

# SAFETY DATA SHEET

T7 RNA Polymerase, Part Number 600124

## Section 1. Identification

<b>Product identifier</b>	: T7 RNA Polymerase, Part Number 600124		
<b>Part no. (chemical kit)</b>	: 600124		
<b>Part no.</b>	: T7 RNA Polymerase	600124-51	
	: RNA Polymerase Dilution Buffer	600110-83	
	: 5X Transcription Buffer	600110-84	
<b>Material uses</b>	: 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	
<b>Supplier/Manufacturer</b>	: Agilent Technologies, Inc. 5301 Stevens Creek Blvd Santa Clara, CA 95051, USA 800-227-9770		
<b>Emergency telephone number (with hours of operation)</b>	: CHEMTREC®: 1-800-424-9300		

## Section 2. Hazard identification

### Classification of the substance or mixture

**T7 RNA Polymerase**  
H320 EYE IRRITATION - Category 2B

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

### GHS label elements

<b>Signal word</b>	: T7 RNA Polymerase	Warning
	: RNA Polymerase Dilution Buffer	Warning
	: 5X Transcription Buffer	No signal word.
<b>Hazard statements</b>	: 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.

### Precautionary statements

<b>Prevention</b>	: <b>T7 RNA Polymerase</b>	Not applicable.
	: RNA Polymerase Dilution Buffer	Not applicable.
	: 5X Transcription Buffer	Not applicable.
<b>Response</b>	: <b>T7 RNA Polymerase</b>	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.
	: RNA Polymerase Dilution 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.

## Section 2. Hazard identification

		5X Transcription Buffer	P337 + P313 - If eye irritation persists: Get medical advice or attention.
<b>Storage</b>	:	T7 RNA Polymerase	Not applicable.
		RNA Polymerase Dilution Buffer	Not applicable.
		5X Transcription Buffer	Not applicable.
<b>Disposal</b>	:	T7 RNA Polymerase	Not applicable.
		RNA Polymerase Dilution Buffer	Not applicable.
		5X Transcription Buffer	Not applicable.
<b>Supplemental label elements</b>	:	T7 RNA Polymerase	None known.
		RNA Polymerase Dilution Buffer	None known.
		5X Transcription Buffer	None known.
<b>Other hazards which do not result in classification</b>	:	T7 RNA Polymerase	None known.
		RNA Polymerase Dilution Buffer	None known.
		5X Transcription Buffer	None known.

## Section 3. Composition/information on ingredients

<b>Substance/mixture</b>	:	T7 RNA Polymerase	Mixture
		RNA Polymerase Dilution Buffer	Mixture
		5X Transcription Buffer	Mixture

Ingredient name	% (w/w)	CAS number
<b>T7 RNA Polymerase</b> Glycerol	45 - 70	56-81-5
<b>RNA Polymerase Dilution Buffer</b> Glycerol	30 - 60	56-81-5
<b>5X Transcription Buffer</b> Trometamol Sodium chloride	1 - 5 0.5 - 1.5	77-86-1 7647-14-5

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

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

## Section 4. First-aid measures

### Description of necessary first aid measures

<b>Eye contact</b>	:	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

## Section 4. First-aid measures

### Inhalation

: T7 RNA Polymerase

medical attention if irritation occurs.

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.

### Ingestion

:  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

## Section 4. First-aid measures

5X Transcription Buffer

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.

Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

<b>Eye contact</b>	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Causes eye irritation. Causes eye irritation.
<b>Inhalation</b>	: 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.
<b>Skin contact</b>	: 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.
<b>Ingestion</b>	: 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

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

## Section 4. First-aid measures

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

<b>Notes to physician</b>	: 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.
<b>Specific treatments</b>	: T7 RNA Polymerase	No specific treatment.
	RNA Polymerase Dilution Buffer	No specific treatment.
	5X Transcription Buffer	No specific treatment.
<b>Protection of first-aiders</b>	: 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

### Extinguishing media

<b>Suitable extinguishing media</b>	: 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.
<b>Unsuitable extinguishing media</b>	: T7 RNA Polymerase	None known.
	RNA Polymerase Dilution Buffer	None known.
	5X Transcription Buffer	None known.
<b>Specific hazards arising from the chemical</b>	: 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.
<b>Hazardous thermal decomposition products</b>	: 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:

## Section 5. Fire-fighting measures

carbon dioxide  
carbon monoxide  
nitrogen oxides  
halogenated compounds  
metal oxide/oxides

<b>Special protective actions for fire-fighters</b>	: 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.
<b>Special protective equipment for fire-fighters</b>	: 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

### Personal precautions, protective equipment and emergency procedures

<b>For non-emergency personnel</b>	: 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 personal protective equipment.
	RNA Polymerase Dilution 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. 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.

## Section 6. Accidental release measures

<b>For emergency responders</b> :	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".

<b>Environmental precautions</b> :	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).

### Methods and materials for containment and cleaning up

<b>Methods for cleaning up</b> :	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.
	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

### Precautions for safe handling



## Section 7. Handling and storage

<b>Protective measures</b>	: 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).
<b>Advice on general occupational hygiene</b>	: 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.
<b>Conditions for safe storage, including any incompatibilities</b>	: 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 environmental contamination. See Section 10 for incompatible materials before handling or use.
	RNA Polymerase Dilution 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



## Section 7. Handling and storage

5X Transcription Buffer

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.

## Section 8. Exposure controls/personal protection

### [Control parameters](#)

### [Occupational exposure limits](#)

Ingredient name	Exposure limits
<b>T7 RNA Polymerase</b> Glycerol	<b>CA Alberta Provincial (Canada, 6/2018).</b> 8 hrs OEL: 10 mg/m <sup>3</sup> 8 hours. Form: Mist <b>CA Quebec Provincial (Canada, 7/2019).</b> TWAEV: 10 mg/m <sup>3</sup> 8 hours. Form: mist <b>CA Saskatchewan Provincial (Canada, 7/2013).</b> STEL: 20 mg/m <sup>3</sup> 15 minutes. Form: mist TWA: 10 mg/m <sup>3</sup> 8 hours. Form: mist <b>CA British Columbia Provincial (Canada, 1/2021).</b> TWA: 3 mg/m <sup>3</sup> 8 hours. Form: respirable mist TWA: 10 mg/m <sup>3</sup> 8 hours. Form: total mist
<b>RNA Polymerase Dilution Buffer</b> Glycerol	<b>CA Alberta Provincial (Canada, 6/2018).</b> 8 hrs OEL: 10 mg/m <sup>3</sup> 8 hours. Form: Mist <b>CA Quebec Provincial (Canada, 7/2019).</b> TWAEV: 10 mg/m <sup>3</sup> 8 hours. Form: mist <b>CA Saskatchewan Provincial (Canada, 7/2013).</b> STEL: 20 mg/m <sup>3</sup> 15 minutes. Form: mist TWA: 10 mg/m <sup>3</sup> 8 hours. Form: mist <b>CA British Columbia Provincial (Canada, 1/2021).</b> TWA: 3 mg/m <sup>3</sup> 8 hours. Form: respirable mist TWA: 10 mg/m <sup>3</sup> 8 hours. Form: total mist

### [Appropriate engineering controls](#)

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

### [Environmental exposure controls](#)

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

## Section 8. Exposure controls/personal protection

### 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

- |                       |                                |                |
|-----------------------|--------------------------------|----------------|
| <b>Physical state</b> | : T7 RNA Polymerase            | Liquid.        |
|                       | RNA Polymerase Dilution Buffer | Liquid.        |
|                       | 5X Transcription Buffer        | Liquid.        |
| <b>Color</b>          | : T7 RNA Polymerase            | Not available. |
|                       | RNA Polymerase Dilution Buffer | Not available. |
|                       | 5X Transcription Buffer        | Not available. |
| <b>Odor</b>           | : T7 RNA Polymerase            | Not available. |
|                       | RNA Polymerase Dilution Buffer | Not available. |
|                       | 5X Transcription Buffer        | Not available. |
| <b>Odor threshold</b> | : T7 RNA Polymerase            | Not available. |
|                       | RNA Polymerase Dilution Buffer | Not available. |
|                       | 5X Transcription Buffer        | Not available. |
| <b>pH</b>             | :                              |                |

## Section 9. Physical and chemical properties and safety characteristics


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

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





<b>Evaporation rate</b>	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.

<b>Flammability</b>	T7 RNA Polymerase	Not applicable.
	RNA Polymerase Dilution Buffer	Not applicable.
	5X Transcription Buffer	Not applicable.

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

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

## Section 9. Physical and chemical properties and safety characteristics

	Buffer					
	water	23.8	3.2		92.258	12.3
	Trometamol	<0.00075006	<0.0001			
<b>Relative vapor density</b>	: T7 RNA Polymerase	Not available.				
	RNA Polymerase Dilution Buffer	Not available.				
	5X Transcription Buffer	Not available.				
<b>Relative density</b>	: T7 RNA Polymerase	Not available.				
	RNA Polymerase Dilution Buffer	Not available.				
	5X Transcription Buffer	Not available.				
<b>Solubility</b>	:  T7 RNA Polymerase	Easily soluble in the following materials: cold water and hot water.				
	RNA Polymerase Dilution Buffer	Easily soluble in the following materials: cold water and hot water.				
	5X Transcription Buffer	Easily soluble in the following materials: cold water and hot water.				
<b>Partition coefficient: n-octanol/water</b>	:  T7 RNA Polymerase	Not applicable.				
	RNA Polymerase Dilution Buffer	Not applicable.				
	5X Transcription Buffer	Not applicable.				
<b>Auto-ignition temperature</b>	: <b>Ingredient name</b>	<b>°C</b>	<b>°F</b>	<b>Method</b>		
	 RNA Polymerase					
	Glycerol	370	698			
	Edetic acid	>400	>752	VDI 2263		
	<b>RNA Polymerase Dilution Buffer</b>					
	Glycerol	370	698			
	Edetic acid	>400	>752	VDI 2263		
<b>Decomposition temperature</b>	: T7 RNA Polymerase	Not available.				
	RNA Polymerase Dilution Buffer	Not available.				
	5X Transcription Buffer	Not available.				
<b>Viscosity</b>	: T7 RNA Polymerase	Not available.				
	RNA Polymerase Dilution Buffer	Not available.				
	5X Transcription Buffer	Not available.				
<b>Particle characteristics</b>						
<b>Median particle size</b>	:  T7 RNA Polymerase	Not applicable.				
	RNA Polymerase Dilution Buffer	Not applicable.				
	5X Transcription Buffer	Not applicable.				

## Section 10. Stability and reactivity

<b>Reactivity</b>	: T7 RNA Polymerase	No specific test data related to reactivity available for this product or its ingredients.
	RNA Polymerase Dilution Buffer	No specific test data related to reactivity available for this product or its ingredients.
	5X Transcription Buffer	No specific test data related to reactivity available for this product or its ingredients.

## Section 10. Stability and reactivity

<b>Chemical stability</b>	: T7 RNA Polymerase	The product is stable.
	RNA Polymerase Dilution Buffer	The product is stable.
	5X Transcription Buffer	The product is stable.
<b>Possibility of hazardous reactions</b>	: 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.
<b>Conditions to avoid</b>	: T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
<b>Incompatible materials</b>	: 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.
<b>Hazardous decomposition products</b>	: 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

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<b>T7 RNA Polymerase</b> Glycerol	LD50 Oral	Rat	12600 mg/kg	-
<b>RNA Polymerase Dilution Buffer</b> Glycerol	LD50 Oral	Rat	12600 mg/kg	-
<b>5X Transcription Buffer</b> Trometamol Sodium chloride	LD50 Dermal	Rat	>5000 mg/kg	-
	LD50 Oral	Rat	3000 mg/kg	-

#### Irritation/Corrosion

## Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>T7 RNA Polymerase</b> Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
<b>RNA Polymerase Dilution Buffer</b> Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
<b>5X Transcription Buffer</b> 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 Skin - Mild irritant	Rabbit Rabbit	- -	10 mg 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
<b>5X Transcription Buffer</b> 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

## Section 11. Toxicological information

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

### Symptoms related to the physical, chemical and toxicological characteristics

<b>Eye contact</b>	: 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.
<b>Inhalation</b>	: T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
<b>Skin contact</b>	: T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
<b>Ingestion</b>	: 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



## Section 11. Toxicological information

<b>General</b>	: 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.
<b>Carcinogenicity</b>	: 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.
<b>Mutagenicity</b>	: 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.
<b>Reproductive toxicity</b>	: 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)
<b>T7 RNA Polymerase</b> Glycerol	12600	N/A	N/A	N/A	N/A
<b>RNA Polymerase Dilution Buffer</b> Glycerol	12600	N/A	N/A	N/A	N/A
<b>5X Transcription Buffer</b> 5X Transcription Buffer	200100	N/A	N/A	N/A	N/A
Sodium chloride	3000	N/A	N/A	N/A	N/A

<b>Other information</b>	: T7 RNA Polymerase	Adverse symptoms may include the following: May cause skin sensitization.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Adverse symptoms may include the following: May cause skin sensitization.

## Section 12. Ecological information

### Toxicity

Product/ingredient name	Result	Species	Exposure
<b>T7 RNA Polymerase</b> Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
<b>RNA Polymerase Dilution Buffer</b> Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
<b>5X Transcription Buffer</b> Trometamol	Acute EC50 >980 mg/l Fresh water Acute NOEC 520 mg/l Fresh water	Daphnia Daphnia	48 hours 48 hours

## Section 12. Ecological information

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

### Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
<b>T7 RNA Polymerase</b> Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
<b>RNA Polymerase Dilution Buffer</b> Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
<b>5X Transcription Buffer</b> Trometamol	OECD 301F Ready Biodegradability - Manometric Respirometry Test	97.1 % - Readily - 28 days	30 mg/l	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
<b>5X Transcription Buffer</b> Trometamol	-	-	Readily

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>T7 RNA Polymerase</b> Glycerol	-1.76	-	low
<b>RNA Polymerase Dilution Buffer</b> Glycerol	-1.76	-	low
<b>5X Transcription Buffer</b> Trometamol	-2.31	-	low

### Mobility in soil

## Section 12. Ecological information

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

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

## Section 13. Disposal considerations

**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. 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.

## Section 14. Transport information

**TDG / IMDG / IATA** : Not regulated.

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

**Transport in bulk according to IMO instruments** : Not available.

## Section 15. Regulatory information

### Canadian lists

**Canadian NPRI** : None of the components are listed.

**CEPA Toxic substances** : None of the components are listed.

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol

Not listed.

#### Stockholm Convention on Persistent Organic Pollutants

Not listed.

#### 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.

## Section 15. Regulatory information

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

## Section 16. Other information

### History

<b>Date of issue/Date of revision</b>	: 05/27/2022
<b>Date of previous issue</b>	: 09/06/2019
<b>Version</b>	: 6

### Key to abbreviations

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

### Procedure used to derive the classification

Classification	Justification
<input checked="" type="checkbox"/> <b>T7 RNA Polymerase</b> EYE IRRITATION - Category 2B	Calculation method
<b>RNA Polymerase Dilution Buffer</b> EYE IRRITATION - Category 2B	Calculation method

**References** : Not available.

Indicates information that has changed from previously issued version.

### Notice to reader

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