Conforms to US OSHA Hazard Communication 29CFR1910.1200

SAFETY DATA SHEET

Agilent Technologies

DNA Ligation Kit, Part Number 203003

Section 1. Identification

1.1 Product identifier

Product name : DNA Ligation Kit, Part Number 203003

Part no. (chemical kit) : 203003

Part no. :

10 mM rATP (pH 7.5) in Sterile Water	200340-81
cI857 Wild-Type Lambda Control DNA Hind III Digested	203003-51
pUC18 BamHI Digested	203003-52
T4 DNA Ligase	600011-51
10x Ligase Buffer	600011-52

Validation date : 7/31/2023

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

Identified uses : Analytical reagent.

10 mM rATP (pH 7.5) in Sterile Water	4 x 0.25 ml
cI857 Wild-Type Lambda Control DNA Hind III Digested	0.01 ml (10 µg 500 ng/µl)
pUC18 BamHI Digested	0.01 ml (1 µg/µl 10 µg)
T4 DNA Ligase	0.075 ml (300 U 4 U/µl)
10x Ligase Buffer	1 ml

1.3 Details of the supplier of the safety data sheet

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

1.4 Emergency telephone number

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

Section 2. Hazards identification

2.1 Classification of the substance or mixture

OSHA/HCS status :

10 mM rATP (pH 7.5) in Sterile Water	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.
cI857 Wild-Type Lambda Control DNA Hind III Digested	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.
pUC18 BamHI Digested	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.
T4 DNA Ligase	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Section 2. Hazards identification

	10x Ligase Buffer	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.

Classification of the substance or mixture

T4 DNA Ligase

H320 EYE IRRITATION - Category 2B

10x Ligase Buffer	Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 1.4%

2.2 GHS label elements

Signal word	:	10 mM rATP (pH 7.5) in Sterile Water	No signal word.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No signal word.
		pUC18 BamHI Digested	No signal word.
		T4 DNA Ligase	Warning
		10x Ligase Buffer	No signal word.
Hazard statements	:	10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
		pUC18 BamHI Digested	No known significant effects or critical hazards.
		T4 DNA Ligase	H320 - Causes eye irritation.
		10x Ligase Buffer	No known significant effects or critical hazards.
Precautionary statements			
Prevention	:	10 mM rATP (pH 7.5) in Sterile Water	Not applicable.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Not applicable.
		pUC18 BamHI Digested	Not applicable.
		T4 DNA Ligase	Not applicable.
		10x Ligase Buffer	Not applicable.
Response	:	10 mM rATP (pH 7.5) in Sterile Water	Not applicable.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Not applicable.
		pUC18 BamHI Digested	Not applicable.
		T4 DNA Ligase	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.
		10x Ligase Buffer	Not applicable.
Storage	:	10 mM rATP (pH 7.5) in Sterile Water	Not applicable.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Not applicable.
		pUC18 BamHI Digested	Not applicable.
		T4 DNA Ligase	Not applicable.
		10x Ligase Buffer	Not applicable.
Disposal	:		

Section 2. Hazards identification

	10 mM rATP (pH 7.5) in Sterile Water	Not applicable.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	Not applicable.
	pUC18 BamHI Digested	Not applicable.
	T4 DNA Ligase	Not applicable.
	10x Ligase Buffer	Not applicable.
Supplemental label elements :	10 mM rATP (pH 7.5) in Sterile Water	None known.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	None known.
	pUC18 BamHI Digested	None known.
	T4 DNA Ligase	None known.
	10x Ligase Buffer	None known.

2.3 Other hazards

Hazards not otherwise classified :	10 mM rATP (pH 7.5) in Sterile Water	None known.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	None known.
	pUC18 BamHI Digested	None known.
	T4 DNA Ligase	None known.
	10x Ligase Buffer	None known.

Section 3. Composition/information on ingredients

Substance/mixture :	10 mM rATP (pH 7.5) in Sterile Water	Mixture
	cI857 Wild-Type Lambda Control DNA Hind III Digested	Mixture
	pUC18 BamHI Digested	Mixture
	T4 DNA Ligase	Mixture
	10x Ligase Buffer	Mixture

Ingredient name	%	CAS number
T4 DNA Ligase		
Glycerol	≥50 - ≤75	56-81-5

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

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

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

Section 4. First aid measures

4.1 Description of necessary first aid measures

Eye contact :	10 mM rATP (pH 7.5) in Sterile Water	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.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	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.
	pUC18 BamHI Digested	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.
	T4 DNA Ligase	Immediately flush eyes with plenty of water,

Section 4. First aid measures

			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.
		10x Ligase Buffer	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.
Inhalation	:	10 mM rATP (pH 7.5) in Sterile Water	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
		pUC18 BamHI Digested	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
		T4 DNA Ligase	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.
		10x Ligase Buffer	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. 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.
Skin contact	:	10 mM rATP (pH 7.5) in Sterile Water	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		pUC18 BamHI Digested	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		T4 DNA Ligase	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.
		10x Ligase Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

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Ingestion	:	10 mM rATP (pH 7.5) in Sterile Water	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.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	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.
		pUC18 BamHI Digested	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.
		T4 DNA Ligase	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.
		10x Ligase Buffer	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.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	:	10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
		pUC18 BamHI Digested	No known significant effects or critical hazards.
		T4 DNA Ligase	Causes eye irritation.
		10x Ligase Buffer	No known significant effects or critical hazards.
Inhalation	:	10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
		pUC18 BamHI Digested	No known significant effects or critical hazards.
		T4 DNA Ligase	No known significant effects or critical hazards.
		10x Ligase Buffer	No known significant effects or critical hazards.

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Skin contact	:	10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
		pUC18 BamHI Digested	No known significant effects or critical hazards.
		T4 DNA Ligase	No known significant effects or critical hazards.
		10x Ligase Buffer	No known significant effects or critical hazards.
Ingestion	:	10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
		pUC18 BamHI Digested	No known significant effects or critical hazards.
		T4 DNA Ligase	No known significant effects or critical hazards.
		10x Ligase Buffer	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	:	10 mM rATP (pH 7.5) in Sterile Water	No specific data.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific data.
		pUC18 BamHI Digested	No specific data.
		T4 DNA Ligase	Adverse symptoms may include the following: irritation watering redness
		10x Ligase Buffer	No specific data.
Inhalation	:	10 mM rATP (pH 7.5) in Sterile Water	No specific data.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific data.
		pUC18 BamHI Digested	No specific data.
		T4 DNA Ligase	No specific data.
		10x Ligase Buffer	No specific data.
Skin contact	:	10 mM rATP (pH 7.5) in Sterile Water	No specific data.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific data.
		pUC18 BamHI Digested	No specific data.
		T4 DNA Ligase	No specific data.
		10x Ligase Buffer	No specific data.
Ingestion	:	10 mM rATP (pH 7.5) in Sterile Water	No specific data.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific data.
		pUC18 BamHI Digested	No specific data.
		T4 DNA Ligase	No specific data.
		10x Ligase Buffer	No specific data.

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

Notes to physician	:	10 mM rATP (pH 7.5) in Sterile Water	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		pUC18 BamHI Digested	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		T4 DNA Ligase	Treat symptomatically. Contact poison treatment

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			specialist immediately if large quantities have been ingested or inhaled.
		10x Ligase Buffer	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.
Specific treatments	:	10 mM rATP (pH 7.5) in Sterile Water	No specific treatment.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific treatment.
		pUC18 BamHI Digested	No specific treatment.
		T4 DNA Ligase	No specific treatment.
		10x Ligase Buffer	No specific treatment.
Protection of first-aiders	:	10 mM rATP (pH 7.5) in Sterile Water	No action shall be taken involving any personal risk or without suitable training.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No action shall be taken involving any personal risk or without suitable training.
		pUC18 BamHI Digested	No action shall be taken involving any personal risk or without suitable training.
		T4 DNA Ligase	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.
		10x Ligase Buffer	No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	10 mM rATP (pH 7.5) in Sterile Water	Use an extinguishing agent suitable for the surrounding fire.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Use an extinguishing agent suitable for the surrounding fire.
		pUC18 BamHI Digested	Use an extinguishing agent suitable for the surrounding fire.
		T4 DNA Ligase	Use an extinguishing agent suitable for the surrounding fire.
		10x Ligase Buffer	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	:	10 mM rATP (pH 7.5) in Sterile Water	None known.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	None known.
		pUC18 BamHI Digested	None known.
		T4 DNA Ligase	None known.
		10x Ligase Buffer	None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	:	10 mM rATP (pH 7.5) in Sterile Water	In a fire or if heated, a pressure increase will occur and the container may burst.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	In a fire or if heated, a pressure increase will occur and the container may burst.
		pUC18 BamHI Digested	In a fire or if heated, a pressure increase will occur and the container may burst.
		T4 DNA Ligase	In a fire or if heated, a pressure increase will occur and the container may burst.

Section 5. Fire-fighting measures

	10x Ligase Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products :	10 mM rATP (pH 7.5) in Sterile Water	No specific data.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific data.
	pUC18 BamHI Digested	No specific data.
	T4 DNA Ligase	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	10x Ligase Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds metal oxide/oxides

5.3 Advice for firefighters

Special protective actions for fire-fighters :	10 mM rATP (pH 7.5) in Sterile Water	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.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	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.
	pUC18 BamHI Digested	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.
	T4 DNA Ligase	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.
	10x Ligase Buffer	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 :	10 mM rATP (pH 7.5) in Sterile Water	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	pUC18 BamHI Digested	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	T4 DNA Ligase	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	10x Ligase Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive

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pressure mode.

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	:	10 mM rATP (pH 7.5) in Sterile Water	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.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	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.
		pUC18 BamHI Digested	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.
		T4 DNA Ligase	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.
		10x Ligase Buffer	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
For emergency responders	:	10 mM rATP (pH 7.5) in Sterile Water	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".
		cI857 Wild-Type Lambda Control DNA Hind III Digested	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".
		pUC18 BamHI Digested	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".
		T4 DNA Ligase	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".
		10x Ligase Buffer	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

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6.2 Environmental precautions	:	10 mM rATP (pH 7.5) in Sterile Water	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).
		cI857 Wild-Type Lambda Control DNA Hind III Digested	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).
		pUC18 BamHI Digested	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).
		T4 DNA Ligase	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).
		10x Ligase Buffer	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up	:	10 mM rATP (pH 7.5) in Sterile Water	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.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	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.
		pUC18 BamHI Digested	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.
		T4 DNA Ligase	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.
		10x Ligase Buffer	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	:	10 mM rATP (pH 7.5) in Sterile Water	Put on appropriate personal protective equipment (see Section 8).
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Put on appropriate personal protective equipment (see Section 8).
		pUC18 BamHI Digested	Put on appropriate personal protective equipment (see Section 8).
		T4 DNA Ligase	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.
		10x Ligase Buffer	Put on appropriate personal protective equipment (see Section 8).
Advice on general occupational hygiene	:	10 mM rATP (pH 7.5) in Sterile Water	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.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	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.
		pUC18 BamHI Digested	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.
		T4 DNA Ligase	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.
		10x Ligase Buffer	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

7.2 Conditions for safe storage, including any incompatibilities	: 10 mM rATP (pH 7.5) in Sterile Water	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.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	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.
	pUC18 BamHI Digested	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.
	T4 DNA Ligase	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.
	10x Ligase Buffer	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.

7.3 Specific end use(s)

Section 7. Handling and storage

Recommendations	:	10 mM rATP (pH 7.5) in Sterile Water	Industrial applications, Professional applications.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Industrial applications, Professional applications.
		pUC18 BamHI Digested	Industrial applications, Professional applications.
		T4 DNA Ligase	Industrial applications, Professional applications.
		10x Ligase Buffer	Industrial applications, Professional applications.
Industrial sector specific solutions	:	10 mM rATP (pH 7.5) in Sterile Water	Not available.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
		pUC18 BamHI Digested	Not available.
		T4 DNA Ligase	Not available.
		10x Ligase Buffer	Not available.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
T4 DNA Ligase 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

Biological exposure indices

No exposure indices known.

8.2 Exposure controls

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

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

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

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

Section 8. Exposure controls/personal protection

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	:	10 mM rATP (pH 7.5) in Sterile Water	Liquid.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Liquid.
		pUC18 BamHI Digested	Liquid.
		T4 DNA Ligase	Liquid.
		10x Ligase Buffer	Liquid.
Color	:	10 mM rATP (pH 7.5) in Sterile Water	Not available.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
		pUC18 BamHI Digested	Not available.
		T4 DNA Ligase	Not available.
		10x Ligase Buffer	Not available.
Odor	:	10 mM rATP (pH 7.5) in Sterile Water	Not available.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
		pUC18 BamHI Digested	Not available.
		T4 DNA Ligase	Not available.
		10x Ligase Buffer	Not available.
Odor threshold	:	10 mM rATP (pH 7.5) in Sterile Water	Not available.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
		pUC18 BamHI Digested	Not available.
		T4 DNA Ligase	Not available.
		10x Ligase Buffer	Not available.
pH	:		

Section 9. Physical and chemical properties and safety characteristics

	10 mM rATP (pH 7.5) in Sterile Water	7
	cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
	pUC18 BamHI Digested	Not available.
	T4 DNA Ligase	7.5
	10x Ligase Buffer	7.5

Melting point/freezing point :

10 mM rATP (pH 7.5) in Sterile Water	0°C (32°F)
cI857 Wild-Type Lambda Control DNA Hind III Digested	0°C (32°F)
pUC18 BamHI Digested	0°C (32°F)
T4 DNA Ligase	Not available.
10x Ligase Buffer	Not available.

Boiling point, initial boiling point, and boiling range :

10 mM rATP (pH 7.5) in Sterile Water	100°C (212°F)
cI857 Wild-Type Lambda Control DNA Hind III Digested	100°C (212°F)
pUC18 BamHI Digested	100°C (212°F)
T4 DNA Ligase	Not available.
10x Ligase Buffer	Not available.

Flash point :

	Closed cup			Open cup		
Ingredient name	**°C**	**°F**	**Method**	**°C**	**°F**	**Method**
T4 DNA Ligase						
Glycerol	-	-	-	177	350.6	-

Evaporation rate :

10 mM rATP (pH 7.5) in Sterile Water	Not available.
cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
pUC18 BamHI Digested	Not available.
T4 DNA Ligase	Not available.
10x Ligase Buffer	Not available.

Flammability :

10 mM rATP (pH 7.5) in Sterile Water	Not applicable.
cI857 Wild-Type Lambda Control DNA Hind III Digested	Not applicable.
pUC18 BamHI Digested	Not applicable.
T4 DNA Ligase	Not applicable.
10x Ligase Buffer	Not applicable.

Lower and upper explosion limit/flammability limit :

10 mM rATP (pH 7.5) in Sterile Water	Not available.
cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
pUC18 BamHI Digested	Not available.
T4 DNA Ligase	Not available.
10x Ligase Buffer	Not available.

Vapor pressure :

	Vapor Pressure at 20°C			Vapor pressure at 50°C		
Ingredient name	**mm Hg**	**kPa**	**Method**	**mm Hg**	**kPa**	**Method**

Section 9. Physical and chemical properties and safety characteristics

10 mM rATP (pH 7.5) in Sterile Water						
water	17.5	2.3	-	92.258	12.3	-
cI857 Wild-Type Lambda Control DNA Hind III Digested						
water	17.5	2.3	-	92.258	12.3	-
pUC18 BamHI Digested						
water	17.5	2.3	-	92.258	12.3	-
T4 DNA Ligase						
water	17.5	2.3	-	92.258	12.3	-
Glycerol	0.000075	0.00001	-	0.0025	0.00033	-
10x Ligase Buffer						
water	17.5	2.3	-	92.258	12.3	-

Relative vapor density :

10 mM rATP (pH 7.5) in Sterile Water	Not available.
cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
pUC18 BamHI Digested	Not available.
T4 DNA Ligase	Not available.
10x Ligase Buffer	Not available.

Relative density :

10 mM rATP (pH 7.5) in Sterile Water	Not available.
cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
pUC18 BamHI Digested	Not available.
T4 DNA Ligase	Not available.
10x Ligase Buffer	Not available.

Solubility(ies) :

Media	Result
10 mM rATP (pH 7.5) in Sterile Water	
water	Soluble
cI857 Wild-Type Lambda Control DNA Hind III Digested	
water	Soluble
pUC18 BamHI Digested	
water	Soluble
T4 DNA Ligase	
water	Soluble
10x Ligase Buffer	
water	Soluble

Section 9. Physical and chemical properties and safety characteristics

Partition coefficient: n-octanol/water :

10 mM rATP (pH 7.5) in Sterile Water	Not applicable.
cI857 Wild-Type Lambda Control DNA Hind III Digested	Not applicable.
pUC18 BamHI Digested	Not applicable.
T4 DNA Ligase	Not applicable.
10x Ligase Buffer	Not applicable.

Auto-ignition temperature :

Ingredient name	°C	°F	Method
T4 DNA Ligase			
Glycerol	370	698	-

Decomposition temperature :

10 mM rATP (pH 7.5) in Sterile Water	Not available.
cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
pUC18 BamHI Digested	Not available.
T4 DNA Ligase	Not available.
10x Ligase Buffer	Not available.

Viscosity :

10 mM rATP (pH 7.5) in Sterile Water	Not available.
cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
pUC18 BamHI Digested	Not available.
T4 DNA Ligase	Not available.
10x Ligase Buffer	Not available.

Particle characteristics

Median particle size :

10 mM rATP (pH 7.5) in Sterile Water	Not applicable.
cI857 Wild-Type Lambda Control DNA Hind III Digested	Not applicable.
pUC18 BamHI Digested	Not applicable.
T4 DNA Ligase	Not applicable.
10x Ligase Buffer	Not applicable.

Section 10. Stability and reactivity

10.1 Reactivity :

10 mM rATP (pH 7.5) in Sterile Water	No specific test data related to reactivity available for this product or its ingredients.
cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific test data related to reactivity available for this product or its ingredients.
pUC18 BamHI Digested	No specific test data related to reactivity available for this product or its ingredients.
T4 DNA Ligase	No specific test data related to reactivity available for this product or its ingredients.
10x Ligase Buffer	No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability :

10 mM rATP (pH 7.5) in Sterile Water	The product is stable.
cI857 Wild-Type Lambda Control DNA Hind III Digested	The product is stable.
pUC18 BamHI Digested	The product is stable.
T4 DNA Ligase	The product is stable.
10x Ligase Buffer	The product is stable.

Section 10. Stability and reactivity

10.3 Possibility of hazardous reactions	:	10 mM rATP (pH 7.5) in Sterile Water	Under normal conditions of storage and use, hazardous reactions will not occur.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Under normal conditions of storage and use, hazardous reactions will not occur.
		pUC18 BamHI Digested	Under normal conditions of storage and use, hazardous reactions will not occur.
		T4 DNA Ligase	Under normal conditions of storage and use, hazardous reactions will not occur.
		10x Ligase Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	:	10 mM rATP (pH 7.5) in Sterile Water	No specific data.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific data.
		pUC18 BamHI Digested	No specific data.
		T4 DNA Ligase	No specific data.
		10x Ligase Buffer	No specific data.
10.5 Incompatible materials	:	10 mM rATP (pH 7.5) in Sterile Water	May react or be incompatible with oxidizing materials.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	May react or be incompatible with oxidizing materials.
		pUC18 BamHI Digested	May react or be incompatible with oxidizing materials.
		T4 DNA Ligase	May react or be incompatible with oxidizing materials.
		10x Ligase Buffer	May react or be incompatible with oxidizing materials.
10.6 Hazardous decomposition products	:	10 mM rATP (pH 7.5) in Sterile Water	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		pUC18 BamHI Digested	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		T4 DNA Ligase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		10x Ligase Buffer	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
T4 DNA Ligase Glycerol	LD50 Oral	Rat	12600 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
T4 DNA Ligase					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-

Sensitization

Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure	:	10 mM rATP (pH 7.5) in Sterile Water	Not available.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	Not available.
		pUC18 BamHI Digested	Not available.
		T4 DNA Ligase	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
		10x Ligase Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Eye contact	:	10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
		pUC18 BamHI Digested	No known significant effects or critical hazards.
		T4 DNA Ligase	Causes eye irritation.
		10x Ligase Buffer	No known significant effects or critical hazards.
Inhalation	:	10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
		pUC18 BamHI Digested	No known significant effects or critical hazards.
		T4 DNA Ligase	No known significant effects or critical hazards.
		10x Ligase Buffer	No known significant effects or critical hazards.

Section 11. Toxicological information

Skin contact	:	10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
		pUC18 BamHI Digested	No known significant effects or critical hazards.
		T4 DNA Ligase	No known significant effects or critical hazards.
		10x Ligase Buffer	No known significant effects or critical hazards.
Ingestion	:	10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
		pUC18 BamHI Digested	No known significant effects or critical hazards.
		T4 DNA Ligase	No known significant effects or critical hazards.
		10x Ligase Buffer	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	:	10 mM rATP (pH 7.5) in Sterile Water	No specific data.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific data.
		pUC18 BamHI Digested	No specific data.
		T4 DNA Ligase	Adverse symptoms may include the following: irritation watering redness
		10x Ligase Buffer	No specific data.
Inhalation	:	10 mM rATP (pH 7.5) in Sterile Water	No specific data.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific data.
		pUC18 BamHI Digested	No specific data.
		T4 DNA Ligase	No specific data.
		10x Ligase Buffer	No specific data.
Skin contact	:	10 mM rATP (pH 7.5) in Sterile Water	No specific data.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific data.
		pUC18 BamHI Digested	No specific data.
		T4 DNA Ligase	No specific data.
		10x Ligase Buffer	No specific data.
Ingestion	:	10 mM rATP (pH 7.5) in Sterile Water	No specific data.
		cI857 Wild-Type Lambda Control DNA Hind III Digested	No specific data.
		pUC18 BamHI Digested	No specific data.
		T4 DNA Ligase	No specific data.
		10x Ligase Buffer	No specific data.

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Section 11. Toxicological information

Potential delayed effects : Not available.

Potential chronic health effects

General	: 10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
	pUC18 BamHI Digested	No known significant effects or critical hazards.
	T4 DNA Ligase	No known significant effects or critical hazards.
	10x Ligase Buffer	No known significant effects or critical hazards.
Carcinogenicity	: 10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
	pUC18 BamHI Digested	No known significant effects or critical hazards.
	T4 DNA Ligase	No known significant effects or critical hazards.
	10x Ligase Buffer	No known significant effects or critical hazards.
Mutagenicity	: 10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
	pUC18 BamHI Digested	No known significant effects or critical hazards.
	T4 DNA Ligase	No known significant effects or critical hazards.
	10x Ligase Buffer	No known significant effects or critical hazards.
Reproductive toxicity	: 10 mM rATP (pH 7.5) in Sterile Water	No known significant effects or critical hazards.
	cI857 Wild-Type Lambda Control DNA Hind III Digested	No known significant effects or critical hazards.
	pUC18 BamHI Digested	No known significant effects or critical hazards.
	T4 DNA Ligase	No known significant effects or critical hazards.
	10x Ligase Buffer	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
T4 DNA Ligase Glycerol	12600	N/A	N/A	N/A	N/A

Other information : 10x Ligase Buffer — Adverse symptoms may include the following: May cause skin sensitization.

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
T4 DNA Ligase Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - *Oncorhynchus mykiss*	96 hours

12.2 Persistence and degradability

Section 12. Ecological information

Product/ingredient name	Test	Result	Dose	Inoculum
T4 DNA Ligase Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
T4 DNA Ligase Glycerol	-1.76	-	Low

12.4 Mobility in soil

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

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

Section 13. Disposal considerations

13.1 Waste treatment methods

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

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

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

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

Section 14. Transport information

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

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

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) 311: Edetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification :

10 mM rATP (pH 7.5) in Sterile Water	Not applicable.
cI857 Wild-Type Lambda Control DNA Hind III Digested	Not applicable.
pUC18 BamHI Digested	Not applicable.
T4 DNA Ligase	EYE IRRITATION - Category 2B
10x Ligase Buffer	Not applicable.

Composition/information on ingredients

Name	%	Classification
T4 DNA Ligase		
Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B

State regulations

Massachusetts : The following components are listed: GLYCERINE MIST

New York : None of the components are listed.

New Jersey : The following components are listed: GLYCERIN

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

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Section 15. Regulatory information

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	:	All components are listed or exempted.
Japan	:	**Japan inventory (CSCL)**: Not determined. **Japan inventory (ISHL)**: Not determined.
New Zealand	:	All components are listed or exempted.
Philippines	:	Not determined.
Republic of Korea	:	Not determined.
Taiwan	:	All components are listed or exempted.
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
T4 DNA Ligase EYE IRRITATION - Category 2B	Calculation method

History

Date of issue/Date of revision	:	07/31/2023
Date of previous issue	:	06/03/2020
Version	:	7
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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