

SAFETY DATA SHEET



Lambda ZAP-CMV Undigested Vector Kit, Part Number 239220

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name	: Lambda ZAP-CMV Undigested Vector Kit, Part Number 239220
Part No. (Kit)	: 239220
Part No.	: R408 Interference-Resistant Helper Phage 200252-81
	ExAssist Interference-Resistant Helper Phage 200253-81
	XL1-Blue MRF ⁺ E.coli Strain 200301-81
	XLOLR E. coli Strain 200304-81
	Lambda ZAP-CMV Undigested Vector 239220-51

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

Identified uses	
Analytical reagent.	
R408 Interference-Resistant Helper Phage	1 ml
ExAssist Interference-Resistant Helper Phage	1 ml (>1 X E10 pfu/ml)
XL1-Blue MRF ⁺ E.coli Strain	0.5 ml
XLOLR E. coli Strain	0.5 ml
Lambda ZAP-CMV Undigested Vector	0.02 ml (20 µg 1 µg/µl)

1.3 Details of the supplier of the safety data sheet

Agilent Technologies Manufacturing GmbH & Co. KG
Hewlett-Packard-Str. 8
76337 Waldbronn
Germany
0800 603 1000

e-mail address of person responsible for this SDS : pdl-msds_author@agilent.com

1.4 Emergency telephone number

Emergency telephone number (with hours of operation) : CHEMTREC®: +(44)-870-8200418

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition	: R408 Interference-Resistant Helper Phage	Mixture
	ExAssist Interference-Resistant Helper Phage	Mixture
	XL1-Blue MRF ⁺ E.coli Strain	Mixture
	XLOLR E. coli Strain	Mixture
	Lambda ZAP-CMV Undigested Vector	Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Not classified.

Date of issue/Date of revision : 12/01/2018

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SECTION 2: Hazards identification

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

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

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

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

Precautionary statements

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

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

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

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SECTION 2: Hazards identification

Disposal	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Hazardous ingredients	: XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain	Not applicable. Not applicable.
Supplemental label elements	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	Not applicable. Not applicable. Safety data sheet available on request. Safety data sheet available on request. Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
<u>Special packaging requirements</u>		
Tactile warning of danger	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
2.3 Other hazards		
Other hazards which do not result in classification	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	None known. None known. None known. None known. None known.

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SECTION 3: Composition/information on ingredients

3.1 Substances	: R408 Interference-Resistant Helper Phage	Mixture
	ExAssist Interference-Resistant Helper Phage	Mixture
	XL1-Blue MRF' E.coli Strain	Mixture
	XLOLR E. coli Strain	Mixture
	Lambda ZAP-CMV Undigested Vector	Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
XL1-Blue MRF' E.coli Strain Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤3	Eye Irrit. 2, H319	[1]
XLOLR E. coli Strain Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥10 - ≤25	Not classified.	[2]
Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤3	Eye Irrit. 2, H319	[1]
			See Section 16 for the full text of the H statements declared above.	

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.

Type

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
- [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
- [5] Substance of equivalent concern
- [6] Additional disclosure due to company policy

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact	: 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.
	ExAssist Interference-Resistant Helper Phage	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	XL1-Blue MRF' E.coli Strain	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	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. Get medical attention if irritation occurs.
	Lambda ZAP-CMV 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.

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SECTION 4: First aid measures

Inhalation	: 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.
	ExAssist Interference-Resistant Helper Phage	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	XL1-Blue MRF' E.coli Strain	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	XLOLR E. coli Strain	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	Lambda ZAP-CMV Undigested Vector	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Skin contact	: R408 Interference-Resistant Helper Phage	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	ExAssist Interference-Resistant Helper Phage	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.
	XLOLR E. coli Strain	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Lambda ZAP-CMV Undigested Vector	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: R408 Interference-Resistant Helper Phage	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	ExAssist Interference-Resistant Helper Phage	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	XL1-Blue MRF' E.coli Strain	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.
	XLOLR E. coli Strain	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.
	Lambda ZAP-CMV Undigested Vector	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.

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SECTION 4: First aid measures

Protection of first-aiders	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XL0LR E. coli Strain Lambda ZAP-CMV Undigested Vector	No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training. No action shall be taken involving any personal risk or without suitable training.
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4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XL0LR E. coli Strain Lambda ZAP-CMV Undigested Vector	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.
Inhalation	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XL0LR E. coli Strain Lambda ZAP-CMV Undigested Vector	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	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XL0LR E. coli Strain Lambda ZAP-CMV Undigested Vector	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	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XL0LR E. coli Strain Lambda ZAP-CMV Undigested Vector	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.

Over-exposure signs/symptoms

Eye contact	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XL0LR E. coli Strain Lambda ZAP-CMV Undigested Vector	No specific data. No specific data. No specific data. No specific data. No specific data.
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SECTION 4: First aid measures

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

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	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. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV	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.
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SECTION 5: Firefighting measures

Undigested Vector

Unsuitable extinguishing media	: R408 Interference-Resistant Helper Phage	None known.
	ExAssist Interference-Resistant Helper Phage	None known.
	XL1-Blue MRF' E.coli Strain	None known.
	XLOLR E. coli Strain	None known.
	Lambda ZAP-CMV Undigested Vector	None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	: R408 Interference-Resistant Helper Phage	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 combustion products	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.
	Lambda ZAP-CMV Undigested Vector	In a fire or if heated, a pressure increase will occur and the container may burst.
	: R408 Interference-Resistant Helper Phage	No specific data.
	ExAssist Interference-Resistant Helper Phage	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
	Lambda ZAP-CMV Undigested Vector	No specific data.

5.3 Advice for firefighters

Special precautions for fire-fighters	: 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.
	ExAssist Interference-Resistant Helper Phage	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	XL1-Blue MRF' E.coli Strain	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
	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.
	Lambda ZAP-CMV 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.

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SECTION 5: Firefighting measures

Special protective equipment for fire-fighters	: 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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	XLOLR 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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
	Lambda ZAP-CMV 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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: 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 spilt material. Put on appropriate personal protective equipment.
	ExAssist Interference-Resistant Helper Phage	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt 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 spilt material. 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 spilt material. Put on appropriate personal protective equipment.
	Lambda ZAP-CMV 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 spilt material. Put on appropriate personal protective equipment.

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SECTION 6: Accidental release measures

For emergency responders

: R408 Interference-Resistant Helper Phage	If specialised 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 specialised 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 specialised 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".
XL0LR E. coli Strain	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
Lambda ZAP-CMV Undigested Vector	If specialised 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".

6.2 Environmental precautions

: R408 Interference-Resistant Helper Phage	Avoid dispersal of spilt 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 spilt 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 spilt 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 spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Lambda ZAP-CMV Undigested Vector	Avoid dispersal of spilt 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 material for containment and cleaning up

Methods for cleaning up

: R408 Interference-Resistant Helper Phage	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
ExAssist Interference-Resistant Helper Phage	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
XL1-Blue MRF' E.coli Strain	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
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

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place in an appropriate waste disposal container. Dispose of via a licensed waste 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.

6.4 Reference to other sections

: See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures

: R408 Interference-Resistant Helper Phage Put on appropriate personal protective equipment (see Section 8).
ExAssist Interference-Resistant Helper Phage Put on appropriate personal protective equipment (see Section 8).
XL1-Blue MRF' E.coli Strain Put on appropriate personal protective equipment (see Section 8).
XLOLR E. coli Strain Put on appropriate personal protective equipment (see Section 8).
Lambda ZAP-CMV Undigested Vector Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene

: R408 Interference-Resistant Helper Phage Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
ExAssist Interference-Resistant Helper Phage Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
XL1-Blue MRF' E.coli Strain Potentially biohazardous material. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
XLOLR E. coli Strain Potentially biohazardous material. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
Lambda ZAP-CMV 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.

7.2 Conditions for safe storage, including any incompatibilities

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SECTION 7: Handling and storage

Storage

: 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 ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled 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 unlabelled 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
XL0LR 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
Lambda ZAP-CMV 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 unlabelled 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

: R408 Interference-Resistant Helper Phage	Industrial applications, Professional applications.
ExAssist Interference-Resistant Helper Phage	Industrial applications, Professional applications.
XL1-Blue MRF' E.coli Strain	Industrial applications, Professional applications.
XL0LR E. coli Strain	Industrial applications, Professional applications.
Lambda ZAP-CMV Undigested Vector	Industrial applications, Professional applications.

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SECTION 7: Handling and storage

Industrial sector specific solutions	: R408 Interference-Resistant Helper Phage	Not applicable.
	ExAssist Interference-Resistant Helper Phage	Not applicable.
	XL1-Blue MRF' E.coli Strain	Not applicable.
	XLOLR E. coli Strain	Not applicable.
	Lambda ZAP-CMV Undigested Vector	Not applicable.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
XL1-Blue MRF' E.coli Strain Glycerol	EH40/2005 WELs (United Kingdom (UK), 12/2011). TWA: 10 mg/m ³ 8 hours. Form: Mist
XLOLR E. coli Strain Glycerol	EH40/2005 WELs (United Kingdom (UK), 12/2011). TWA: 10 mg/m ³ 8 hours. Form: Mist

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

No DNELs/DMELs available.

PNECs

No PNECs available

8.2 Exposure controls

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

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: safety glasses with side-shields.

Skin protection

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SECTION 8: Exposure controls/personal protection

- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- 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.
- 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.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

- Physical state** : R408 Interference-Resistant Helper Phage Liquid.
ExAssist Interference-Resistant Helper Phage Liquid.
XL1-Blue MRF' E.coli Strain Liquid.
XLOLR E. coli Strain Liquid.
Lambda ZAP-CMV Undigested Vector Liquid.
- Colour** : R408 Interference-Resistant Helper Phage Not available.
ExAssist Interference-Resistant Helper Phage Not available.
XL1-Blue MRF' E.coli Strain Not available.
XLOLR E. coli Strain Not available.
Lambda ZAP-CMV Undigested Vector Not available.
- Odour** : R408 Interference-Resistant Helper Phage Not available.
ExAssist Interference-Resistant Helper Phage Not available.
XL1-Blue MRF' E.coli Strain Not available.
XLOLR E. coli Strain Not available.
Lambda ZAP-CMV Undigested Vector Not available.
- Odour threshold** : R408 Interference-Resistant Helper Phage Not available.
ExAssist Interference-Resistant Helper Phage Not available.
XL1-Blue MRF' E.coli Strain Not available.
XLOLR E. coli Strain Not available.
Lambda ZAP-CMV Undigested Vector Not available.

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SECTION 9: Physical and chemical properties

pH	: R408 Interference-Resistant Helper Phage	7.5
	ExAssist Interference-Resistant Helper Phage	7.5
	XL1-Blue MRF' E.coli Strain	7
	XLOLR E. coli Strain	7
	Lambda ZAP-CMV Undigested Vector	7
Melting point/freezing point	: R408 Interference-Resistant Helper Phage	0°C
	ExAssist Interference-Resistant Helper Phage	0°C
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	Lambda ZAP-CMV Undigested Vector	0°C
Initial boiling point and boiling range	: R408 Interference-Resistant Helper Phage	100°C
	ExAssist Interference-Resistant Helper Phage	100°C
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	Lambda ZAP-CMV Undigested Vector	100°C
Flash point	: R408 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	Lambda ZAP-CMV Undigested Vector	Not available.
Evaporation rate	: R408 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	Lambda ZAP-CMV Undigested Vector	Not available.
Flammability (solid, gas)	: R408 Interference-Resistant Helper Phage	Not applicable.
	ExAssist Interference-Resistant Helper Phage	Not applicable.
	XL1-Blue MRF' E.coli Strain	Not applicable.
	XLOLR E. coli Strain	Not applicable.
	Lambda ZAP-CMV Undigested Vector	Not applicable.

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SECTION 9: Physical and chemical properties

Upper/lower flammability or explosive limits	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	Not available. Not available. Not available. Not available. Not available.
Vapour pressure	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	Not available. Not available. Not available. Not available. Not available.
Vapour density	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	Not available. Not available. Not available. Not available. Not available.
Relative density	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	Not available. Not available. Not available. Not available. Not available.
Solubility(ies)	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	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. 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	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	Not available. Not available. Not available. Not available. Not available.

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SECTION 9: Physical and chemical properties

Auto-ignition temperature	: R408 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	Lambda ZAP-CMV Undigested Vector	Not available.
Decomposition temperature	: R408 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	Lambda ZAP-CMV Undigested Vector	Not available.
Viscosity	: R408 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	Lambda ZAP-CMV Undigested Vector	Not available.
Explosive properties	: R408 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	Lambda ZAP-CMV Undigested Vector	Not available.
Oxidising properties	: R408 Interference-Resistant Helper Phage	Not available.
	ExAssist Interference-Resistant Helper Phage	Not available.
	XL1-Blue MRF' E.coli Strain	Not available.
	XLOLR E. coli Strain	Not available.
	Lambda ZAP-CMV Undigested Vector	Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	: R408 Interference-Resistant Helper Phage	No specific test data related to reactivity available for this product or its ingredients.
	ExAssist Interference-Resistant Helper Phage	No specific test data related to reactivity available for this product or its ingredients.
	XL1-Blue MRF' E.coli Strain	No specific test data related to reactivity available for this product or its ingredients.
	XLOLR E. coli Strain	No specific test data related to reactivity available for this product or its ingredients.
	Lambda ZAP-CMV	No specific test data related to reactivity available for this product or its ingredients.

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SECTION 10: Stability and reactivity

Undigested Vector product or its ingredients.

10.2 Chemical stability	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	The product is stable. The product is stable. The product is stable. The product is stable. The product is stable.
10.3 Possibility of hazardous reactions	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	No specific data. No specific data. No specific data. No specific data. No specific data.
10.5 Incompatible materials	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.
10.6 Hazardous decomposition products	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	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.

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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 Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
XL0LR E. coli Strain Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-

Acute toxicity estimates

Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
XL1-Blue MRF' E.coli Strain Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
XL0LR E. coli Strain Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

Sensitiser

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 likely routes of exposure

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

Potential acute health effects

Inhalation : R408 Interference-Resistant Helper Phage No known significant effects or critical hazards.
 ExAssist Interference-Resistant Helper Phage No known significant effects or critical hazards.
 XL1-Blue MRF' E.coli Strain No known significant effects or critical hazards.
 XL0LR E. coli Strain No known significant effects or critical hazards.
 Lambda ZAP-CMV No known significant effects or critical hazards.
 Undigested Vector No known significant effects or critical hazards.

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SECTION 11: Toxicological information

Ingestion	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	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	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	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.
Eye contact	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	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

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

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SECTION 11: Toxicological information

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

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General	: R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	Lambda ZAP-CMV	No known significant effects or critical hazards.
	Undigested Vector	
Carcinogenicity	: R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	Lambda ZAP-CMV	No known significant effects or critical hazards.
	Undigested Vector	
Mutagenicity	: R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	Lambda ZAP-CMV	No known significant effects or critical hazards.
	Undigested Vector	
Teratogenicity	: R408 Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	ExAssist Interference-Resistant Helper Phage	No known significant effects or critical hazards.
	XL1-Blue MRF' E.coli Strain	No known significant effects or critical hazards.
	XLOLR E. coli Strain	No known significant effects or critical hazards.
	Lambda ZAP-CMV	No known significant effects or critical hazards.
	Undigested Vector	

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SECTION 11: Toxicological information

Developmental effects	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	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	: R408 Interference-Resistant Helper Phage ExAssist Interference-Resistant Helper Phage XL1-Blue MRF' E.coli Strain XLOLR E. coli Strain Lambda ZAP-CMV Undigested Vector	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 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
XL1-Blue MRF' E.coli Strain Sodium chloride	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
XLOLR E. coli Strain Sodium chloride	Chronic NOEC 6 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Chronic NOEC 0.314 g/L Fresh water	Daphnia - Daphnia pulex	21 days
	Chronic NOEC 100 mg/l Fresh water	Fish - Gambusia holbrooki - Adult	8 weeks
	Acute 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

Not available.

12.3 Bioaccumulative potential

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SECTION 12: Ecological information

Not available.

12.4 Mobility in soil

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

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.

vPvB : Not applicable.

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised 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.

Hazardous waste : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 2008/98/EC.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

ADR/RID / IMDG / IATA : Not regulated.

14.6 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.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code : Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

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SECTION 15: Regulatory information

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: R408 Interference-Resistant Helper Phage	Not applicable.
	ExAssist Interference-Resistant Helper Phage	Not applicable.
	XL1-Blue MRF ⁺ E.coli Strain	Not applicable.
	XL0LR E. coli Strain	Not applicable.
	Lambda ZAP-CMV Undigested Vector	Not applicable.

Other EU regulations

Ozone depleting substances (1005/2009/EU)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

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)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia	: All components are listed or exempted.
Canada	: Not determined.
China	: All components are listed or exempted.
Europe	: All components are listed or exempted.
Japan	: Japan inventory (ENCS): All components are listed or exempted. Japan inventory (ISHL): All components are listed or exempted.
Malaysia	: Not determined.
New Zealand	: All components are listed or exempted.
Philippines	: Not determined.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: Not determined.
Turkey	: Not determined.
United States	: All components are listed or exempted.
Viet Nam	: Not determined.

15.2 Chemical safety assessment : This product contains substances for which Chemical Safety Assessments might still be required.

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SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Not classified.	

Full text of abbreviated H statements

XL1-Blue MRF' E.coli Strain H319	Causes serious eye irritation.
XLOLR E. coli Strain H319	Causes serious eye irritation.

Full text of classifications [CLP/GHS]

XL1-Blue MRF' E.coli Strain Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
XLOLR E. coli Strain Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2

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