

SAFETY DATA SHEET



T7 RNA Polymerase, Part Number 600124

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

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 600110-83
 Dilution Buffer
 5X Transcription Buffer 600110-84

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

Agilent Technologies LDA UK Ltd.
 5500 Lakeside Cheadle Royal Business Park,
 Cheadle, Cheshire, SK8 3GR
 United Kingdom
 Tel: +44 (0) 345 712 5292
e-mail address of person responsible for this SDS : pdl-msds_author@agilent.com

1.4 Emergency telephone number

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

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : T7 RNA Polymerase Mixture
 RNA Polymerase Mixture
 Dilution Buffer
 5X Transcription Buffer Mixture

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

Not classified.

Ingredients of unknown toxicity : T7 RNA Polymerase Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%
 RNA Polymerase Dilution Buffer Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%
 5X Transcription Buffer Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 1 - 10%

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

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

2.2 Label elements

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SECTION 2: Hazards identification

Signal word	: T7 RNA Polymerase	No signal word.
	RNA Polymerase	No signal word.
	Dilution Buffer	
	5X Transcription Buffer	No signal word.
Hazard statements	: T7 RNA Polymerase	No known significant effects or critical hazards.
	RNA Polymerase	No known significant effects or critical hazards.
	Dilution Buffer	
	5X Transcription Buffer	No known significant effects or critical hazards.

Precautionary statements

Prevention	: T7 RNA Polymerase	Not applicable.
	RNA Polymerase	Not applicable.
	Dilution Buffer	
	5X Transcription Buffer	Not applicable.
Response	: T7 RNA Polymerase	Not applicable.
	RNA Polymerase	Not applicable.
	Dilution Buffer	
	5X Transcription Buffer	Not applicable.
Storage	: T7 RNA Polymerase	Not applicable.
	RNA Polymerase	Not applicable.
	Dilution Buffer	
	5X Transcription Buffer	Not applicable.
Disposal	: T7 RNA Polymerase	Not applicable.
	RNA Polymerase	Not applicable.
	Dilution Buffer	
	5X Transcription Buffer	Not applicable.
Hazardous ingredients	: 5X Transcription Buffer	Not applicable.
Supplemental label elements	: T7 RNA Polymerase	Not applicable.
	RNA Polymerase	Not applicable.
	Dilution Buffer	
	5X Transcription Buffer	Safety data sheet available on request.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: T7 RNA Polymerase	Not applicable.
	RNA Polymerase	Not applicable.
	Dilution Buffer	
	5X Transcription Buffer	Not applicable.
<u>Special packaging requirements</u>		
Tactile warning of danger	: T7 RNA Polymerase	Not applicable.
	RNA Polymerase	Not applicable.
	Dilution Buffer	
	5X Transcription Buffer	Not applicable.

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII	: T7 RNA Polymerase	This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
	RNA Polymerase	This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
	Dilution Buffer	
	5X Transcription Buffer	This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
Other hazards which do not result in classification	: T7 RNA Polymerase	None known.
	RNA Polymerase	None known.
	Dilution Buffer	
	5X Transcription Buffer	None known.

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SECTION 3: Composition/information on ingredients

3.1 Substances : T7 RNA Polymerase Mixture
 RNA Polymerase Dilution Buffer Mixture
 5X Transcription Buffer Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
T7 RNA Polymerase Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
RNA Polymerase Dilution Buffer Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
5X Transcription Buffer Trometamol	EC: 201-064-4 CAS: 77-86-1	≤3	Skin Irrit. 2, H315 Eye Irrit. 2, H319	[1]
Sodium chloride	EC: 231-598-3 CAS: 7647-14-5	≤3	Eye Irrit. 2, H319	[1]
			See Section 16 for the full text of the H statements declared above.	

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type

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

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : T7 RNA Polymerase 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.
 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. Get medical attention if irritation occurs.
 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. Get medical attention if symptoms occur.
 RNA Polymerase Dilution Buffer Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
 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.

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SECTION 4: First aid measures

Skin contact	: T7 RNA Polymerase	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	RNA Polymerase Dilution Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	5X Transcription Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: T7 RNA Polymerase	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.
	RNA Polymerase Dilution 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.
	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.
Protection of first-aiders	: T7 RNA Polymerase	No action shall be taken involving any personal risk or without suitable training.
	RNA Polymerase Dilution Buffer	No action shall be taken involving any personal risk or without suitable training.
	5X Transcription Buffer	No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

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

Over-exposure signs/symptoms

Eye contact	: T7 RNA Polymerase	No specific data.
	RNA Polymerase	No specific data.
	Dilution Buffer	
	5X Transcription Buffer	No specific data.
Inhalation	: T7 RNA Polymerase	No specific data.
	RNA Polymerase	No specific data.
	Dilution Buffer	
	5X Transcription Buffer	No specific data.

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SECTION 4: First aid measures

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

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	:	T7 RNA Polymerase	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		RNA Polymerase	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		Dilution Buffer	
		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	No specific treatment.
		Dilution Buffer	
		5X Transcription Buffer	No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	T7 RNA Polymerase	Use an extinguishing agent suitable for the surrounding fire.
		RNA Polymerase	Use an extinguishing agent suitable for the surrounding fire.
		Dilution Buffer	
		5X Transcription Buffer	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	:	T7 RNA Polymerase	None known.
		RNA Polymerase	None known.
		Dilution Buffer	
		5X Transcription Buffer	None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	:	T7 RNA Polymerase	In a fire or if heated, a pressure increase will occur and the container may burst.
		RNA Polymerase	In a fire or if heated, a pressure increase will occur and the container may burst.
		Dilution Buffer	
		5X Transcription Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous combustion products	:	T7 RNA Polymerase	Decomposition products may include the following materials: carbon dioxide carbon monoxide
		RNA Polymerase	Decomposition products may include the following materials: carbon dioxide carbon monoxide
		Dilution Buffer	
		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

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SECTION 5: Firefighting measures

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

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: 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 spilt material. 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 spilt material. 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 spilt material. Put on appropriate personal protective equipment.
For emergency responders	: T7 RNA Polymerase	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	RNA Polymerase Dilution Buffer	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	5X Transcription Buffer	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

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SECTION 6: Accidental release measures

6.2 Environmental precautions	: T7 RNA Polymerase	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	RNA Polymerase Dilution Buffer	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	5X Transcription Buffer	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	: 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.

6.4 Reference to other sections	: See Section 1 for emergency contact information. See Section 8 for information on appropriate personal protective equipment. See Section 13 for additional waste treatment information.
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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).
	RNA Polymerase Dilution Buffer	Put on appropriate personal protective equipment (see Section 8).
	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.

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SECTION 7: Handling and storage

7.2 Conditions for safe storage, including any incompatibilities

Storage	: 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 unlabelled 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
	5X Transcription 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

Recommendations	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
Industrial sector specific solutions	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not available. Not available. Not available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
T7 RNA Polymerase Glycerol	EH40/2005 WELs (United Kingdom (UK), 1/2020). TWA: 10 mg/m ³ 8 hours. Form: Mist
RNA Polymerase Dilution Buffer Glycerol	EH40/2005 WELs (United Kingdom (UK), 1/2020). TWA: 10 mg/m ³ 8 hours. Form: Mist

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SECTION 8: Exposure controls/personal protection

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

DNELs/DMELs

Product/ingredient name	Type	Exposure	Value	Population	Effects
5X Transcription Buffer	DNEL	Long term Oral	8.3 mg/kg bw/day	General population	Systemic
	DNEL	Long term Inhalation	29 mg/m ³	General population	Systemic
Sodium chloride	DNEL	Long term Dermal	83.3 mg/kg bw/day	General population	Systemic
	DNEL	Long term Inhalation	117.5 mg/m ³	Workers	Systemic
	DNEL	Long term Dermal	166.7 mg/kg bw/day	Workers	Systemic
	DNEL	Short term Oral	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Long term Oral	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Long term Dermal	126.65 mg/kg bw/day	General population	Systemic
	DNEL	Short term Dermal	295.52 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Dermal	295.52 mg/kg bw/day	Workers	Systemic
	DNEL	Short term Inhalation	443.28 mg/m ³	General population	Systemic
	DNEL	Long term Inhalation	443.28 mg/m ³	General population	Systemic
	DNEL	Short term Inhalation	2068.62 mg/m ³	Workers	Systemic
	DNEL	Long term Inhalation	2068.62 mg/m ³	Workers	Systemic

PNECs

No PNECs available

8.2 Exposure controls

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

Individual protection measures

Hygiene measures : 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.

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SECTION 8: Exposure controls/personal protection

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

- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

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

9.1 Information on basic physical and chemical properties

Appearance

Physical state	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Liquid. Liquid. Liquid.
Colour	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not available. Not available. Not available.
Odour	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not available. Not available. Not available.
Odour threshold	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not available. Not available. Not available.
Melting point/freezing point	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not available. Not available. 0°C
Initial boiling point and boiling range	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not available. Not available. 100°C (212°F)
Flammability (solid, gas)	:	T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Not applicable. Not applicable. Not applicable.

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SECTION 9: Physical and chemical properties

Upper/lower flammability or explosive limits : T7 RNA Polymerase Not available.
 RNA Polymerase Not available.
 Dilution Buffer
 5X Transcription Buffer Not available.

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				

Auto-ignition temperature :

Ingredient name	°C	°F	Method
T7 RNA Polymerase			
Glycerol	370	698	
Edetic acid	>400	>752	VDI 2263
RNA Polymerase Dilution Buffer			
Glycerol	370	698	
Edetic acid	>400	>752	VDI 2263

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

pH : T7 RNA Polymerase 7.7
 RNA Polymerase 7.7
 Dilution Buffer
 5X Transcription Buffer 8

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

Solubility(ies) : **T7 RNA Polymerase** Easily soluble in the following materials: cold water and hot water.
 RNA Polymerase Easily soluble in the following materials: cold water and hot water.
 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.

Partition coefficient: n-octanol/water : **T7 RNA Polymerase** Not applicable.
 RNA Polymerase Not applicable.
 Dilution Buffer
 5X Transcription Buffer Not applicable.

Vapour pressure :

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SECTION 9: Physical and chemical properties

Ingredient name	Vapour Pressure at 20°C			Vapour 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						
water	23.8	3.2		92.258	12.3	
Trometamol	<0.00075006	<0.0001				

- Evaporation rate** : T7 RNA Polymerase Not available.
RNA Polymerase Not available.
Dilution Buffer
5X Transcription Buffer Not available.
- Relative density** : T7 RNA Polymerase Not available.
RNA Polymerase Not available.
Dilution Buffer
5X Transcription Buffer Not available.
- Vapour density** : T7 RNA Polymerase Not available.
RNA Polymerase Not available.
Dilution Buffer
5X Transcription Buffer Not available.
- Explosive properties** : **T7 RNA Polymerase** Not available.
RNA Polymerase Not available.
Dilution Buffer
5X Transcription Buffer Not available.
- Oxidising properties** : T7 RNA Polymerase Not available.
RNA Polymerase Not available.
Dilution Buffer
5X Transcription Buffer Not available.
- Particle characteristics**
- Median particle size** : **T7 RNA Polymerase** Not applicable.
RNA Polymerase Not applicable.
Dilution Buffer
5X Transcription Buffer Not applicable.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

- 10.1 Reactivity** : T7 RNA Polymerase No specific test data related to reactivity available for this product or its ingredients.
RNA Polymerase No specific test data related to reactivity available for this product or its ingredients.
Dilution Buffer
5X Transcription Buffer No specific test data related to reactivity available for this product or its ingredients.

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SECTION 10: Stability and reactivity

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.
10.3 Possibility of hazardous reactions	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	No specific data. No specific data. No specific data.
10.5 Incompatible materials	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.
10.6 Hazardous decomposition products	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
5X Transcription Buffer Trometamol Sodium chloride	LD50 Dermal	Rat	>5000 mg/kg	-
	LD50 Oral	Rat	3000 mg/kg	-

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
5X Transcription Buffer Sodium chloride	3000	N/A	N/A	N/A	N/A

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
5X Transcription Buffer Trometamol Sodium chloride	Skin - Moderate irritant	Rabbit	-	25 %	-
	Skin - Severe irritant	Rabbit	-	500 mg	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Moderate irritant	Rabbit	-	10 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-

Sensitiser

Conclusion/Summary : Not available.

Mutagenicity

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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 likely routes of exposure : T7 RNA Polymerase Routes of entry anticipated: Oral, Dermal, Inhalation.
 RNA Polymerase Routes of entry anticipated: Oral, Dermal, Inhalation.
 Dilution Buffer
 5X Transcription Buffer Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

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. 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. 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. No known significant effects or critical hazards.
Eye 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. No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

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

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

Short term exposure

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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 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.
Carcinogenicity	: 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.
Mutagenicity	: 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.
Reproductive toxicity	: 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.
Other information	: T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer	Adverse symptoms may include the following: May cause skin sensitisation. Not available. Adverse symptoms may include the following: May cause skin sensitisation.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
5X Transcription Buffer Trometamol Sodium chloride	Acute EC50 >980 mg/l Fresh water	Daphnia	48 hours
	Acute NOEC 520 mg/l Fresh water	Daphnia	48 hours
	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

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SECTION 12: Ecological information

Product/ingredient name	Test	Result	Dose	Inoculum
5X Transcription Buffer Trometamol	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
5X Transcription Buffer Trometamol	-2.31	-	low

12.4 Mobility in soil

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

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

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

Packaging

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

Special precautions : This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

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SECTION 14: Transport information

	ADR/RID	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-
14.3 Transport hazard class(es)	-	-	-
14.4 Packing group	-	-	-
14.5 Environmental hazards	No.	No.	No.

Additional information

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

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

SECTION 15: Regulatory information

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

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

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Label	: T7 RNA Polymerase	Not applicable.
	RNA Polymerase Dilution	Not applicable.
	Buffer	
	5X Transcription Buffer	Not applicable.

Other EU regulations

Ozone depleting substances (1005/2009/EU)

Not listed.

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

Not listed.

Persistent Organic Pollutants

Not listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

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SECTION 15: Regulatory information

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	: <input checked="" type="checkbox"/> All components are active or exempted.
Viet Nam	: <input checked="" type="checkbox"/> All components are listed or exempted.

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

SECTION 16: Other information

Indicates information that has changed from previously issued version.

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

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

Classification	Justification
Not classified.	

Full text of abbreviated H statements

5X Transcription Buffer H315 H319	Causes skin irritation. Causes serious eye irritation.
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Full text of classifications [CLP/GHS]

<input checked="" type="checkbox"/> 5X Transcription Buffer Eye Irrit. 2 Skin Irrit. 2	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 SKIN CORROSION/IRRITATION - Category 2
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T7 RNA Polymerase, Part Number 600124

SECTION 16: Other information

Date of issue/ Date of revision : 27/05/2022

Date of previous issue : 06/09/2019

Version : 4

Notice to reader

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