

SAFETY DATA SHEET



T3 RNA Polymerase, Part Number 600111

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

1.1 Product identifier

Product name : T3 RNA Polymerase, Part Number 600111
Part no. (chemical kit) : 600111
Part no. : 5X Transcription Buffer 600110-82
RNA Polymerase 600110-83
Dilution Buffer
T3 RNA Polymerase 600111-51

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

Material uses : Analytical reagent.
5X Transcription Buffer 1 ml
RNA Polymerase Dilution Buffer 1 ml
T3 RNA Polymerase 0.1 ml (5000 U 50 U/μl)

1.3 Details of the supplier of the safety data sheet

Agilent Technologies Manufacturing GmbH & Co. KG
Hewlett-Packard-Str. 8
76337 Waldbronn
Germany
0800 603 1000

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 : 5X Transcription Buffer Mixture
RNA Polymerase Mixture
Dilution Buffer
T3 RNA Polymerase Mixture

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

5X Transcription

Buffer

H412

LONG-TERM (CHRONIC) AQUATIC HAZARD

Category 3

Ingredients of unknown toxicity : 5X Transcription Buffer Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 1 - 10%
RNA Polymerase Dilution Buffer Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%
T3 RNA Polymerase Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 30 - 60%

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	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No signal word. No signal word. No signal word.
Hazard statements	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	H412 - Harmful to aquatic life with long lasting effects. No known significant effects or critical hazards. No known significant effects or critical hazards.
<u>Precautionary statements</u>		
Prevention	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	P273 - Avoid release to the environment. Not applicable. Not applicable.
Response	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	Not applicable. Not applicable. Not applicable.
Storage	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	Not applicable. Not applicable. Not applicable.
Disposal	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. Not applicable. Not applicable.
Hazardous ingredients	: 5X Transcription Buffer	Not applicable.
Supplemental label elements	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	Not applicable. Not applicable. Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	Not applicable. Not applicable. Not applicable.
<u>Special packaging requirements</u>		
Tactile warning of danger	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	Not applicable. Not applicable. Not applicable.
2.3 Other hazards		
Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	This mixture does not contain any substances that are assessed to be a PBT or a vPvB. This mixture does not contain any substances that are assessed to be a PBT or a vPvB. 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	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	None known. None known. None known.

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SECTION 3: Composition/information on ingredients

3.1 Substances : 5X Transcription Buffer Mixture
 RNA Polymerase Dilution Buffer Mixture
 T3 RNA Polymerase Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
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]
Magnesium chloride	EC: 232-094-6 CAS: 7786-30-3	≤1	Aquatic Chronic 1, H410 (M=1)	[1]
RNA Polymerase Dilution Buffer				
Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
T3 RNA Polymerase				
Glycerol	REACH #: Annex V EC: 200-289-5 CAS: 56-81-5	≥50 - ≤75	Not classified.	[2]
			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

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

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : 5X Transcription 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. 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.

T3 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.

Inhalation : 5X Transcription 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

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SECTION 4: First aid measures

		collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	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.
	T3 RNA Polymerase	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Skin contact	: 5X Transcription 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.
	RNA Polymerase Dilution Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	T3 RNA Polymerase	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: 5X Transcription 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.
	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.
	T3 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.
Protection of first-aiders	: 5X Transcription 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.
	RNA Polymerase Dilution Buffer	No action shall be taken involving any personal risk or without suitable training.
	T3 RNA Polymerase	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	: 5X Transcription Buffer	No known significant effects or critical hazards.
	RNA Polymerase	No known significant effects or critical hazards.
	Dilution Buffer	
	T3 RNA Polymerase	No known significant effects or critical hazards.
Inhalation	: 5X Transcription Buffer	No known significant effects or critical hazards.
	RNA Polymerase	No known significant effects or critical hazards.
	Dilution Buffer	
	T3 RNA Polymerase	No known significant effects or critical hazards.

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SECTION 4: First aid measures

Skin contact	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	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	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No specific data. No specific data. No specific data.
Inhalation	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No specific data. No specific data. No specific data.
Skin contact	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No specific data. No specific data. No specific data.
Ingestion	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No specific data. No specific data. No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	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. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No specific treatment. No specific treatment. No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	None known. None known. None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	: 5X Transcription Buffer RNA Polymerase Dilution Buffer	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. In a fire or if heated, a pressure increase will occur and the container may burst.
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SECTION 5: Firefighting measures

	T3 RNA Polymerase	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous combustion products	: 5X Transcription Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds metal oxide/oxides
	RNA Polymerase Dilution Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	T3 RNA Polymerase	Decomposition products may include the following materials: carbon dioxide carbon monoxide

5.3 Advice for firefighters

Special precautions for fire-fighters	: 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.
	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.
	T3 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.
Special protective equipment for fire-fighters	: 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.
	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.
	T3 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.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: 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. Avoid breathing vapour 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 spilt material. Put on appropriate personal protective equipment.
	T3 RNA Polymerase	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas.

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SECTION 6: Accidental release measures

For emergency responders

: 5X Transcription Buffer

Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

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".

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".

T3 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".

6.2 Environmental precautions

: 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). Water polluting material. May be harmful to the environment if released in large quantities.

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).

T3 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).

6.3 Methods and material for containment and cleaning up

Methods for cleaning up

: 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.

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.

T3 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.

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.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

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SECTION 7: Handling and storage

Protective measures	: 5X Transcription Buffer	Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Avoid release to the environment. 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	Put on appropriate personal protective equipment (see Section 8).
	Dilution Buffer	Put on appropriate personal protective equipment (see Section 8).
	T3 RNA Polymerase	Put on appropriate personal protective equipment (see Section 8).
Advice on general occupational hygiene	: 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.
	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.
	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.
	T3 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.

7.2 Conditions for safe storage, including any incompatibilities

Storage	: 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.
	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.
	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.
	T3 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.

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SECTION 7: Handling and storage

7.3 Specific end use(s)

Recommendations	: 5X Transcription Buffer	Industrial applications, Professional applications.
	RNA Polymerase	Industrial applications, Professional applications.
	Dilution Buffer	
	T3 RNA Polymerase	Industrial applications, Professional applications.
Industrial sector specific solutions	: 5X Transcription Buffer	Not available.
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	Not available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
RNA Polymerase Dilution Buffer Glycerol	NAOSH (Ireland, 1/2020). OELV-8hr: 10 mg/m ³ 8 hours. Form: mist
T3 RNA Polymerase Glycerol	NAOSH (Ireland, 1/2020). OELV-8hr: 10 mg/m ³ 8 hours. Form: mist

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 Trometamol	DNEL	Long term Oral	8.3 mg/kg bw/day	General population	Systemic	
	DNEL	Long term Inhalation	29 mg/m ³	General population	Systemic	
	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	
	Sodium chloride	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

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Magnesium chloride	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
	DNEL	Long term Oral	7 mg/kg bw/day	General population	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.

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. 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.

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.

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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	: 5X Transcription Buffer	Liquid.
	RNA Polymerase	Liquid.
	Dilution Buffer	
	T3 RNA Polymerase	Liquid.
Colour	: 5X Transcription Buffer	Not available.
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	Not available.
Odour	: 5X Transcription Buffer	Not available.
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	Not available.
Odour threshold	: 5X Transcription Buffer	Not available.
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	Not available.
Melting point/freezing point	: 5X Transcription Buffer	0°C
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	Not available.
Initial boiling point and boiling range	: 5X Transcription Buffer	100°C (212°F)
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	Not available.
Flammability (solid, gas)	: 5X Transcription Buffer	Not applicable.
	RNA Polymerase	Not applicable.
	Dilution Buffer	
	T3 RNA Polymerase	Not applicable.
Upper/lower flammability or explosive limits	: 5X Transcription Buffer	Not available.
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	Not available.
Flash point	: 5X Transcription Buffer	Not available.
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	[Product does not sustain combustion.]

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
RNA Polymerase Dilution Buffer						
Edetic acid	>100	>212	DIN 51758			
(R*,R*) -1,4-Dimercaptobutane-2,3-diol	>110	>230				
T3 RNA Polymerase						
Edetic acid	>100	>212	DIN 51758			
(R*,R*) -1,4-Dimercaptobutane-2,3-diol	>110	>230				

Auto-ignition temperature :

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Ingredient name	°C	°F	Method
RNA Polymerase Dilution Buffer			
Glycerol	370	698	VDI 2263
Edetic acid	>400	>752	
T3 RNA Polymerase			
Glycerol	370	698	VDI 2263
Edetic acid	>400	>752	

- Decomposition temperature** : 5X Transcription Buffer Not available.
RNA Polymerase Not available.
Dilution Buffer
T3 RNA Polymerase Not available.
- pH** : 5X Transcription Buffer 8
RNA Polymerase 7.7
Dilution Buffer
T3 RNA Polymerase 7.7
- Viscosity** : 5X Transcription Buffer Not available.
RNA Polymerase Not available.
Dilution Buffer
T3 RNA Polymerase Not available.
- Solubility(ies)** : 5X Transcription Buffer 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.
T3 RNA Polymerase Easily soluble in the following materials: cold water and hot water.
- Partition coefficient: n-octanol/water** : 5X Transcription Buffer Not applicable.
RNA Polymerase Not applicable.
Dilution Buffer
T3 RNA Polymerase Not applicable.

Vapour pressure :

Ingredient name	Vapour Pressure at 20°C			Vapour pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
5X Transcription Buffer						
water	23.8	3.2		92.258	12.3	
Trometamol	<0.00075006	<0.0001				
RNA Polymerase Dilution Buffer						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	
T3 RNA Polymerase						
water	23.8	3.2		92.258	12.3	
Glycerol	0.000075	0.00001		0.0025	0.00033	

- Evaporation rate** : 5X Transcription Buffer Not available.
RNA Polymerase Not available.
Dilution Buffer
T3 RNA Polymerase Not available.
- Relative density** : 5X Transcription Buffer Not available.
RNA Polymerase Not available.
Dilution Buffer
T3 RNA Polymerase Not available.

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SECTION 9: Physical and chemical properties

Vapour density	: 5X Transcription Buffer	Not available.
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	Not available.
Explosive properties	: 5 X Transcription Buffer	Not available.
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	Not available.
Oxidising properties	: 5X Transcription Buffer	Not available.
	RNA Polymerase	Not available.
	Dilution Buffer	
	T3 RNA Polymerase	Not available.

Particle characteristics

Median particle size	: 5X Transcription Buffer	Not applicable.
	RNA Polymerase	Not applicable.
	Dilution Buffer	
	T3 RNA Polymerase	Not applicable.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	: 5X Transcription Buffer	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	
	T3 RNA Polymerase	No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: 5X Transcription Buffer	The product is stable.
	RNA Polymerase	The product is stable.
	Dilution Buffer	
	T3 RNA Polymerase	The product is stable.
10.3 Possibility of hazardous reactions	: 5X Transcription Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
	RNA Polymerase	Under normal conditions of storage and use, hazardous reactions will not occur.
	Dilution Buffer	
	T3 RNA Polymerase	Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: 5X Transcription Buffer	No specific data.
	RNA Polymerase	No specific data.
	Dilution Buffer	
	T3 RNA Polymerase	No specific data.
10.5 Incompatible materials	: 5X Transcription Buffer	May react or be incompatible with oxidising materials.
	RNA Polymerase	May react or be incompatible with oxidising materials.
	Dilution Buffer	
	T3 RNA Polymerase	May react or be incompatible with oxidising materials.
10.6 Hazardous decomposition products	: 5X Transcription Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	RNA Polymerase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Dilution Buffer	
	T3 RNA Polymerase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
5X Transcription Buffer				
Trometamol	LD50 Dermal	Rat	>5000 mg/kg	-
Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
Magnesium chloride	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Oral	Rat	2800 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
Magnesium chloride	2800	N/A	N/A	N/A	N/A

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
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	-

Sensitiser

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure

: 5X Transcription Buffer
RNA Polymerase
Dilution Buffer
T3 RNA Polymerase

Routes of entry anticipated: Oral, Dermal, Inhalation.
Routes of entry anticipated: Oral, Dermal, Inhalation.
Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

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SECTION 11: Toxicological information

Inhalation	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Eye contact	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	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	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No specific data. No specific data. No specific data.
Ingestion	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No specific data. No specific data. No specific data.
Skin contact	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No specific data. No specific data. No specific data.
Eye contact	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	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

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	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Carcinogenicity	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Mutagenicity	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

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SECTION 11: Toxicological information

Reproductive toxicity	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Other information	: 5X Transcription Buffer RNA Polymerase Dilution Buffer T3 RNA Polymerase	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	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	
	Magnesium chloride	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	
Acute EC50 >100 mg/l Fresh water		Algae - Desmodesmus subspicatus	72 hours	
Acute EC50 180000 µg/l Fresh water		Crustaceans - Eudiaptomus padanus ssp. padanus - Adult	48 hours	
Acute IC50 6.8 mg/l Fresh water		Aquatic plants - Lemna aequinoctialis	96 hours	
	Acute LC50 32000 µg/l Fresh water	Daphnia - Daphnia hyalina - Adult	48 hours	
	Acute LC50 2120 mg/l Fresh water	Fish - Pimephales promelas	96 hours	
	Acute NOEC 100 mg/l Fresh water	Algae - Desmodesmus subspicatus	72 hours	
	Chronic NOEC 0.1 mg/l Fresh water	Fish - Cyprinus carpio	35 days	

12.2 Persistence and degradability

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

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SECTION 12: Ecological information

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 : The classification of the product may meet the criteria for a hazardous waste.

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. 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

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

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SECTION 14: Transport 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	: 5X Transcription Buffer	Not applicable.
	RNA Polymerase Dilution Buffer	Not applicable.
	T3 RNA Polymerase	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.

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.

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SECTION 15: Regulatory information

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.

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
5X Transcription Buffer Aquatic Chronic 3, H412	Calculation method

Full text of abbreviated H statements

5X Transcription Buffer H315 H319 H410 H412	Causes skin irritation. Causes serious eye irritation. Very toxic to aquatic life with long lasting effects. Harmful to aquatic life with long lasting effects.
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Full text of classifications [CLP/GHS]

5X Transcription Buffer Aquatic Chronic 1 Aquatic Chronic 3 Eye Irrit. 2 Skin Irrit. 2	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 SKIN CORROSION/IRRITATION - Category 2
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