Conforms to US OSHA Hazard Communication 29CFR1910.1200

SAFETY DATA SHEET

Agilent Technologies

Lambda CE6 Induction Kit, Part Number 235200

Section 1. Identification

1.1 Product identifier

Product name : Lambda CE6 Induction Kit, Part Number 235200

Part no. (chemical kit) : 235200

Part no. :

Lambda CE6 Bacteriophage	235200-41
LE392 E. coli Strain	200266-81
BL21 Competent Cells	200133-41
pUC 18 DNA Control Plasmid	200231-42
Beta Mercaptoethanol	210200-43

Validation date : 6/5/2023

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

Identified uses : Analytical reagent.

Lambda CE6 Bacteriophage	1 ml (≥5.0x10E9 pfu/ml)
LE392 E. coli Strain	0.5 ml
BL21 Competent Cells	1 ml (5 x 0.2 ml)
pUC 18 DNA Control Plasmid	0.01 ml (0.1 ng / µl)
Beta Mercaptoethanol	0.025 ml (25 µl 1.42M)

1.3 Details of the supplier of the safety data sheet

Supplier/Manufacturer : Agilent Technologies, Inc.
5301 Stevens Creek Blvd
Santa Clara, CA 95051, USA
800-227-9770

1.4 Emergency telephone number

In case of emergency : CHEMTREC®: 1-800-424-9300

Section 2. Hazards identification

2.1 Classification of the substance or mixture

OSHA/HCS status :

Lambda CE6 Bacteriophage	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
LE392 E. coli Strain	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
BL21 Competent Cells	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
pUC 18 DNA Control Plasmid	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
Beta Mercaptoethanol	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

Section 2. Hazards identification

Lambda CE6 Bacteriophage

H319	EYE IRRITATION - Category 2A
H351	CARCINOGENICITY - Category 2
H361	TOXIC TO REPRODUCTION - Category 2
H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

LE392 E. coli Strain

H320	EYE IRRITATION - Category 2B

BL21 Competent Cells

H320	EYE IRRITATION - Category 2B

Beta Mercaptoethanol

H312	ACUTE TOXICITY (dermal) - Category 4
H315	SKIN IRRITATION - Category 2
H318	SERIOUS EYE DAMAGE - Category 1
H317	SKIN SENSITIZATION - Category 1
H361	TOXIC TO REPRODUCTION - Category 2
H373	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
H412	AQUATIC HAZARD (LONG-TERM) - Category 3

BL21 Competent Cells — Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 5%

2.2 GHS label elements

Hazard pictograms :

Lambda CE6 Bacteriophage

Beta Mercaptoethanol

Signal word :

Lambda CE6 Bacteriophage	Danger
LE392 E. coli Strain	Warning
BL21 Competent Cells	Warning
pUC 18 DNA Control Plasmid	No signal word.
Beta Mercaptoethanol	Danger

Hazard statements :

Lambda CE6 Bacteriophage
H319 - Causes serious eye irritation.
H351 - Suspected of causing cancer.
H361 - Suspected of damaging fertility or the unborn child.
H372 - Causes damage to organs through prolonged or repeated exposure.

LE392 E. coli Strain
H320 - Causes eye irritation.

BL21 Competent Cells
H320 - Causes eye irritation.

pUC 18 DNA Control Plasmid
No known significant effects or critical hazards.

Beta Mercaptoethanol
H312 - Harmful in contact with skin.
H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H318 - Causes serious eye damage.
H361 - Suspected of damaging fertility or the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure.
H412 - Harmful to aquatic life with long lasting

Section 2. Hazards identification

effects.

Precautionary statements

Prevention	:	Lambda CE6 Bacteriophage	P201 - Obtain special instructions before use. P280 - Wear protective gloves, protective clothing and eye or face protection. P260 - Do not breathe vapor. P270 - Do not eat, drink or smoke when using this product.
		LE392 E. coli Strain	Not applicable.
		BL21 Competent Cells	Not applicable.
		pUC 18 DNA Control Plasmid	Not applicable.
		Beta Mercaptoethanol	P201 - Obtain special instructions before use. P280 - Wear protective gloves, protective clothing and eye or face protection. P273 - Avoid release to the environment. P260 - Do not breathe vapor. P264 - Wash thoroughly after handling.
Response	:	Lambda CE6 Bacteriophage	P308 + P313 - IF exposed or concerned: 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.
		LE392 E. coli Strain	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.
		BL21 Competent Cells	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.
		pUC 18 DNA Control Plasmid	Not applicable.
		Beta Mercaptoethanol	P308 + P313 - IF exposed or concerned: Get medical advice or attention. P362 + P364 - Take off contaminated clothing and wash it before reuse. P363 - Wash contaminated clothing before reuse. P302 + P312, P352 - IF ON SKIN: Call a POISON CENTER or doctor if you feel unwell. Wash with plenty of water. P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention. P305 + P351 + P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
Storage	:	Lambda CE6 Bacteriophage	Not applicable.
		LE392 E. coli Strain	Not applicable.
		BL21 Competent Cells	Not applicable.
		pUC 18 DNA Control Plasmid	Not applicable.
		Beta Mercaptoethanol	Not applicable.
Disposal	:		

Section 2. Hazards identification

	Lambda CE6 Bacteriophage	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	LE392 E. coli Strain	Not applicable.
	BL21 Competent Cells	Not applicable.
	pUC 18 DNA Control Plasmid	Not applicable.
	Beta Mercaptoethanol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Supplemental label elements :	Lambda CE6 Bacteriophage	None known.
	LE392 E. coli Strain	None known.
	BL21 Competent Cells	None known.
	pUC 18 DNA Control Plasmid	None known.
	Beta Mercaptoethanol	None known.

2.3 Other hazards

Hazards not otherwise classified :	Lambda CE6 Bacteriophage	None known.
	LE392 E. coli Strain	None known.
	BL21 Competent Cells	None known.
	pUC 18 DNA Control Plasmid	None known.
	Beta Mercaptoethanol	None known.

Section 3. Composition/information on ingredients

Substance/mixture :	Lambda CE6 Bacteriophage	Mixture
	LE392 E. coli Strain	Mixture
	BL21 Competent Cells	Mixture
	pUC 18 DNA Control Plasmid	Mixture
	Beta Mercaptoethanol	Mixture

Ingredient name	%	CAS number
Lambda CE6 Bacteriophage		
Dimethyl sulfoxide	≤10	67-68-5
Trichloromethane	≤5	67-66-3
LE392 E. coli Strain		
Glycerol	≥10 - ≤25	56-81-5
BL21 Competent Cells		
Glycerol	≥10 - ≤25	56-81-5
Dimethyl sulfoxide	≤10	67-68-5
Potassium chloride	≤3	7447-40-7
Beta Mercaptoethanol		
2-Mercaptoethanol	≤12	60-24-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 3. Composition/information on ingredients

			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.
		LE392 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. If irritation persists, get medical attention.
		BL21 Competent Cells	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. If irritation persists, get medical attention.
		pUC 18 DNA Control Plasmid	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.
		Beta Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. 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. Chemical burns must be treated promptly by a physician.
Inhalation	:	Lambda CE6 Bacteriophage	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 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. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
		LE392 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.
		BL21 Competent Cells	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

Section 4. First aid measures

			and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
		pUC 18 DNA Control Plasmid	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
		Beta Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Skin contact	:	Lambda CE6 Bacteriophage	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
		LE392 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.
		BL21 Competent Cells	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.
		pUC 18 DNA Control Plasmid	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		Beta Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	:	Lambda CE6 Bacteriophage	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. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention

Section 4. First aid measures

	immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
LE392 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 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.
BL21 Competent Cells	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.
pUC 18 DNA Control Plasmid	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.
Beta Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. 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. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact :

Lambda CE6 Bacteriophage	Causes serious eye irritation.
LE392 E. coli Strain	Causes eye irritation.
BL21 Competent Cells	Causes eye irritation.
pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
Beta Mercaptoethanol	Causes serious eye damage.

Section 4. First aid measures

Inhalation	:	Lambda CE6 Bacteriophage	No known significant effects or critical hazards.
		LE392 E. coli Strain	No known significant effects or critical hazards.
		BL21 Competent Cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	No known significant effects or critical hazards.
Skin contact	:	Lambda CE6 Bacteriophage	No known significant effects or critical hazards.
		LE392 E. coli Strain	No known significant effects or critical hazards.
		BL21 Competent Cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.
Ingestion	:	Lambda CE6 Bacteriophage	No known significant effects or critical hazards.
		LE392 E. coli Strain	No known significant effects or critical hazards.
		BL21 Competent Cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	:	Lambda CE6 Bacteriophage	Adverse symptoms may include the following: pain or irritation watering redness
		LE392 E. coli Strain	Adverse symptoms may include the following: irritation watering redness
		BL21 Competent Cells	Adverse symptoms may include the following: irritation watering redness
		pUC 18 DNA Control Plasmid	No specific data.
		Beta Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
Inhalation	:	Lambda CE6 Bacteriophage	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
		LE392 E. coli Strain	No specific data.
		BL21 Competent Cells	No specific data.
		pUC 18 DNA Control Plasmid	No specific data.
		Beta Mercaptoethanol	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Skin contact	:	Lambda CE6 Bacteriophage	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
		LE392 E. coli Strain	No specific data.
		BL21 Competent Cells	No specific data.
		pUC 18 DNA Control Plasmid	No specific data.
		Beta Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced fetal weight increase in fetal deaths skeletal malformations

Section 4. First aid measures

Ingestion	:	Lambda CE6 Bacteriophage	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
		LE392 E. coli Strain	No specific data.
		BL21 Competent Cells	No specific data.
		pUC 18 DNA Control Plasmid	No specific data.
		Beta Mercaptoethanol	Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations

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

Notes to physician	:	Lambda CE6 Bacteriophage	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
		LE392 E. coli Strain	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		BL21 Competent Cells	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		pUC 18 DNA Control Plasmid	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		Beta Mercaptoethanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	:	Lambda CE6 Bacteriophage	No specific treatment.
		LE392 E. coli Strain	No specific treatment.
		BL21 Competent Cells	No specific treatment.
		pUC 18 DNA Control Plasmid	No specific treatment.
		Beta Mercaptoethanol	No specific treatment.
Protection of first-aiders	:	Lambda CE6 Bacteriophage	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.
		LE392 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.
		BL21 Competent Cells	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.
		pUC 18 DNA Control Plasmid	No action shall be taken involving any personal risk or without suitable training.
		Beta Mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Section 4. First aid measures

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	Lambda CE6 Bacteriophage	Use an extinguishing agent suitable for the surrounding fire.
		LE392 E. coli Strain	Use an extinguishing agent suitable for the surrounding fire.
		BL21 Competent Cells	Use an extinguishing agent suitable for the surrounding fire.
		pUC 18 DNA Control Plasmid	Use an extinguishing agent suitable for the surrounding fire.
		Beta Mercaptoethanol	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	:	Lambda CE6 Bacteriophage	None known.
		LE392 E. coli Strain	None known.
		BL21 Competent Cells	None known.
		pUC 18 DNA Control Plasmid	None known.
		Beta Mercaptoethanol	None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	:	Lambda CE6 Bacteriophage	In a fire or if heated, a pressure increase will occur and the container may burst.
		LE392 E. coli Strain	In a fire or if heated, a pressure increase will occur and the container may burst.
		BL21 Competent Cells	In a fire or if heated, a pressure increase will occur and the container may burst.
		pUC 18 DNA Control Plasmid	In a fire or if heated, a pressure increase will occur and the container may burst.
		Beta Mercaptoethanol	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous thermal decomposition products	:	Lambda CE6 Bacteriophage	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds carbonyl halides
		LE392 E. coli Strain	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
		BL21 Competent Cells	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds metal oxide/oxides
		pUC 18 DNA Control Plasmid	No specific data.
		Beta Mercaptoethanol	Decomposition products may include the following materials:

Section 5. Fire-fighting measures

carbon dioxide
carbon monoxide
sulfur oxides

5.3 Advice for firefighters

Special protective actions for fire-fighters	:	Lambda CE6 Bacteriophage	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.
		LE392 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.
		BL21 Competent Cells	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.
		pUC 18 DNA Control Plasmid	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.
		Beta Mercaptoethanol	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	:	Lambda CE6 Bacteriophage	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
		LE392 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.
		BL21 Competent Cells	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
		pUC 18 DNA Control Plasmid	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
		Beta Mercaptoethanol	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	:	Lambda CE6 Bacteriophage	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.
		LE392 E. coli Strain	No action shall be taken involving any personal

Section 6. Accidental release measures

		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.
	BL21 Competent Cells	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.
	pUC 18 DNA Control Plasmid	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.
	Beta Mercaptoethanol	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. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders :	Lambda CE6 Bacteriophage	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".
	LE392 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".
	BL21 Competent Cells	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".
	pUC 18 DNA Control Plasmid	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".
	Beta Mercaptoethanol	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".

Section 6. Accidental release measures

6.2 Environmental precautions

Lambda CE6 Bacteriophage	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).
LE392 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).
BL21 Competent Cells	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).
pUC 18 DNA Control Plasmid	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).
Beta Mercaptoethanol	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). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up

Lambda CE6 Bacteriophage	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.
LE392 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.
BL21 Competent Cells	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.
pUC 18 DNA Control Plasmid	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.
Beta Mercaptoethanol	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

7.1 Precautions for safe handling

Protective measures	:	Lambda CE6 Bacteriophage	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. 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.
		LE392 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.
		BL21 Competent Cells	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.
		pUC 18 DNA Control Plasmid	Put on appropriate personal protective equipment (see Section 8).
		Beta Mercaptoethanol	Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
Advice on general occupational hygiene	:	Lambda CE6 Bacteriophage	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.
		LE392 E. coli Strain	Potentially biohazardous material. Eating, drinking and smoking should be prohibited in areas where

Section 7. Handling and storage

		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.
	BL21 Competent Cells	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.
	pUC 18 DNA Control Plasmid	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.
	Beta Mercaptoethanol	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	: Lambda CE6 Bacteriophage	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. Store locked up. 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.
	LE392 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.
	BL21 Competent Cells	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

Section 7. Handling and storage

	containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
pUC 18 DNA Control Plasmid	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.
Beta Mercaptoethanol	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. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

Recommendations	:	Lambda CE6 Bacteriophage	Industrial applications, Professional applications.
		LE392 E. coli Strain	Industrial applications, Professional applications.
		BL21 Competent Cells	Industrial applications, Professional applications.
		pUC 18 DNA Control Plasmid	Industrial applications, Professional applications.
		Beta Mercaptoethanol	Industrial applications, Professional applications.
Industrial sector specific solutions	:	Lambda CE6 Bacteriophage	Not available.
		LE392 E. coli Strain	Not available.
		BL21 Competent Cells	Not available.
		pUC 18 DNA Control Plasmid	Not available.
		Beta Mercaptoethanol	Not available.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Lambda CE6 Bacteriophage	
Dimethyl sulfoxide	**OARS WEEL (United States, 4/2022).** TWA: 250 ppm 8 hours.
Trichloromethane	**ACGIH TLV (United States, 1/2022).** TWA: 10 ppm 8 hours. TWA: 49 mg/m³ 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 2 ppm 8 hours. TWA: 9.78 mg/m³ 8 hours. **NIOSH REL (United States, 10/2020).** STEL: 2 ppm 60 minutes. STEL: 9.78 mg/m³ 60 minutes. **OSHA PEL (United States, 5/2018).**

Section 8. Exposure controls/personal protection

	CEIL: 50 ppm CEIL: 240 mg/m³ **CAL OSHA PEL (United States, 5/2018).** TWA: 9.78 mg/m³ 8 hours. TWA: 2 ppm 8 hours.
LE392 E. coli Strain	
Glycerol	**OSHA PEL 1989 (United States, 3/1989).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust **OSHA PEL (United States, 5/2018).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust **CAL OSHA PEL (United States, 5/2018).** TWA: 5 mg/m³ 8 hours. Form: respirable fraction TWA: 10 mg/m³ 8 hours. Form: total dust
BL21 Competent Cells	
Glycerol	**OSHA PEL 1989 (United States, 3/1989).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust **OSHA PEL (United States, 5/2018).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust **CAL OSHA PEL (United States, 5/2018).** TWA: 5 mg/m³ 8 hours. Form: respirable fraction TWA: 10 mg/m³ 8 hours. Form: total dust
Dimethyl sulfoxide	**OARS WEEL (United States, 4/2022).** TWA: 250 ppm 8 hours.
Potassium chloride	None.
Beta Mercaptoethanol	
2-Mercaptoethanol	**OARS WEEL (United States, 4/2022).** **Absorbed through skin.** TWA: 0.2 ppm 8 hours.

Biological exposure indices

No exposure indices known.

8.2 Exposure controls

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

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

Appearance

Physical state :	Lambda CE6 Bacteriophage	Liquid.
	LE392 E. coli Strain	Liquid.
	BL21 Competent Cells	Liquid.
	pUC 18 DNA Control Plasmid	Liquid.
	Beta Mercaptoethanol	Liquid.
Color :	Lambda CE6 Bacteriophage	Not available.
	LE392 E. coli Strain	Not available.
	BL21 Competent Cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	Beta Mercaptoethanol	Not available.
Odor :	Lambda CE6 Bacteriophage	Not available.
	LE392 E. coli Strain	Not available.
	BL21 Competent Cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	Beta Mercaptoethanol	Not available.
Odor threshold :	Lambda CE6 Bacteriophage	Not available.
	LE392 E. coli Strain	Not available.
	BL21 Competent Cells	Not available.
	pUC 18 DNA Control Plasmid	Not available.
	Beta Mercaptoethanol	Not available.

pH :

Section 9. Physical and chemical properties and safety characteristics

	Lambda CE6 Bacteriophage	7.5
	LE392 E. coli Strain	7
	BL21 Competent Cells	6.4
	pUC 18 DNA Control Plasmid	7.5
	Beta Mercaptoethanol	Not available.

Melting point/freezing point :

Lambda CE6 Bacteriophage	Not available.
LE392 E. coli Strain	Not available.
BL21 Competent Cells	Not available.
pUC 18 DNA Control Plasmid	0°C (32°F)
Beta Mercaptoethanol	Not available.

Boiling point, initial boiling point, and boiling range :

Lambda CE6 Bacteriophage	Not available.
LE392 E. coli Strain	Not available.
BL21 Competent Cells	Not available.
pUC 18 DNA Control Plasmid	100°C (212°F)
Beta Mercaptoethanol	Not available.

Flash point :

	Closed cup			Open cup		
Ingredient name	**°C**	**°F**	**Method**	**°C**	**°F**	**Method**
Lambda CE6 Bacteriophage						
Dimethyl sulfoxide	87	188.6	ASTM D 93	87	188.6	
LE392 E. coli Strain						
Glycerol				177	350.6	
BL21 Competent Cells						
Dimethyl sulfoxide	87	188.6	ASTM D 93	87	188.6	
Glycerol				177	350.6	
Beta Mercaptoethanol						
2-Mercaptoethanol	74	165.2		74	165.2	

Evaporation rate :

Lambda CE6 Bacteriophage	Not available.
LE392 E. coli Strain	Not available.
BL21 Competent Cells	Not available.
pUC 18 DNA Control Plasmid	Not available.
Beta Mercaptoethanol	Not available.

Flammability :

Lambda CE6 Bacteriophage	Not applicable.
LE392 E. coli Strain	Not applicable.
BL21 Competent Cells	Not applicable.
pUC 18 DNA Control Plasmid	Not applicable.
Beta Mercaptoethanol	Not applicable.

Lower and upper explosion limit/flammability limit :

Lambda CE6 Bacteriophage	Not available.
LE392 E. coli Strain	Not available.
BL21 Competent Cells	Not available.
pUC 18 DNA Control Plasmid	Not available.
Beta Mercaptoethanol	Not available.

Vapor pressure :

Section 9. Physical and chemical properties and safety characteristics

Ingredient name	Vapor Pressure at 20˚C			Vapor pressure at 50˚C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
Lambda CE6 Bacteriophage						
Trichloromethane	159.01	21.2				
water	17.5	2.3		92.258	12.3	
LE392 E. coli Strain						
water	17.5	2.3		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
BL21 Competent Cells						
water	17.5	2.3		92.258	12.3	
Dimethyl sulfoxide	0.42	0.056	EU A.4			
pUC 18 DNA Control Plasmid						
water	17.5	2.3		92.258	12.3	
Beta Mercaptoethanol						
water	17.5	2.3		92.258	12.3	
2-Mercaptoethanol	0.98	0.13				

Relative vapor density :

Lambda CE6 Bacteriophage	Not available.
LE392 E. coli Strain	Not available.
BL21 Competent Cells	Not available.
pUC 18 DNA Control Plasmid	Not available.
Beta Mercaptoethanol	Not available.

Relative density :

Lambda CE6 Bacteriophage	Not available.
LE392 E. coli Strain	Not available.
BL21 Competent Cells	Not available.
pUC 18 DNA Control Plasmid	Not available.
Beta Mercaptoethanol	Not available.

Solubility(ies) :

Media	Result
Lambda CE6 Bacteriophage	
water	Soluble
LE392 E. coli Strain	
water	Soluble
BL21 Competent Cells	
water	Soluble
pUC 18 DNA Control Plasmid	
water	Soluble

Section 9. Physical and chemical properties and safety characteristics

Beta Mercaptoethanol	
water	Soluble

Partition coefficient: n-octanol/water :

Lambda CE6 Bacteriophage	Not applicable.
LE392 E. coli Strain	Not applicable.
BL21 Competent Cells	Not applicable.
pUC 18 DNA Control Plasmid	Not applicable.
Beta Mercaptoethanol	Not applicable.

Auto-ignition temperature :

Ingredient name	°C	°F	Method
Lambda CE6 Bacteriophage			
Dimethyl sulfoxide	300 to 302	572 to 575.6	
Trichloromethane	>600	>1112	
LE392 E. coli Strain			
Glycerol	370	698	
BL21 Competent Cells			
Dimethyl sulfoxide	300 to 302	572 to 575.6	
Glycerol	370	698	
Beta Mercaptoethanol			
2-Mercaptoethanol	295	563	

Decomposition temperature :

Lambda CE6 Bacteriophage	Not available.
LE392 E. coli Strain	Not available.
BL21 Competent Cells	Not available.
pUC 18 DNA Control Plasmid	Not available.
Beta Mercaptoethanol	Not available.

Viscosity :

Lambda CE6 Bacteriophage	Not available.
LE392 E. coli Strain	Not available.
BL21 Competent Cells	Not available.
pUC 18 DNA Control Plasmid	Not available.
Beta Mercaptoethanol	Not available.

Particle characteristics

Median particle size :

Lambda CE6 Bacteriophage	Not applicable.
LE392 E. coli Strain	Not applicable.
BL21 Competent Cells	Not applicable.
pUC 18 DNA Control Plasmid	Not applicable.
Beta Mercaptoethanol	Not applicable.

Section 10. Stability and reactivity

10.1 Reactivity :

Lambda CE6 Bacteriophage	No specific test data related to reactivity available for this product or its ingredients.
LE392 E. coli Strain	No specific test data related to reactivity available for this product or its ingredients.
BL21 Competent Cells	No specific test data related to reactivity available for this product or its ingredients.
pUC 18 DNA Control Plasmid	No specific test data related to reactivity available for this product or its ingredients.
Beta Mercaptoethanol	No specific test data related to reactivity available for this product or its ingredients.

Section 10. Stability and reactivity

10.2 Chemical stability	:	Lambda CE6 Bacteriophage	The product is stable.
		LE392 E. coli Strain	The product is stable.
		BL21 Competent Cells	The product is stable.
		pUC 18 DNA Control Plasmid	The product is stable.
		Beta Mercaptoethanol	The product is stable.
10.3 Possibility of hazardous reactions	:	Lambda CE6 Bacteriophage	Under normal conditions of storage and use, hazardous reactions will not occur.
		LE392 E. coli Strain	Under normal conditions of storage and use, hazardous reactions will not occur.
		BL21 Competent Cells	Under normal conditions of storage and use, hazardous reactions will not occur.
		pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous reactions will not occur.
		Beta Mercaptoethanol	Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	:	Lambda CE6 Bacteriophage	No specific data.
		LE392 E. coli Strain	No specific data.
		BL21 Competent Cells	No specific data.
		pUC 18 DNA Control Plasmid	No specific data.
		Beta Mercaptoethanol	No specific data.
10.5 Incompatible materials	:	Lambda CE6 Bacteriophage	May react or be incompatible with oxidizing materials.
		LE392 E. coli Strain	May react or be incompatible with oxidizing materials.
		BL21 Competent Cells	May react or be incompatible with oxidizing materials.
		pUC 18 DNA Control Plasmid	May react or be incompatible with oxidizing materials.
		Beta Mercaptoethanol	May react or be incompatible with oxidizing materials.
10.6 Hazardous decomposition products	:	Lambda CE6 Bacteriophage	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		LE392 E. coli Strain	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		BL21 Competent Cells	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		pUC 18 DNA Control Plasmid	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		Beta Mercaptoethanol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Lambda CE6 Bacteriophage				
Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
Trichloromethane	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Oral	Rat	300 mg/kg	-
LE392 E. coli Strain				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
BL21 Competent Cells				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Dimethyl sulfoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
Beta Mercaptoethanol				
2-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Lambda CE6 Bacteriophage					
Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	100 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	100 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Trichloromethane	Eyes - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
LE392 E. coli Strain					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
BL21 Competent Cells					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	100 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	100 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
Beta Mercaptoethanol					
2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 mg	-

Section 11. Toxicological information

Sensitization

Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Lambda CE6 Bacteriophage			
Trichloromethane	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Lambda CE6 Bacteriophage			
Trichloromethane	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects
Beta Mercaptoethanol			
2-Mercaptoethanol	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Lambda CE6 Bacteriophage			
Trichloromethane	Category 1	inhalation	kidneys, liver
Beta Mercaptoethanol			
2-Mercaptoethanol	Category 2	oral	heart, liver

Aspiration hazard

Not available.

Information on the likely routes of exposure :

Lambda CE6 Bacteriophage	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
LE392 E. coli Strain	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
BL21 Competent Cells	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
pUC 18 DNA Control Plasmid	Not available.
Beta Mercaptoethanol	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Section 11. Toxicological information

Eye contact	:	Lambda CE6 Bacteriophage	Causes serious eye irritation.
		LE392 E. coli Strain	Causes eye irritation.
		BL21 Competent Cells	Causes eye irritation.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	Causes serious eye damage.
Inhalation	:	Lambda CE6 Bacteriophage	No known significant effects or critical hazards.
		LE392 E. coli Strain	No known significant effects or critical hazards.
		BL21 Competent Cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	No known significant effects or critical hazards.
Skin contact	:	Lambda CE6 Bacteriophage	No known significant effects or critical hazards.
		LE392 E. coli Strain	No known significant effects or critical hazards.
		BL21 Competent Cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.
Ingestion	:	Lambda CE6 Bacteriophage	No known significant effects or critical hazards.
		LE392 E. coli Strain	No known significant effects or critical hazards.
		BL21 Competent Cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	:	Lambda CE6 Bacteriophage	Adverse symptoms may include the following: pain or irritation watering redness
		LE392 E. coli Strain	Adverse symptoms may include the following: irritation watering redness
		BL21 Competent Cells	Adverse symptoms may include the following: irritation watering redness
		pUC 18 DNA Control Plasmid	No specific data.
		Beta Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
Inhalation	:	Lambda CE6 Bacteriophage	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
		LE392 E. coli Strain	No specific data.
		BL21 Competent Cells	No specific data.
		pUC 18 DNA Control Plasmid	No specific data.
		Beta Mercaptoethanol	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations

Section 11. Toxicological information

Skin contact	:	Lambda CE6 Bacteriophage	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
		LE392 E. coli Strain	No specific data.
		BL21 Competent Cells	No specific data.
		pUC 18 DNA Control Plasmid	No specific data.
		Beta Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced fetal weight increase in fetal deaths skeletal malformations
Ingestion	:	Lambda CE6 Bacteriophage	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
		LE392 E. coli Strain	No specific data.
		BL21 Competent Cells	No specific data.
		pUC 18 DNA Control Plasmid	No specific data.
		Beta Mercaptoethanol	Adverse symptoms may include the following: stomach pains reduced fetal weight increase in fetal deaths skeletal malformations

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General	:	Lambda CE6 Bacteriophage	Causes damage to organs through prolonged or repeated exposure.
		LE392 E. coli Strain	No known significant effects or critical hazards.
		BL21 Competent Cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Carcinogenicity	:	Lambda CE6 Bacteriophage	Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
		LE392 E. coli Strain	No known significant effects or critical hazards.
		BL21 Competent Cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	No known significant effects or critical hazards.

Section 11. Toxicological information

Mutagenicity	:	Lambda CE6 Bacteriophage	No known significant effects or critical hazards.
		LE392 E. coli Strain	No known significant effects or critical hazards.
		BL21 Competent Cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	No known significant effects or critical hazards.
Reproductive toxicity	:	Lambda CE6 Bacteriophage	Suspected of damaging fertility or the unborn child.
		LE392 E. coli Strain	No known significant effects or critical hazards.
		BL21 Competent Cells	No known significant effects or critical hazards.
		pUC 18 DNA Control Plasmid	No known significant effects or critical hazards.
		Beta Mercaptoethanol	Suspected of damaging fertility or the unborn child.

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)
Lambda CE6 Bacteriophage					
Lambda CE6 Bacteriophage	16666.7	N/A	N/A	244.9	N/A
Dimethyl sulfoxide	14500	40000	N/A	N/A	N/A
Trichloromethane	500	N/A	N/A	7.348	N/A
LE392 E. coli Strain					
LE392 E. coli Strain	300000.0	N/A	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
BL21 Competent Cells					
BL21 Competent Cells	144778.9	N/A	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
Dimethyl sulfoxide	14500	40000	N/A	N/A	N/A
Potassium chloride	2600	N/A	N/A	N/A	N/A
Beta Mercaptoethanol					
Beta Mercaptoethanol	2440.0	2000	N/A	30	N/A
2-Mercaptoethanol	244	200	N/A	3	N/A

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Lambda CE6 Bacteriophage			
Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 100 ul/L Marine water	Algae - Ulva lactuca	72 hours
	Chronic NOEC 100 ul/L Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	21 days
Trichloromethane	Acute EC50 13.3 mg/l	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Acute EC50 2.803 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute LC50 29 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 13.3 ppm Fresh water	Fish - Lepomis macrochirus	96 hours

Section 12. Ecological information

	Chronic EC10 3.61 mg/l	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Chronic NOEC 1.8 mg/l Fresh water	Daphnia - Daphnia magna	21 days
LE392 E. coli Strain			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
BL21 Competent Cells			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 100 ul/L Marine water	Algae - Ulva lactuca	72 hours
	Chronic NOEC 100 ul/L Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	21 days
Potassium chloride	Acute EC50 9.24 g/L Fresh water	Algae - Desmodesmus subspicatus	72 hours
	Acute EC50 1337000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute LC50 9.68 mg/l Fresh water	Crustaceans - Pseudosida ramosa - Neonate	48 hours
	Acute LC50 93000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 509.65 mg/l Fresh water	Fish - Danio rerio	96 hours

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
Lambda CE6 Bacteriophage				
Dimethyl sulfoxide	OECD 301D Ready Biodegradability - Closed Bottle Test	31 % - Not readily - 28 days	-	-
LE392 E. coli Strain				
Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
BL21 Competent Cells				
Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
Dimethyl sulfoxide	OECD 301D Ready Biodegradability - Closed Bottle Test	31 % - Not readily - 28 days	-	-
Beta Mercaptoethanol				
2-Mercaptoethanol	OECD 310 Ready Biodegradability - CO_2 in Sealed Vessels (Headspace Test)	69 % - Not readily - 60 days	20 mg/l	-

Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Lambda CE6 Bacteriophage			
Dimethyl sulfoxide	-	-	Not readily
Trichloromethane	-	-	Not readily
BL21 Competent Cells			
Dimethyl sulfoxide	-	-	Not readily
Potassium chloride	-	-	Readily
Beta Mercaptoethanol			
2-Mercaptoethanol	-	-	Not readily

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Lambda CE6 Bacteriophage			
Dimethyl sulfoxide	-1.35	3.16	low
Trichloromethane	1.97	690	high
LE392 E. coli Strain			
Glycerol	-1.76	-	low
BL21 Competent Cells			
Glycerol	-1.76	-	low
Dimethyl sulfoxide	-1.35	3.16	low
Potassium chloride	-0.46	-	low
Beta Mercaptoethanol			
2-Mercaptoethanol	-0.056	-	low

12.4 Mobility in soil

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

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

Section 13. Disposal considerations

13.1 Waste treatment methods

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Section 13. Disposal considerations

Ingredient	CAS #	Status	Reference number
Lambda CE6 Bacteriophage Chloroform	67-66-3	Listed	U044

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

DOT / TDG / Mexico / IMDG / IATA : Not regulated.

Additional information

DOT Classification : **Reportable quantity** 1666.7 lbs / 756.67 kg. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

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

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

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Water Act (CWA) 307: Trichloromethane

Clean Water Act (CWA) 311: Trichloromethane; Edetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Section 15. Regulatory information

Name	%	EHS	SARA 302 TPQ (lbs)	SARA 302 TPQ (gallons)	SARA 304 RQ (lbs)	SARA 304 RQ (gallons)
Lambda CE6 Bacteriophage Trichloromethane	≤5	Yes.	10000	803.8	10	0.8

SARA 304 RQ : 1666.7 lbs / 756.7 kg

SARA 311/312

Classification :

Lambda CE6 Bacteriophage	EYE IRRITATION - Category 2A CARCINOGENICITY - Category 2 TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
LE392 E. coli Strain	EYE IRRITATION - Category 2B
BL21 Competent Cells	EYE IRRITATION - Category 2B
pUC 18 DNA Control Plasmid	Not applicable.
Beta Mercaptoethanol	ACUTE TOXICITY (dermal) - Category 4 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

Composition/information on ingredients

Name	%	Classification
Lambda CE6 Bacteriophage		
Dimethyl sulfoxide	≤10	FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B
Trichloromethane	≤5	ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A CARCINOGENICITY - Category 2 TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
LE392 E. coli Strain		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2B
BL21 Competent Cells		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2B
Dimethyl sulfoxide	≤10	FLAMMABLE LIQUIDS - Category 4 EYE IRRITATION - Category 2B
Sucrose	≤10	COMBUSTIBLE DUSTS
Potassium chloride	≤3	EYE IRRITATION - Category 2B
Beta Mercaptoethanol		
2-Mercaptoethanol	≤12	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 3 ACUTE TOXICITY (dermal) - Category 2 ACUTE TOXICITY (inhalation) - Category 3 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1A TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

SARA 313

Section 15. Regulatory information

	Product name	CAS number	%
Form R - Reporting requirements	**Lambda CE6 Bacteriophage** Trichloromethane	67-66-3	≤5
Supplier notification	**Lambda CE6 Bacteriophage** Trichloromethane	67-66-3	≤5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: GLYCERINE MIST; 2-MERCAPTOETHANOL; SUCROSE DUST

New York : None of the components are listed.

New Jersey : The following components are listed: GLYCERIN; DIMETHYL SULFOXIDE; THIOGLYCOL; CHLOROFORM

Pennsylvania : The following components are listed: 1,2,3-PROPANETRIOL; ETHANOL, 2-MERCAPTO-; .ALPHA.-D-GLUCOPYRANOSIDE, .BETA.-D-FRUCTOFURANOSYL

California Prop. 65

⚠ **WARNING**: This product can expose you to Chloroform, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Ingredient name	No significant risk level	Maximum acceptable dosage level
Lambda CE6 Bacteriophage Chloroform	Yes.	-

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.

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 : All components are listed or exempted.

China : Not determined.

Eurasian Economic Union : **Russian Federation inventory**: All components are listed or exempted.

Japan : **Japan inventory (CSCL)**: Not determined.
Japan inventory (ISHL): Not determined.

New Zealand : Not determined.

Philippines : Not determined.

Republic of Korea : All components are listed or exempted.

Taiwan : All components are listed or exempted.

Section 15. Regulatory information

Thailand : Not determined.

Turkey : Not determined.

United States : All components are active or exempted.

Viet Nam : All components are listed or exempted.

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
Lambda CE6 Bacteriophage	
EYE IRRITATION - Category 2A	Calculation method
CARCINOGENICITY - Category 2	Calculation method
TOXIC TO REPRODUCTION - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1	Calculation method
LE392 E. coli Strain	
EYE IRRITATION - Category 2B	Calculation method
BL21 Competent Cells	
EYE IRRITATION - Category 2B	Calculation method
Beta Mercaptoethanol	
ACUTE TOXICITY (dermal) - Category 4	Calculation method
SKIN IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE - Category 1	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
TOXIC TO REPRODUCTION - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method
AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method

History

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Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
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

Indicates information that has changed from previously issued version.

Notice to reader

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