant Helper Phage	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: ZAP Express Undigested Vector	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.
	XLOLR 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.
	R408 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.
For emergency responders	: ZAP Express Undigested Vector	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".
	XLOLR 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".

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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".
R408 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".
Environmental precautions : ZAP Express Undigested Vector	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).
XL0LR 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).
R408 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).

Methods and materials for containment and cleaning up

Methods for cleaning up : ZAP Express Undigested Vector	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.
XL0LR E. coli Strain	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
ExAssist Interference-Resistant Helper Phage	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

R408 Interference-Resistant
Helper Phage

disposal contractor.

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

Section 7. Handling and storage

Precautions for safe handling

Protective measures

: ZAP Express Undigested Vector	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.
XL0LR 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	Put on appropriate personal protective equipment (see Section 8).
R408 Interference-Resistant Helper Phage	Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene

: ZAP Express Undigested Vector	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.
XL0LR 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

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R408 Interference-Resistant
Helper Phage

contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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.

Conditions for safe storage, including any incompatibilities : ZAP Express Undigested Vector

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

XL1-Blue MRF' E.coli Strain

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

XLOLR E. coli Strain

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

ExAssist Interference-
Resistant Helper Phage

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.

R408 Interference-Resistant
Helper Phage

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

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ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

[Control parameters](#)

[Occupational exposure limits](#)

Ingredient name	Exposure limits
XL1-Blue MRF' E.coli Strain Glycerol	CA Alberta Provincial (Canada, 6/2018). 8 hrs OEL: 10 mg/m ³ 8 hours. Form: Mist CA Quebec Provincial (Canada, 7/2019). TWAEV: 10 mg/m ³ 8 hours. Form: mist CA Saskatchewan Provincial (Canada, 7/2013). STEL: 20 mg/m ³ 15 minutes. Form: mist TWA: 10 mg/m ³ 8 hours. Form: mist CA British Columbia Provincial (Canada, 1/2021). TWA: 3 mg/m ³ 8 hours. Form: respirable mist TWA: 10 mg/m ³ 8 hours. Form: total mist
XLOLR E. coli Strain Glycerol	CA Alberta Provincial (Canada, 6/2018). 8 hrs OEL: 10 mg/m ³ 8 hours. Form: Mist CA Quebec Provincial (Canada, 7/2019). TWAEV: 10 mg/m ³ 8 hours. Form: mist CA Saskatchewan Provincial (Canada, 7/2013). STEL: 20 mg/m ³ 15 minutes. Form: mist TWA: 10 mg/m ³ 8 hours. Form: mist CA British Columbia Provincial (Canada, 1/2021). TWA: 3 mg/m ³ 8 hours. Form: respirable mist TWA: 10 mg/m ³ 8 hours. Form: total mist

[Appropriate engineering controls](#)

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

[Environmental exposure controls](#)

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

[Individual protection measures](#)

Section 8. Exposure controls/personal protection

- 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: safety glasses with side-shields.
- 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.
- 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 and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

- Physical state**
- | | |
|--|---------|
| ZAP Express Undigested Vector | Liquid. |
| XL1-Blue MRF' E.coli Strain | Liquid. |
| XLOLR E. coli Strain | Liquid. |
| ExAssist Interference-Resistant Helper Phage | Liquid. |
| R408 Interference-Resistant Helper Phage | Liquid. |
- Color**
- | | |
|--|----------------|
| ZAP Express Undigested Vector | Not available. |
| XL1-Blue MRF' E.coli Strain | Not available. |
| XLOLR E. coli Strain | Not available. |
| ExAssist Interference-Resistant Helper Phage | Not available. |
| R408 Interference-Resistant Helper Phage | Not available. |
- Odor**
- | | |
|--|----------------|
| ZAP Express Undigested Vector | Not available. |
| XL1-Blue MRF' E.coli Strain | Not available. |
| XLOLR E. coli Strain | Not available. |
| ExAssist Interference-Resistant Helper Phage | Not available. |
| R408 Interference-Resistant Helper Phage | Not available. |

Section 9. Physical and chemical properties and safety characteristics

Odor threshold : ZAP Express Undigested Vector Not available.
 XL1-Blue MRF' E.coli Strain Not available.
 XLOLR E. coli Strain Not available.
 ExAssist Interference-Resistant Helper Phage Not available.
 R408 Interference-Resistant Helper Phage Not available.

pH : ZAP Express Undigested Vector 7.5
 XL1-Blue MRF' E.coli Strain 7
 XLOLR E. coli Strain 7
 ExAssist Interference-Resistant Helper Phage 7.5
 R408 Interference-Resistant Helper Phage 7.5

Melting point/freezing point : ZAP Express Undigested Vector 0°C (32°F)
 XL1-Blue MRF' E.coli Strain Not available.
 XLOLR E. coli Strain Not available.
 ExAssist Interference-Resistant Helper Phage 0°C (32°F)
 R408 Interference-Resistant Helper Phage 0°C (32°F)

Boiling point, initial boiling point, and boiling range : ZAP Express Undigested Vector 100°C (212°F)
 XL1-Blue MRF' E.coli Strain Not available.
 XLOLR E. coli Strain Not available.
 ExAssist Interference-Resistant Helper Phage 100°C (212°F)
 R408 Interference-Resistant Helper Phage 100°C (212°F)

Flash point :

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
ZAP Express Undigested Vector						
Edetic acid	>100	>212	DIN 51758			
XL1-Blue MRF' E.coli Strain						
Glycerol				177	350.6	
XLOLR E. coli Strain						
Glycerol				177	350.6	

Evaporation rate : ZAP Express Undigested Vector Not available.
 XL1-Blue MRF' E.coli Strain Not available.
 XLOLR E. coli Strain Not available.
 ExAssist Interference-Resistant Helper Phage Not available.
 R408 Interference-Resistant Helper Phage Not available.

Section 9. Physical and chemical properties and safety characteristics

Flammability : ZAP Express Undigested Vector Not applicable.
 XL1-Blue MRF' E.coli Strain Not applicable.
 XLOLR E. coli Strain Not applicable.
 ExAssist Interference-Resistant Helper Phage Not applicable.
 R408 Interference-Resistant Helper Phage Not applicable.

Lower and upper explosion limit/flammability limit : ZAP Express Undigested Vector Not available.
 XL1-Blue MRF' E.coli Strain Not available.
 XLOLR E. coli Strain Not available.
 ExAssist Interference-Resistant Helper Phage Not available.
 R408 Interference-Resistant Helper Phage Not available.

Vapor pressure :

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
ZAP Express Undigested Vector						
water	23.8	3.2		92.258	12.3	
2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	0.000027	0.0000036		0.000007501	0.000001	
XL1-Blue MRF' E.coli Strain						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
XLOLR E. coli Strain						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
ExAssist Interference-Resistant Helper Phage						
water	23.8	3.2		92.258	12.3	
R408 Interference-Resistant Helper Phage						
water	23.8	3.2		92.258	12.3	

Relative vapor density : ZAP Express Undigested Vector Not available.
 XL1-Blue MRF' E.coli Strain Not available.
 XLOLR E. coli Strain Not available.
 ExAssist Interference-Resistant Helper Phage Not available.
 R408 Interference-Resistant Helper Phage Not available.

Section 9. Physical and chemical properties and safety characteristics

Relative density	:	ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not available. Not available. Not available. Not available. Not available.																												
Solubility	:	ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Easily soluble in the following materials: cold water and hot water. 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. Easily soluble in the following materials: cold water and hot water.																												
Partition coefficient: n-octanol/water	:	ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.																												
Auto-ignition temperature	:	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Ingredient name</th> <th style="text-align: center;">°C</th> <th style="text-align: center;">°F</th> <th style="text-align: left;">Method</th> </tr> </thead> <tbody> <tr> <td>ZAP Express Undigested Vector</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Edetic acid</td> <td style="text-align: center;">>400</td> <td style="text-align: center;">>752</td> <td>VDI 2263</td> </tr> <tr> <td>XL1-Blue MRF' E.coli Strain</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Glycerol</td> <td style="text-align: center;">370</td> <td style="text-align: center;">698</td> <td></td> </tr> <tr> <td>XLOLR E. coli Strain</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Glycerol</td> <td style="text-align: center;">370</td> <td style="text-align: center;">698</td> <td></td> </tr> </tbody> </table>	Ingredient name	°C	°F	Method	ZAP Express Undigested Vector				Edetic acid	>400	>752	VDI 2263	XL1-Blue MRF' E.coli Strain				Glycerol	370	698		XLOLR E. coli Strain				Glycerol	370	698		
Ingredient name	°C	°F	Method																												
ZAP Express Undigested Vector																															
Edetic acid	>400	>752	VDI 2263																												
XL1-Blue MRF' E.coli Strain																															
Glycerol	370	698																													
XLOLR E. coli Strain																															
Glycerol	370	698																													
Decomposition temperature	:	ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not available. Not available. Not available. Not available. Not available.																												
Viscosity	:	ZAP Express Undigested Vector XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain ExAssist Interference-Resistant Helper Phage R408 Interference-Resistant Helper Phage	Not available. Not available. Not available. Not available. Not available.																												

Particle characteristics

Section 9. Physical and chemical properties and safety characteristics

Median particle size	: ZAP Express Undigested Vector	Not applicable.
	XL1-Blue MRF' E.coli Strain	Not applicable.
	XLOLR E. coli Strain	Not applicable.
	ExAssist Interference-Resistant Helper Phage	Not applicable.
	R408 Interference-Resistant Helper Phage	Not applicable.

Section 10. Stability and reactivity

Reactivity	: ZAP Express Undigested Vector	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.
	XLOLR 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.
	R408 Interference-Resistant Helper Phage	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: ZAP Express Undigested Vector	The product is stable.
	XL1-Blue MRF' E.coli Strain	The product is stable.
	XLOLR E. coli Strain	The product is stable.
	ExAssist Interference-Resistant Helper Phage	The product is stable.
	R408 Interference-Resistant Helper Phage	The product is stable.
Possibility of hazardous reactions	: ZAP Express Undigested Vector	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.
	XLOLR 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.
	R408 Interference-Resistant Helper Phage	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.

Section 10. Stability and reactivity

Incompatible materials	: ZAP Express Undigested Vector	May react or be incompatible with oxidizing materials.
	XL1-Blue MRF' E.coli Strain	May react or be incompatible with oxidizing materials.
	XLOLR E. coli Strain	May react or be incompatible with oxidizing materials.
	ExAssist Interference-Resistant Helper Phage	May react or be incompatible with oxidizing materials.
	R408 Interference-Resistant Helper Phage	May react or be incompatible with oxidizing materials.
Hazardous decomposition products	: ZAP Express Undigested Vector	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	XL1-Blue MRF' E.coli Strain	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	XLOLR E. coli Strain	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	ExAssist Interference-Resistant Helper Phage	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	R408 Interference-Resistant Helper Phage	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

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	-
XLOLR E. coli Strain				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
XL1-Blue MRF' E.coli Strain					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Moderate irritant Skin - Mild irritant	Rabbit Rabbit	- -	10 mg 24 hours 500 mg	- -
XLOLR E. coli Strain					
	Glycerol				
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-

Section 11. Toxicological information

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

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	: ZAP Express Undigested Vector	Not available.
	XL1-Blue MRF' E.coli Strain	Routes of entry anticipated: Oral, Dermal, Inhalation.
	XL0LR E. coli Strain	Routes of entry anticipated: Oral, Dermal, Inhalation.
	ExAssist Interference-Resistant Helper Phage	Not available.
	R408 Interference-Resistant Helper Phage	Not available.

Potential acute health effects

Eye contact	: ZAP Express Undigested Vector	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	Causes serious eye irritation.
	XL0LR E. coli Strain	Causes serious eye irritation.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
Inhalation	: ZAP Express Undigested Vector	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XL0LR E. coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.

Section 11. Toxicological information

Skin contact	: ZAP Express Undigested Vector	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
Ingestion	: ZAP Express Undigested Vector	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	Adverse symptoms may include the following: pain or irritation watering redness
	XLOLR E. coli Strain	Adverse symptoms may include the following: pain or irritation watering redness
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.
Inhalation	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.
Skin contact	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.
Ingestion	: ZAP Express Undigested Vector	No specific data.
	XL1-Blue MRF' E.coli Strain	No specific data.
	XLOLR E. coli Strain	No specific data.
	ExAssist Interference-Resistant Helper Phage	No specific data.
	R408 Interference-Resistant Helper Phage	No specific data.

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

Section 11. Toxicological information

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : ZAP Express Undigested Vector No known significant effects or critical hazards.

XL1-Blue MRF' E.coli Strain No known significant effects or critical hazards.

XLOLR E. coli Strain No known significant effects or critical hazards.

ExAssist Interference-Resistant Helper Phage No known significant effects or critical hazards.

R408 Interference-Resistant Helper Phage No known significant effects or critical hazards.

Carcinogenicity : ZAP Express Undigested Vector No known significant effects or critical hazards.

XL1-Blue MRF' E.coli Strain No known significant effects or critical hazards.

XLOLR E. coli Strain No known significant effects or critical hazards.

ExAssist Interference-Resistant Helper Phage No known significant effects or critical hazards.

R408 Interference-Resistant Helper Phage No known significant effects or critical hazards.

Mutagenicity : ZAP Express Undigested Vector No known significant effects or critical hazards.

XL1-Blue MRF' E.coli Strain No known significant effects or critical hazards.

XLOLR E. coli Strain No known significant effects or critical hazards.

ExAssist Interference-Resistant Helper Phage No known significant effects or critical hazards.

R408 Interference-Resistant Helper Phage No known significant effects or critical hazards.

Reproductive toxicity : ZAP Express Undigested Vector No known significant effects or critical hazards.

XL1-Blue MRF' E.coli Strain No known significant effects or critical hazards.

XLOLR E. coli Strain No known significant effects or critical hazards.

ExAssist Interference-Resistant Helper Phage No known significant effects or critical hazards.

R408 Interference-Resistant Helper Phage No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
XL1-Blue MRF' E.coli Strain					
XL1-Blue MRF' E.coli Strain	300000	N/A	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
Sodium chloride	3000	N/A	N/A	N/A	N/A
XLOLR E. coli Strain					
XLOLR E. coli Strain	300000	N/A	N/A	N/A	N/A

Section 11. Toxicological information

Glycerol	12600	N/A	N/A	N/A	N/A
Sodium chloride	3000	N/A	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
XL1-Blue MRF' E.coli Strain Glycerol Sodium chloride	Acute LC50 54000 mg/l Fresh water Acute EC50 2430000 µg/l Fresh water Acute EC50 519.6 mg/l Fresh water Acute EC50 402.6 mg/l Fresh water Acute IC50 6.87 g/L Fresh water Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Fish - Oncorhynchus mykiss Algae - Navicula seminulum Crustaceans - Cypris subglobosa Daphnia - Daphnia magna Aquatic plants - Lemna minor Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling) Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 96 hours 48 hours 48 hours 96 hours 96 hours 3 weeks 96 hours 21 days 8 weeks
XL0LR E. coli Strain Glycerol Sodium chloride	Acute LC50 54000 mg/l Fresh water Acute EC50 2430000 µg/l Fresh water Acute EC50 519.6 mg/l Fresh water Acute EC50 402.6 mg/l Fresh water Acute IC50 6.87 g/L Fresh water Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Fish - Oncorhynchus mykiss Algae - Navicula seminulum Crustaceans - Cypris subglobosa Daphnia - Daphnia magna Aquatic plants - Lemna minor Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling) Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 96 hours 48 hours 48 hours 96 hours 96 hours 3 weeks 96 hours 21 days 8 weeks

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	-	-
XL0LR E. coli Strain Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-

Section 12. Ecological information

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
XL1-Blue MRF' E.coli Strain Glycerol	-1.76	-	low
XL0LR E. coli Strain Glycerol	-1.76	-	low

Mobility in soil

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

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

Section 13. Disposal considerations

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. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

TDG / 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 IMO instruments : Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Section 15. Regulatory information

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

Not listed.

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

Not listed.

[Inventory list](#)

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

Section 16. Other information

[History](#)

Date of issue/Date of revision	: 04/01/2022
Date of previous issue	: 08/19/2019
Version	: 6

Key to abbreviations	: ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals HPR = Hazardous Products Regulations IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) N/A = Not available UN = United Nations
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[Procedure used to derive the classification](#)

Classification	Justification
<input checked="" type="checkbox"/> XL1-Blue MRF' E.coli Strain EYE IRRITATION - Category 2A	Calculation method
XLOLR E. coli Strain EYE IRRITATION - Category 2A	Calculation method

References : Not available.

Indicates information that has changed from previously issued version.

[Notice to reader](#)

Section 16. Other information

Disclaimer: The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.