

SAFETY DATA SHEET



T7 RNA Polymerase, Part Number 600124

Section 1. Identification

1.1 Product identifier

Product name : T7 RNA Polymerase, Part Number 600124
Part no. (chemical kit) : 600124
Part no. : T7 RNA Polymerase 600124-51
 RNA Polymerase Dilution Buffer 600110-83
 5X Transcription Buffer 600110-84
Validation date : 5/27/2022

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

Material uses : Analytical reagent.
 T7 RNA Polymerase 0.5 ml (25,000 U 50 U/μl)
 RNA Polymerase Dilution Buffer 2 ml (2 x 1 ml)
 5X Transcription Buffer 13 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 : T7 RNA Polymerase This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 RNA Polymerase Dilution Buffer This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 5X Transcription 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

T7 RNA Polymerase
 H320 EYE IRRITATION - Category 2B
RNA Polymerase Dilution Buffer
 H320 EYE IRRITATION - Category 2B

2.2 GHS label elements

Signal word : T7 RNA Polymerase Warning
 RNA Polymerase Dilution Buffer Warning
 5X Transcription Buffer No signal word.
Hazard statements : T7 RNA Polymerase H320 - Causes eye irritation.
 RNA Polymerase Dilution Buffer H320 - Causes eye irritation.
 5X Transcription Buffer No known significant effects or critical hazards.

Section 2. Hazards identification

Precautionary statements

Prevention	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not applicable. Not applicable. Not applicable.
Response	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention. Not applicable.
Storage	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not applicable. Not applicable. Not applicable.
Disposal	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not applicable. Not applicable. Not applicable.
Supplemental label elements	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	None known. None known. None known.

2.3 Other hazards

Hazards not otherwise classified	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	None known. None known. None known.
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Section 3. Composition/information on ingredients

Substance/mixture	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Mixture Mixture Mixture
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Ingredient name	%	CAS number
T7 RNA Polymerase Glycerol	≥50 - ≤75	56-81-5
RNA Polymerase Dilution Buffer Glycerol	≥50 - ≤75	56-81-5
5X Transcription Buffer Trometamol	≤3	77-86-1
Sodium chloride	≤3	7647-14-5

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

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified 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	: T7 RNA Polymerase	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.
	RNA Polymerase Dilution Buffer	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.
	5X Transcription 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	: T7 RNA Polymerase	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.
	RNA Polymerase Dilution Buffer	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.
	5X Transcription 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	: T7 RNA Polymerase	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.
	RNA Polymerase Dilution Buffer	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.
	5X Transcription Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Section 4. First aid measures

Ingestion	: T7 RNA Polymerase	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.
	RNA Polymerase Dilution Buffer	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.
	5X Transcription 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	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Causes eye irritation. Causes eye irritation. No known significant effects or critical hazards.
Inhalation	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: T7 RNA Polymerase	Adverse symptoms may include the following: irritation watering redness
	RNA Polymerase Dilution Buffer	Adverse symptoms may include the following: irritation watering

Section 4. First aid measures

	5X Transcription Buffer	redness
Inhalation	: T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
Skin contact	: T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
Ingestion	: T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.

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

Notes to physician	: T7 RNA Polymerase	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	RNA Polymerase Dilution Buffer	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	5X Transcription 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	: T7 RNA Polymerase	No specific treatment.
	RNA Polymerase Dilution Buffer	No specific treatment.
	5X Transcription Buffer	No specific treatment.
Protection of first-aiders	: T7 RNA Polymerase	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.
	RNA Polymerase Dilution Buffer	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.
	5X Transcription 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	: T7 RNA Polymerase	Use an extinguishing agent suitable for the surrounding fire.
	RNA Polymerase Dilution Buffer	Use an extinguishing agent suitable for the surrounding fire.
	5X Transcription Buffer	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: T7 RNA Polymerase	None known.
	RNA Polymerase Dilution Buffer	None known.
	5X Transcription Buffer	None known.

5.2 Special hazards arising from the substance or mixture

Section 5. Fire-fighting measures

Specific hazards arising from the chemical	: T7 RNA Polymerase	In a fire or if heated, a pressure increase will occur and the container may burst.
	RNA Polymerase Dilution Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
	5X Transcription Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	: T7 RNA Polymerase	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	RNA Polymerase Dilution Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	5X Transcription 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	: T7 RNA Polymerase	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.
	RNA Polymerase Dilution 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.
	5X Transcription 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	: T7 RNA Polymerase	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	RNA Polymerase Dilution Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	5X Transcription Buffer	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	: T7 RNA Polymerase	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
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Section 6. Accidental release measures

	RNA Polymerase Dilution Buffer	personal protective equipment. 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.
	5X Transcription 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 :	T7 RNA Polymerase	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".
	RNA Polymerase Dilution 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".
	5X Transcription 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".
6.2 Environmental precautions	T7 RNA Polymerase	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).
	RNA Polymerase Dilution 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).
	5X Transcription 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 :	T7 RNA Polymerase	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.
	RNA Polymerase Dilution 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 6. Accidental release measures

5X Transcription 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

: T7 RNA Polymerase

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.

RNA Polymerase Dilution Buffer

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.

5X Transcription Buffer

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

Advice on general occupational hygiene

: T7 RNA Polymerase

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.

RNA Polymerase Dilution 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.

5X Transcription 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.

7.2 Conditions for safe storage, including any incompatibilities

: T7 RNA Polymerase

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

Section 7. Handling and storage

RNA Polymerase Dilution Buffer

environmental contamination. See Section 10 for incompatible materials before handling or use. 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. 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.

5X Transcription Buffer

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7.3 Specific end use(s)

Recommendations

: T7 RNA Polymerase Industrial applications, Professional applications.
 RNA Polymerase Dilution Buffer Industrial applications, Professional applications.
 5X Transcription Buffer Industrial applications, Professional applications.

Industrial sector specific solutions

: T7 RNA Polymerase Not available.
 RNA Polymerase Dilution Buffer Not available.
 5X Transcription Buffer Not available.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
T7 RNA Polymerase Glycerol	<p>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</p> <p>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p>
RNA Polymerase Dilution Buffer Glycerol	<p>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</p> <p>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p>

Section 8. Exposure controls/personal protection

5X Transcription Buffer

Trometamol
Sodium chloride

None.
None.

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.

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


T7 RNA Polymerase	Liquid.
RNA Polymerase Dilution Buffer	Liquid.
5X Transcription Buffer	Liquid.

Color

T7 RNA Polymerase	Not available.
RNA Polymerase Dilution Buffer	Not available.
5X Transcription Buffer	Not available.

Section 9. Physical and chemical properties and safety characteristics


Odor	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
Odor threshold	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
pH	T7 RNA Polymerase	7.7
	RNA Polymerase Dilution Buffer	7.7
	5X Transcription Buffer	8
Melting point/freezing point	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	0°C (32°F)
Boiling point, initial boiling point, and boiling range	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	100°C (212°F)

Flash point	Ingredient name	Closed cup			Open cup		
		°C	°F	Method	°C	°F	Method
	 T7 RNA Polymerase						
	Edetic acid	>100	>212	DIN 51758			
	(R*,R*) -1,4-Dimercaptobutane-2,3-diol	>110	>230				
	RNA Polymerase Dilution Buffer						
	Edetic acid	>100	>212	DIN 51758			
	(R*,R*) -1,4-Dimercaptobutane-2,3-diol	>110	>230				

Evaporation rate	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.

Flammability	T7 RNA Polymerase	Not applicable.
	RNA Polymerase Dilution Buffer	Not applicable.
	5X Transcription Buffer	Not applicable.

Lower and upper explosion limit/flammability limit	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.

Vapor pressure	Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
		mm Hg	kPa	Method	mm Hg	kPa	Method
	 T7 RNA Polymerase						
	water	23.8	3.2		92.258	12.3	
	Glycerol	0.000075	0.00001		0.0025	0.00033	
	RNA Polymerase Dilution Buffer						
	water	23.8	3.2		92.258	12.3	
	Glycerol	0.000075	0.00001		0.0025	0.00033	
	5X Transcription Buffer						

Section 9. Physical and chemical properties and safety characteristics

water	23.8	3.2		92.258	12.3	
Trometamol	<0.00075006	<0.0001				

Relative vapor density	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not available. Not available. Not available.																										
Relative density	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not available. Not available. Not available.																										
Solubility	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Easily soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water.																										
Partition coefficient: n-octanol/water	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not applicable. Not applicable. Not applicable.																										
Auto-ignition temperature	:	<table border="1"> <thead> <tr> <th style="text-align: left;">Ingredient name</th> <th>°C</th> <th>°F</th> <th>Method</th> </tr> </thead> <tbody> <tr> <td colspan="4">T7 RNA Polymerase</td> </tr> <tr> <td>Glycerol</td> <td>370</td> <td>698</td> <td rowspan="2">VDI 2263</td> </tr> <tr> <td>Edetic acid</td> <td>>400</td> <td>>752</td> </tr> <tr> <td colspan="4">RNA Polymerase Dilution Buffer</td> </tr> <tr> <td>Glycerol</td> <td>370</td> <td>698</td> <td rowspan="2">VDI 2263</td> </tr> <tr> <td>Edetic acid</td> <td>>400</td> <td>>752</td> </tr> </tbody> </table>		Ingredient name	°C	°F	Method	T7 RNA Polymerase				Glycerol	370	698	VDI 2263	Edetic acid	>400	>752	RNA Polymerase Dilution Buffer				Glycerol	370	698	VDI 2263	Edetic acid	>400	>752
Ingredient name	°C	°F	Method																										
T7 RNA Polymerase																													
Glycerol	370	698	VDI 2263																										
Edetic acid	>400	>752																											
RNA Polymerase Dilution Buffer																													
Glycerol	370	698	VDI 2263																										
Edetic acid	>400	>752																											
Decomposition temperature	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not available. Not available. Not available.																										
Viscosity	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not available. Not available. Not available.																										
Particle characteristics																													
Median particle size	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not applicable. Not applicable. Not applicable.																										

Section 10. Stability and reactivity

10.1 Reactivity	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	The product is stable. The product is stable. The product is stable.

Section 10. Stability and reactivity

10.3 Possibility of hazardous reactions	: T7 RNA Polymerase	Under normal conditions of storage and use, hazardous reactions will not occur.
	RNA Polymerase Dilution Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
	5X Transcription Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
10.5 Incompatible materials	: T7 RNA Polymerase	May react or be incompatible with oxidizing materials.
	RNA Polymerase Dilution Buffer	May react or be incompatible with oxidizing materials.
	5X Transcription Buffer	May react or be incompatible with oxidizing materials.
10.6 Hazardous decomposition products	: T7 RNA Polymerase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	RNA Polymerase Dilution Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	5X Transcription 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
T7 RNA Polymerase Glycerol	LD50 Oral	Rat	12600 mg/kg	-
RNA Polymerase Dilution Buffer Glycerol	LD50 Oral	Rat	12600 mg/kg	-
5X Transcription Buffer Trometamol Sodium chloride	LD50 Dermal	Rat	>5000 mg/kg	-
	LD50 Oral	Rat	3000 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
T7 RNA Polymerase Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
RNA Polymerase Dilution Buffer Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-

Section 11. Toxicological information

				mg	
5X Transcription Buffer Trometamol	Skin - Moderate irritant	Rabbit	-	25 %	-
	Skin - Severe irritant	Rabbit	-	500 mg	-
Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Moderate irritant	Rabbit	-	10 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-

Sensitization

Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
5X Transcription Buffer Trometamol	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure

: T7 RNA Polymerase

Routes of entry anticipated: Oral, Dermal, Inhalation.

RNA Polymerase Dilution Buffer

Routes of entry anticipated: Oral, Dermal, Inhalation.

5X Transcription Buffer

Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact

: T7 RNA Polymerase
RNA Polymerase Dilution Buffer
5X Transcription Buffer

Causes eye irritation.

Causes eye irritation.

No known significant effects or critical hazards.

Inhalation

: T7 RNA Polymerase
RNA Polymerase Dilution Buffer
5X Transcription Buffer

No known significant effects or critical hazards.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

Skin contact

: T7 RNA Polymerase
RNA Polymerase Dilution Buffer
5X Transcription Buffer

No known significant effects or critical hazards.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

Ingestion

: T7 RNA Polymerase
RNA Polymerase Dilution Buffer
5X Transcription Buffer

No known significant effects or critical hazards.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

Section 11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: T7 RNA Polymerase	Adverse symptoms may include the following: irritation watering redness
	RNA Polymerase Dilution Buffer	Adverse symptoms may include the following: irritation watering redness
	5X Transcription Buffer	No specific data.
Inhalation	: T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
Skin contact	: T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
Ingestion	: T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription 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.

Potential delayed effects : Not available.

Potential chronic health effects

General	: T7 RNA Polymerase	No known significant effects or critical hazards.
	RNA Polymerase Dilution Buffer	No known significant effects or critical hazards.
	5X Transcription Buffer	No known significant effects or critical hazards.
Carcinogenicity	: T7 RNA Polymerase	No known significant effects or critical hazards.
	RNA Polymerase Dilution Buffer	No known significant effects or critical hazards.
	5X Transcription Buffer	No known significant effects or critical hazards.
Mutagenicity	: T7 RNA Polymerase	No known significant effects or critical hazards.
	RNA Polymerase Dilution Buffer	No known significant effects or critical hazards.
	5X Transcription Buffer	No known significant effects or critical hazards.
Reproductive toxicity	: T7 RNA Polymerase	No known significant effects or critical hazards.
	RNA Polymerase Dilution Buffer	No known significant effects or critical hazards.
	5X Transcription 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)

Section 11. Toxicological information

T7 RNA Polymerase Glycerol	12600	N/A	N/A	N/A	N/A
RNA Polymerase Dilution Buffer Glycerol	12600	N/A	N/A	N/A	N/A
5X Transcription Buffer 5X Transcription Buffer	200100	N/A	N/A	N/A	N/A
Sodium chloride	3000	N/A	N/A	N/A	N/A

Other information

: **T7 RNA Polymerase**

Adverse symptoms may include the following: May cause skin sensitization.

RNA Polymerase Dilution Buffer
5X Transcription Buffer

Not available.

Adverse symptoms may include the following: May cause skin sensitization.

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
T7 RNA Polymerase Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
RNA Polymerase Dilution Buffer Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
5X Transcription Buffer Trometamol	Acute EC50 >980 mg/l Fresh water	Daphnia	48 hours
	Acute NOEC 520 mg/l Fresh water	Daphnia	48 hours
Sodium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute EC50 402.6 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - Morone saxatilis - Larvae	96 hours
	Chronic LC10 781 mg/l Fresh water	Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Chronic NOEC 0.314 g/L Fresh water	Daphnia - Daphnia pulex	21 days
	Chronic NOEC 100 mg/l Fresh water	Fish - Gambusia holbrooki - Adult	8 weeks

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
T7 RNA Polymerase Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
RNA Polymerase Dilution Buffer Glycerol	301D Ready Biodegradability - Closed Bottle	93 % - 30 days	-	-

Section 12. Ecological information

5X Transcription Buffer Trometamol	Test OECD 301F Ready Biodegradability - Manometric Respirometry Test	97.1 % - Readily - 28 days	30 mg/l	-
Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability	
5X Transcription Buffer Trometamol	-	-	Readily	

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
T7 RNA Polymerase Glycerol	-1.76	-	low
RNA Polymerase Dilution Buffer Glycerol	-1.76	-	low
5X Transcription Buffer Trometamol	-2.31	-	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

Section 13. Disposal considerations

for additional handling information and protection of employees.

Section 14. Transport information

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

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

Transport in bulk according to 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: Disodium hydrogenorthophosphate; 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 : T7 RNA Polymerase EYE IRRITATION - Category 2B
 RNA Polymerase Dilution Buffer EYE IRRITATION - Category 2B
 5X Transcription Buffer Not applicable.

Composition/information on ingredients

Name	%	Classification
T7 RNA Polymerase Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
RNA Polymerase Dilution Buffer Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
5X Transcription Buffer Trometamol	≤3	COMBUSTIBLE DUSTS SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

Section 15. Regulatory information

Sodium chloride	≤3	EYE IRRITATION - Category 2A
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State regulations

- Massachusetts** : The following components are listed: GLYCERINE MIST
- New York** : None of the components are listed.
- New Jersey** : The following components are listed: GLYCERIN; 1,2,3-PROPANETRIOL
- Pennsylvania** : The following components are listed: 1,2,3-PROPANETRIOL
- 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

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

- Australia** : Not determined.
- Canada** : At least one component is not listed in DSL but all such components are listed in NDSL.
- China** : All components are listed or exempted.
- Europe** : 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
T7 RNA Polymerase EYE IRRITATION - Category 2B	Calculation method
RNA Polymerase Dilution Buffer EYE IRRITATION - Category 2B	Calculation method

History

Section 16. Other information

Date of issue	: 05/27/2022
Date of previous issue	: 09/06/2019
Version	: 6
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.

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